B O N N E V I L L E   P O W E R   A D M I N I S T R A T I O N

Hooper Springs Transmission Project

Supplemental Draft Environmental Impact Statement

May 2014

Volume 1: Environmental Impact Statement

DOE/EIS-0451

HOOPER SPRINGS TRANSMISSION PROJECT

Supplemental Draft Environmental Impact Statement

DOE/EIS - 0451

Bonneville Power Administration

Cooperating Agencies

U.S. Department of Agriculture, Forest Service, Caribou-Targhee National Forest

U.S. Department of Interior, Bureau of Land Management

Idaho Governor's Office of Energy Resources

May 2014

Hooper Springs Transmission Project

Responsible Agency: U.S. Department of Energy (DOE), Bonneville Power Administration (BPA)

Cooperating Agencies: U.S. Department of Agriculture, Forest Service (USFS), Caribou-Targhee National Forest (C-TNF); U.S. Department of Interior, Bureau of Land Management (BLM); Idaho Governor's Office of Energy Resources

Title of Proposed Project: Hooper Springs Transmission Project (Project), DOE/EIS - 0451

State Involved: Idaho

Abstract: BPA is proposing to build a new, 115-kilovolt (kV) transmission line in Caribou County, Idaho from a proposed new 138/115-kV BPA substation (Hooper Springs Substation), near the city of Soda Springs, Idaho, to either an existing Lower Valley Energy (LVE) substation or a proposed BPA connection facility that would connect with LVE's existing transmission system in northeastern Caribou County. BPA also would construct an approximately 0.2-mile-long, single-circuit 138-kV transmission line between the new Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation to connect the new line to the regional transmission grid. BPA is considering a North Alternative, including two route options (the Long Valley Road and North Highland Road options) and a South Alternative, including five route options (Options 1, 2, 3, 3A, and 4) for the proposed transmission line. BPA's preferred alternative is the South Alternative's Option 3A. BPA is also considering the No Action Alternative.

The Project is needed to increase reliability to the southern portion of LVE's transmission system and to address ongoing electricity use (load) growth in southeast Idaho and northwestern Wyoming.

BPA issued a Preliminary Environmental Assessment (EA) (DOE/EA-1567) for the Project in May 2009 (BPA 2009). Based on comments received on the 2009 Preliminary EA, BPA discovered that the preliminary EA alternatives would all cross one or more areas that may have heavy metal and selenium soil contamination from phosphate mining activities. As a result, BPA developed the North Alternative to avoid mining areas and analyzed both the North Alternative and the South Alternative (the alternative considered in the preliminary EA) in a draft Environmental Impact Statement (EIS) released in March 2013. Since the draft EIS was released, BPA has evaluated comments and suggestions and subsequently developed an additional South Alternative route option (Option 3A). To provide detailed analysis of Option 3A, BPA has prepared this supplemental draft EIS.

The Project could create impacts on land use and recreation, visual resources, vegetation, geology and soils, water resources, wildlife, fish, cultural resources, social and economic resources, public health and safety, transportation, air quality, noise, and greenhouse gases. Chapter 3 of the EIS describes the affected environment and potential impacts in detail.

Public review and comment of this supplemental draft EIS will continue through August 7, 2014.

For additional information, contact: Ms. Tish Eaton – KEC-4
Project Environmental Lead
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208
Telephone: (503) 230-3469
Email: tkeaton@bpa.gov

For additional copies of this document, please call 1-800-622-4520 and ask for the document by name. The supplemental draft EIS is also on the Internet at: www.bpa.gov/go/HooperSprings. You may also request copies by writing to:

Bonneville Power Administration
P. O. Box 3621
Portland, Oregon 97208
ATT: Public Information Center - CHDL-1

For additional information on DOE NEPA activities, please contact Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance, GC-20, U.S. Department of Energy, 1000 Independence Avenue S.W., Washington D.C. 20585-0103, phone: 1-800-472-2756 or visit the DOE NEPA website at www.eh.doe.gov/nepa.

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Hooper Springs Transmission Project

Supplemental Draft Environmental Impact Statement

Volume 1: Environmental Impact Statement

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Summary

This summary covers the major points of the supplemental draft environmental impact statement (EIS) prepared for the Hooper Springs Transmission Project (Project). This supplemental draft EIS was prepared by Bonneville Power Administration (BPA). The Project would include building a new 115-kilovolt (kV) transmission line, a new 138-kV transmission line, a new substation, and either additions to an existing substation or a new connection facility located in Caribou County, Idaho.

S.1 Purpose of and Need for Action

BPA is a federal agency within the U.S. Department of Energy (DOE) that owns and operates more than 15,000 circuit miles of high voltage transmission lines in the Pacific Northwest. BPA's electrical transmission system transmits most of the Pacific Northwest's power to serve customers in Idaho, Oregon, Washington, western Montana, and small parts of California, eastern Montana, Nevada, Utah, and Wyoming.

BPA has a statutory obligation to ensure it has sufficient capability to serve its customers through a safe and reliable transmission system. The Federal Columbia River Transmission Act directs BPA to construct improvements, additions, and replacements to its transmission system that the BPA Administrator determines are necessary to provide service to BPA's customers and maintain electrical stability and reliability (16 United States Code [U.S.C.] § 838b[b-d]). The Project is needed to improve the stability and reliability of the transmission system in southeastern Idaho.

Lower Valley Energy (LVE) and Fall River Electric Cooperative (FREC) are customers of BPA who purchase all, or almost all, of the electric power required to serve their electrical loads in eastern Idaho, northwestern Wyoming, and southwestern Montana from BPA. BPA has completed various upgrades and other improvements of its existing transmission lines that have increased the voltage stability and reliability of the FREC transmission system and the northern portion of LVE's transmission system. However, reliability and voltage stability of the southern portion of LVE's transmission system is a concern. LVE's system experiences extreme peaks in electrical load during winter, when temperatures can drop to -50 degrees Fahrenheit (°F) and electricity is needed for heat. If a transmission line serving the southern portion of LVE's system were to lose service due to weather or other events, voltage instability could occur and LVE and FREC customers, including residential customers, could lose power and heat. Because such an outage would likely be associated with potentially life-threatening low temperatures, such an outage is a major concern.

In 2006, BPA developed a proposal to address the voltage stability and reliability concerns in the southern portion of LVE's transmission system and to meet projected load demands that involved construction, operation, and maintenance by BPA of the proposed Hooper Springs Substation, as well as partial funding by BPA of the construction, operation, and maintenance by LVE of a new 22-mile-long, double-circuit 115-kV transmission line in Caribou County, Idaho (the current South Alternative). BPA issued a preliminary environmental assessment (EA) (DOE/EA-1567) for that proposed project in May 2009 (BPA 2009). Based on comments received on the 2009 Preliminary EA, BPA discovered that the South Alternative and its route options all crossed one or more areas that may have heavy metal and selenium soil contamination from phosphate mining activities. Because of environmental and other concerns about these sites, BPA decided to develop the North Alternative for consideration and determined that preparation of an EIS for the Project was appropriate. BPA also decided to fully fund the proposed transmission line.

BPA began the EIS process for the Project in June 2010 and issued a draft EIS in March 2013. The draft EIS evaluated a North Alternative and two route options, and a South Alternative and four route options. After release of the draft EIS, BPA continued to evaluate comments and suggestions concerning the alternatives and options. As a result, BPA identified an additional route option for the South Alternative. Because it is largely similar to Option 3, this additional route option has been identified as Option 3A. While similar to the South Alternative route options included in the draft EIS, Option 3A was not specifically evaluated in the draft EIS. BPA therefore has prepared this supplemental draft EIS to evaluate this route option in detail. This supplemental draft EIS also includes responses to all comments received on the draft EIS and identifies a preferred alternative for the Project.

BPA needs to address the current voltage stability and reliability concerns related to the southern portion of LVE’s transmission system. The proposed Hooper Springs Transmission Project would provide increased reliability to the southern portion of LVE’s transmission system by allowing BPA to provide transmission reinforcement to avoid loss of LVE’s entire voltage load during peak winter conditions. BPA also needs to address ongoing electricity use (load) growth in southeast Idaho and the Jackson Hole valley area in northwestern Wyoming.

In meeting the need for action, BPA will attempt to achieve the following purposes:

- Maintain reliability of BPA’s transmission system to BPA and industry standards.
- Meet BPA’s contractual and statutory obligations.
- Minimize project costs.
- Minimize impacts to the natural and human environment.

S.2 Lead and Cooperating Agencies

BPA is the lead agency for the Hooper Springs Transmission Project EIS. The U.S. Forest Service (USFS), the U.S. Bureau of Land Management (BLM), and the Idaho Governor’s Office of Energy Resources are participating in the preparation of this supplemental draft EIS as cooperating agencies under the National Environmental Policy Act (NEPA).

USFS, through the Caribou-Targhee National Forest (C-TNF), will use the information contained in this supplemental draft EIS, its current Forest Plan, associated planning requirements, and comments from the public to decide whether to grant BPA a special use permit across forest lands to construct and maintain the transmission lines and associated access roads. If the C-TNF decides to grant BPA the special use permit, it must amend its current Forest Plan to adjust the management prescriptions associated with the lands crossed by the Project. The C-TNF also will help to ensure this EIS is sufficient for supporting the C-TNF in complying with the Settlement Agreement for the Section 368 West Wide Energy Corridors. BLM also manages lands potentially crossed by the proposed transmission line regardless of route. Similar to the C-TNF, BLM will decide whether to grant BPA a right-of-way (ROW) easement across BLM lands to construct the transmission lines and associated access roads, and allow for maintenance of the transmission lines and roads, as necessary.

The Idaho Governor's Office of Energy Resources will help identify state interests that should be addressed in the supplemental draft EIS and help coordinate its review by various state agencies. Other agencies may also play a role in the Project depending on the alternative or route option. The route for the North Alternative would cross lands managed by the Bureau of Indian Affairs (BIA) for the BIA Fort Hall Irrigation Project. Either alternative may require a permit issued by the U.S. Army Corps of Engineers.

S.3 Public Involvement

BPA initiated public involvement in May 2006, when it sent a letter concerning the Hooper Springs Transmission Project, as described in the 2009 Preliminary EA, to adjacent landowners; tribes; federal, state, regional, and local agencies; interest groups; and others. BPA also held public scoping meetings for the EA in 2006 and 2007, and conducted other public outreach efforts during that time.

After BPA decided to prepare an EIS, it again solicited comments from the public to help determine what issues should be studied in the EIS. BPA requested comments through publishing a notice in the Federal Register; mailing letters to people who live along the proposed transmission line routes; federal, state, regional, and local agencies that may have expertise or require permits; tribes with interest in the area; and other interest groups. Most scoping comments received by BPA focused on project need, proposed routes, disruption of future mining activities, crossing of lands undergoing investigation for selenium soil contamination and associated liability issues, mobilization and/or release of contaminants or toxic substances due to soil and sediment disturbance, and potential impacts on wildlife habitat, property values, visual quality, and water quality.

In March 2013, BPA distributed a draft EIS to the public (landowners; tribes; federal, state, and local agencies; interested groups; and others) for review and comment. BPA accepted comments through April 22, 2013. All comments received were posted online on the Hooper Springs Transmission Project comments webpage and are included in Volume 2 of this supplemental draft EIS. During the public comment period for the draft EIS, BPA requested comments by publishing a notice in the Federal Register; mailing a letter to interested and affected persons; sending a press release to local media and placing paid ads in newspapers; holding an open-house style public meeting on April 3, 2013, in Soda Springs, Idaho; posting the draft EIS on BPA's project website: http://efw.bpa.gov/environmental_services/Document_Library/HooperSprings/; and holding a project update meeting in September 2013 to provide information on the current alternatives being considered.

On October 22, 2013, BPA sent a letter was sent to all potentially interested and affected persons describing its intent to prepare a supplemental draft EIS to evaluate Option 3A. During the public comment period for the supplemental draft EIS, BPA is requesting comments by publishing a notice in the Federal Register; sending a letter to potentially interested and affected persons, requesting comments and inviting the public to an open-house style public meeting; sending a press release to local media, placing newspaper ads about the supplemental draft EIS public meeting and the comment period; and posting the supplemental draft EIS on BPA's project website: http://efw.bpa.gov/environmental_services/Document_Library/HooperSprings/.

S.4 Alternatives

BPA is considering two alternatives and several route options to meet the purpose and need: the North Alternative, including two route options; and the South Alternative, including five route options. In addition, BPA is considering the No Action Alternative. Under the No Action Alternative, a new line would not be constructed.

BPA has evaluated the alternatives and route options, considered the purpose and need of the Project, the affected environment, and environmental consequences, and based on these factors, BPA's preferred alternative at this time is the South Alternative's Option 3A.

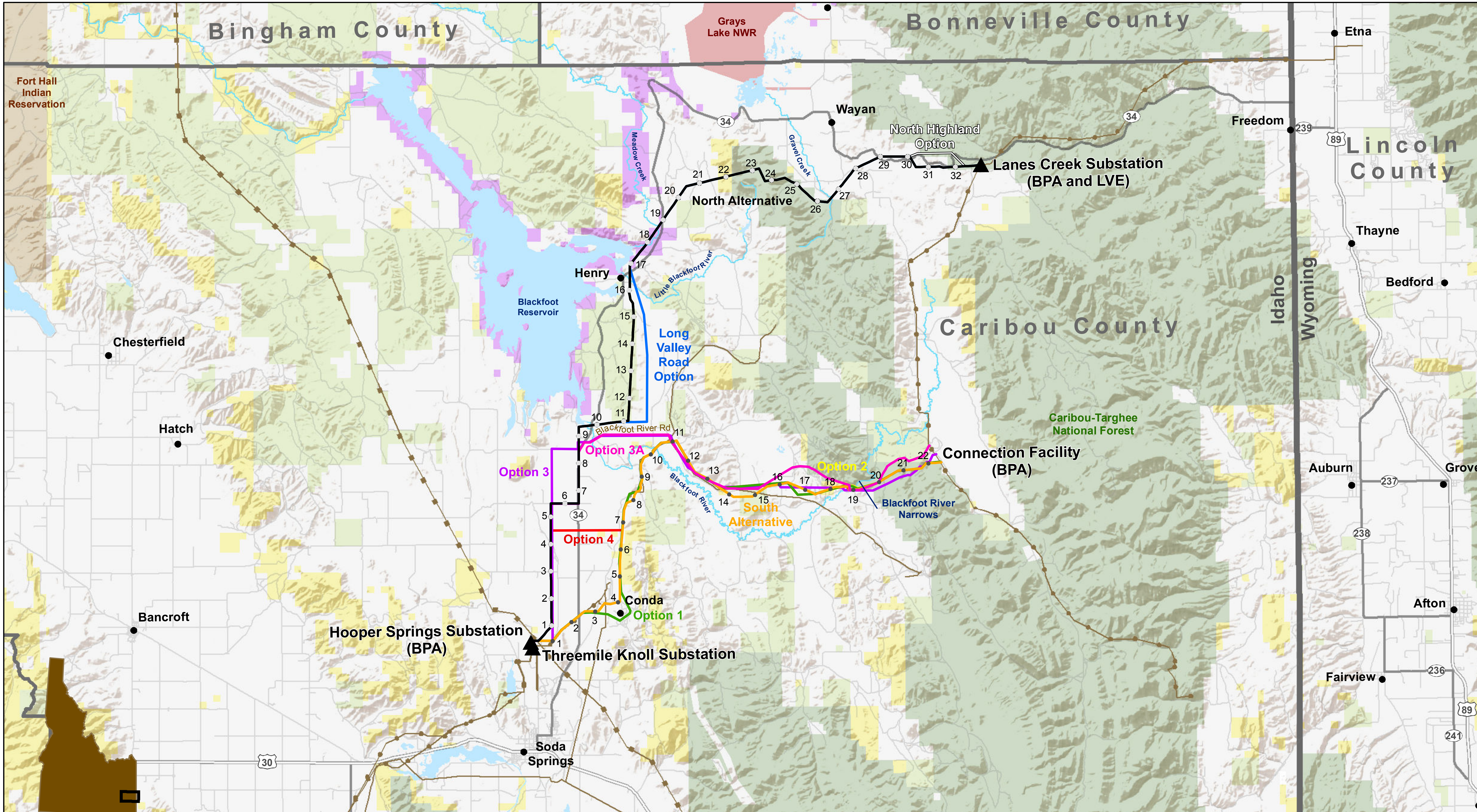
S.4.1 North Alternative

The North Alternative would include a new, approximately 33-mile-long, single-circuit 115-kV transmission line in Caribou County north of Soda Springs, Idaho that would extend from the proposed BPA Hooper Springs Substation generally north and then east to the existing LVE Lanes Creek Substation (see Map S-1). This alternative also would include construction of the 138/115-kV BPA Hooper Springs Substation, which would be located about 3 miles directly north of the city of Soda Springs along Threemile Knoll Road. New 115-kV substation facilities within the boundaries of LVE's existing Lanes Creek Substation, which is located east of the unincorporated community of Wayan, Idaho, also would be constructed. A new 0.2-mile, single-circuit 138-kV transmission line that would extend from the proposed Hooper Springs Substation generally south to PacifiCorp's existing 345/138-kV Threemile Knoll Substation would be constructed to connect the new line to the regional transmission grid.

Easements and Land

The North Alternative would require a 100-foot-wide ROW for the new single-circuit 115-kV transmission line, a 150-foot-wide ROW for the new 138-kV line, and a 50-foot-wide easement for new and reconstructed access roads. A 20-foot-wide easement would be needed for access roads that need improvement only.

BPA would purchase easements on private or state lands or apply for special use permits or easements on federal lands. These easements or permits would provide BPA the rights to construct, operate, and maintain the lines in perpetuity. Construction of the Hooper Springs Substation would require the purchase of 11 acres of private land. BPA would not permit any uses of the transmission line ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities. At LVE's existing Lanes Creek Substation, BPA would negotiate and enter into a tenant agreement with LVE for the use of a portion of its existing substation land.



Substation
Mile Markers - North Alternative
North Alternative
Long Valley Road Option
North Highland Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 3A
Option 4

Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
US Fish and Wildlife Service
Tribal Land
Bureau of Indian Affairs
State Land
Private Land

City
Local Road
State Route
US Highway

Existing Transmission Lines
46 kV
138 kV
345 kV

N
W E
S

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

0 1 2 4 6 8 10 Miles

Hooper Springs Transmission Project

BONNEVILLE POWER ADMINISTRATION

Map S-1
Hooper Springs Transmission Project Overview

Date: 1/27/2014

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Route Options

Long Valley Road Option

The Long Valley Road Option would move a portion of the North Alternative off state of Idaho lands and increase the length of the transmission line by approximately 0.6 mile.

North Highland Option

The North Highland Option is about 2.2 miles long and would move a portion of the North Alternative corridor on to primarily C-TNF lands. This option is the same length as the portion of line replaced along the North Alternative (also about 2.2 miles).

Transmission Structures and Footings

The North Alternative would require approximately 234 new structures over its 33-mile length. Approximately 12 miles would be constructed using about 74 steel single-pole structures between Hooper Springs Substation and transmission line mile (line mile) 12. These structures would be about 80 to 110 feet tall with spans of approximately 750 feet between structures. Structure heights at particular locations would depend on terrain, the length of the span, and other factors. Permanent guy wires would not be required on steel pole structures although temporary guy wires may be used during construction. Approximately 160 wood, H-frame structures would be installed over the remaining approximately 21 miles between line mile 12 and the Lanes Creek Substation. These structures would be about 55 to 105 feet tall with spans of approximately 750 feet between structures. The area permanently disturbed would be about 0.012 acre for steel single-poles and 0.01 acre for wood H-frame structures. After construction, the disturbed areas would be restored to their original contours and revegetated.

The proposed 138-kV transmission line would require two wood, H-frame structures over its approximately 0.2-mile length. The 138-kV wood structures would be 80 to 85 feet tall with a span of approximately 400 feet between the two structures.

The Long Valley Road Option would be constructed using steel single-pole structures rather than wood H-frame structures (requiring the use of seven additional steel structures compared to the North Alternative). All of the North Highland Option would be composed of wood, H-frame structures and would require about the same number of wood-pole structures as the North Alternative portion of line that it replaces, described above.

To assemble and erect the steel single-pole and wood H-frame structures for both lines, an area about 100 feet by 100 feet (0.2 acre) would be temporarily disturbed at each site for construction equipment maneuvering and structure assembly. All wood structures and most steel structures for the North Alternative would be directly embedded into the ground. The average hole depth for suspension structures would be approximately 10 feet for wood poles and 15 feet for steel poles. Dead-end steel pole structures would require a concrete footing approximately 6 feet in diameter and 30 feet deep.

Conductors, Overhead Ground Wires, and Counterpoise

Conductors, wires that carry the electrical current on a transmission line, are suspended from towers with insulators. Insulators are made of non-conductive materials (porcelain or composite materials) that prevent electric current from passing through structure to the ground. The North Alternative would use non-reflective ceramic insulators. In addition, one or two small wires (0.38-inch diameter), called overhead ground wires, would be attached to the top of the transmission structures. Steel pole structures would have one overhead ground wire, while wood pole structures would have two. Overhead ground wires are used for lightning protection. To take the lightning charge from the overhead ground wire and dissipate it into the earth, a series of wires called counterpoise would be buried in the ground at each structure, depending on soil types present. Counterpoise would vary from one to six runs of wire that extend up to 100 feet from the structure, with two counterpoise running out from each side of the structure footings.

Fiber Optic Cable (138-kV Transmission Line)

A fiber optic cable would be strung from Threemile Knoll Substation to the proposed Hooper Springs Substation along the 0.2 mile 138-kV line. No fiber optic cable is proposed for the 115-kV transmission line. The fiber would be used for communications as part of the power system. The fiber optic cable would be less than 1 inch in diameter and would be installed underground between Threemile Knoll Substation and the southern structure and between the northern structure and Hooper Springs Substation. Between the two structures, the cable would be installed either as overhead ground wire or independently on the structure.

Pulling and Tensioning Sites, Staging Areas, and Other Work Areas

Pulling/tensioning sites are temporarily disturbed areas from which the conductors are pulled and tightened to the correct tension during construction. About 17 pulling/tensioning sites would be required along the North Alternative’s approximately 33-mile length with 2 pulling sites required for the 0.2 mile 138-kV line. An area approximately 100 feet wide by 300 feet long (0.7 acre) would be disturbed at each pulling and tensioning site. Pulling and tensioning of the proposed line also would require “snubs,” which are trenches approximately 8 feet deep by 4 feet wide by 12 feet long that are used to tie off the conductors after they are pulled through the towers and before they are strung under tension.

Two temporary staging areas would be needed along or near the North Alternative corridor for construction crews to store materials, equipment, and vehicles. It is anticipated that approximately 10 acres of land would be required at each site for staging areas. Other temporary work areas include field storage yards, soil borrow areas, conductor splice sites, heliports, and road turnarounds. Environmental review of staging and other work areas would be conducted prior to approval for use if necessary.

Substation Facilities

The Hooper Springs Substation would be located relatively close (about 0.2 mile) to the Threemile Knoll Substation, and would permenantly occupy approximately 5.8 acres. An additional 3.5 acres surrounding the substation footprint would be temporarily disturbed during construction. Equipment installed would include a transformer, power circuit breakers, switches, bus tubing and pedestals, a control house and conduit, a stormwater retention system, and substation dead end structures.

The proposed substation facilities constructed at LVE's existing Lanes Creek Substation would be located at the northeastern end of the North Alternative corridor. Additional equipment installed at Lanes Creek Substation would include breakers, disconnect switches, dead end structures, and a control house. All additions would be located within the existing fenced boundary of the Lanes Creek Substation.

Access Roads

Access roads are the system of roads that BPA's construction and maintenance crews would use to get to the structures or structure sites along the transmission line and to the substation. The North Alternative would require about 21.7 miles of new, permanent access roads, including 900 feet of new road to access the Hooper Springs Substation. About 10.6 miles of existing access roads would need to be improved or reconstructed.

New road construction includes all work associated with excavating the existing ground, hauling material in and out of the area, blading and shaping the roadbed, and placing gravel on top. Access road reconstruction typically occurs when an existing roadbed has deteriorated or does not conform to BPA's access road standards. Access road improvement would occur on existing roads that meet BPA standards for width and curves but may require the addition of gravel. For permanent roads, BPA, in coordination with landowners, would install gates at the entrances to access roads to prevent motorized public access.

Temporary roads are typically constructed in areas where a permanent road is not desired but improvements are needed to get equipment across the existing ground. These areas include agricultural fields or wet areas where the ground is too soft to support equipment. Temporary roads would be reclaimed according to USFS, BLM, BIA, and other landowner requirements (i.e., erosion control measures installed, regraded, reseeded, etc.) following construction of the North Alternative. Road turnarounds would be constructed where access roads end, typically at structure sites. Other turnarounds may be constructed specifically to minimize disturbance to adjacent sensitive resources.

Vegetation Clearing

Vegetation would be maintained along the transmission line for safe operation and to allow access. Tall vegetation would not be allowed to grow within the 100 or 150 foot transmission line ROWs. On either side of the new ROWs, danger trees that pose a hazard to construction activities and reliable operation of the transmission line would be removed. In deep valleys with sufficient clearance, some trees may be left in place. During construction, low-growing plant communities would be protected as much as practicable and promoted as the basis for ongoing vegetation management following construction.

In addition to vegetation clearing within the North Alternative ROW, vegetation would need to be cleared where new access roads are proposed outside of the ROW. Most of the vegetation along the North Alternative transmission line ROW is prairie and open areas, both of which are compatible with transmission lines. However, a portion of the North Alternative would cross forested C-TNF lands where the C-TNF has requested BPA clear a 250-foot-wide area for the transmission line. The 250-foot cleared area would be centered on the 100-foot transmission line ROW and initially be cleared of all tall-growing vegetation. During operation of the North Alternative, only vegetation within the 100-foot transmission line ROW would be managed as low growing.

Construction Sequence, Schedule, and Work Crews

If BPA decides to proceed with the Project after completion of all necessary environmental reviews, construction of the proposed substation and transmission line could begin in spring 2015. BPA likely would construct the transmission line over two phases. The first phase would involve clearing the ROW, some access road construction, structure footing installation, and substation construction. The second phase would involve the construction of the remaining components of the transmission line and would occur in 2016. If this occurs, the new substation and transmission line may be energized as early as fall 2016. This expected schedule would result in a total construction period of about 16 months. However, weather or other factors could delay or prolong the construction schedule.

Construction of the proposed Hooper Springs Substation would begin with clearing and grading the site to provide a level work area. A ground mat, conduit for control cables, drainage, concrete footings for all the high voltage equipment, and structures would then be installed. After all the below-grade work is completed, the above-grade construction work would begin with the erection of the dead-end structures and pedestals to support the electrical bus. Other support structures would be installed for the high voltage equipment. Access to Hooper Springs Substation for construction activities would occur via a portion of an existing road, Threemile Knoll Road, with construction of an additional 900 feet of new road from the end of Threemile Knoll Road to the substation.

The Lanes Creek Substation work for the North Alternative would be located inside the existing substation fence and would require minimum site preparation. Construction of the above-grade components would be similar to that described above for the Hooper Springs Substation.

Typically, construction of the transmission line begins with clearing the ROW, access roads, pulling and tensioning sites, and danger tree areas; installing temporary guard structures; and constructing crane pads and other workspaces. Structure sites would then be cleared and graded as needed, and erosion control devices would be put in place. For structure footings, holes would be excavated with an auger. Structure pieces would be brought to each site; constructed; lifted into place using a line truck, crane, or helicopter; and set into the excavated holes. Holes would be backfilled with previously excavated native material. Salvaged topsoil would be used during the final reclamation of temporarily disturbed areas.

Temporary guard structures would be installed at all road, railroad, and overhead utility crossings to protect the public and prevent the conductor from falling at these sites. Next, the conductor would be strung from structure to structure. The ground wires would also be strung using a similar method, with pulling sites on the ground to tighten the cable.

After the structures, conductors, and ground wires are installed, the construction contractor would remove construction equipment and debris and restore the disturbed areas. Soils used for agriculture in the temporary disturbance area that become compacted would be restored and reseeded after construction to reestablish close to original conditions. Topsoil would be spread as necessary and disturbed areas would be reseeded with a suitable seed mix. Existing and new permanent access roads would be repaired as necessary. Temporary roads on C-TNF land for the North Alternative would be reclaimed according to USFS requirements (i.e., erosion control measures installed, land regraded, areas reseeded, etc.) and then blocked to restrict unauthorized travel following completion of project construction.

A typical crew can usually construct about 10 miles of transmission line in 2 to 3 months. Actual workforce numbers would vary over time. During peak construction, about 50 workers would be working on the transmission line at one time.

Maintenance

During the life of the transmission line, BPA would perform routine and periodic maintenance and emergency repairs on the transmission line. Maintenance would typically involve replacing insulators or repairing guy wires, vegetation management, and soil stabilization. BPA typically conducts routine helicopter inspection patrols twice a year.

BPA's vegetation management would be guided by its Transmission System Vegetation Management Program EIS (BPA 2000) and Record of Decision (August 23, 2000). BPA adopted an integrated vegetation management strategy for controlling vegetation along its transmission line ROWs that involves choosing the appropriate method for controlling the vegetation based on the type of vegetation and its density, the natural resources present at a particular site, landowner requests, regulations, and costs. Noxious weed control is also part of BPA's vegetation management program. BPA works with the county weed boards and landowners on area-wide plans for noxious weed control.

Estimated Cost

Construction cost of the Hooper Springs Substation; additions to the Lanes Creek Substation; and construction of the proposed 33-mile-long, single-circuit 115-kV and 0.2-mile-long, 138-kV transmission lines is estimated to be about $72.5 million. Annual maintenance costs would be about $10,000 to $20,000.

S.4.2 South Alternative

The South Alternative and its route options are the same as the alternatives considered by BPA in the 2009 Preliminary EA for the Project except for an additional route option (Option 3A). The South Alternative would include a new, approximately 22.5-mile-long, double-circuit 115-kV transmission line that would extend from BPA's proposed Hooper Springs Substation generally north to northeast for 6 to 8 miles before turning generally east to a proposed connection with LVE's existing transmission system in Caribou County, Idaho (see Map S-1). The new connection facility with LVE's existing transmission system would be located at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road. Similar to the North Alternative, the South Alternative would include construction of the 138/115-kV BPA

Hooper Springs Substation and the 0.2-mile, single-circuit 138-kV transmission line to connect the line to PacifiCorp's existing 345/138-kV Threemile Knoll Substation.

Because the South Alternative and all five route options would cross one or more phosphate mining areas that may have heavy metal and selenium soil contamination, BPA has worked closely with USFS, BLM, and the mining companies to identify a potential pathway through the phosphate mining areas to avoid known contamination and minimize its environmental liability.

Easements and Land

The South Alternative corridor crosses private property and lands under federal and state ownership. Construction of the South Alternative would require easements for transmission line ROWs (100-foot-wide for the new double-circuit 115-kV transmission line and 150-foot-wide for the new 138-kV line) and access roads (50-foot-wide easements for new and reconstructed roads and 20 feet for improved roads). Similar to the North Alternative, the 100 to 150 foot ROW width for the South Alternative is intended to ensure that the transmission lines are a safe distance from other objects and structures, such as trees and buildings.

Similar to the North Alternative, BPA would purchase easements from the underlying landowner where transmission line facilities and access roads for the South Alternative would be located on privately owned and state of Idaho lands. On USFS- and BLM-managed land, BPA would apply to secure the necessary special use permits or easements. While the underlying landowner would still own and use the property, BPA would not permit any uses of the transmission line ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities except where the ROWs would cross mining leases. Where the ROWs would cross a mining lease, the rights on the leased phosphate reserves supersede all surface use special use permits or easements, including those for the transmission line, and therefore BPA would be unable to restrict use of these areas. However, the leases do allow for other authorizations or surface uses as long as they do not unreasonably interfere with the rights of the lessee.

Like the North Alternative, the South Alternative also would require the purchase of approximately 11 acres of private property for the proposed Hooper Springs Substation. At the new connection facility with LVE's existing transmission system, BPA would apply to secure the necessary special use permit from the C-TNF within LVE's existing transmission line ROW.

Route Options

The five route options of the South Alternative all begin at the proposed Hooper Springs Substation and end at the proposed connection facility with LVE. Four of the route options were initially developed and discussed as alternatives in the 2009 Preliminary EA (see 2009 EA Alternative names below). The fifth, Option 3A, was developed after release of the draft EIS. The proposed location of the 138-kV transmission line would be the same as the South Alternative for all five route options.

- **Option 1 (2007 Proposed Transmission Line Route) and Option 2 (Narrows Transmission Line Route)**—Options 1 and 2 would follow the same general route as the South Alternative corridor with one to two minor deviations near Conda and at the

Blackfoot River Narrows. Option 1 would be about 23.1 miles long and Option 2 would be about 22.4 miles long.

- **Option 3 (Original Proposed Transmission Line Route)**—Option 3 would follow a route similar to the first part of the North Alternative west of Idaho State Highway 34 (Highway 34) before turning and rejoining the same general corridor as the South Alternative east of Highway 34. Option 3 would be about 24 miles long.
- **Option 3A (Transmission Line Route Variation of Option 3)**—Option 3A would follow a route similar to the first part of the North Alternative west of Highway 34 before turning and rejoining the same general corridor as the South Alternative and Option 3 east of Highway 34 until Option 3A's line mile 17. Between line miles 17 and 20, the corridor would travel northeast and southeast to the Blackfoot River Narrows. From the Narrows, Option 3A would follow the same general corridor as the South Alternative for about 1 mile before heading northeast across the C-TNF and the Blackfoot River WMA to its point of connection with the existing LVE line. Option 3A would be about 24 miles long.
- **Option 4 (Tailing Pond Transmission Line Route)**—Option 4 would follow the same route as Option 3 for about 4.5 miles before turning east across Highway 34 to connect back with the South Alternative corridor. Option 4 would be 23.2 miles long.

Transmission Structures and Footings

The South Alternative would require approximately 210 new 115-kV double-circuit steel structures over about 22.5 miles. The double-circuit steel poles for the South Alternative would be about 90 feet tall with spans of approximately 730 feet between structures. Route options would require about the same number of steel structures as the South Alternative: Option 1 would be about 0.6 mile longer; Option 2 about 0.1 mile shorter; Options 3 and 3A about 1.5 miles longer; and Option 4 about 0.7 mile longer. Like the North Alternative, the proposed 138-kV transmission line under the South Alternative would require two wood, H-frame structures over its approximately 0.2-mile length.

Temporary disturbance areas required to assemble and erect the suspension and dead end structures would be about 100 feet by 100 feet (0.2 acre). Similar to the North Alternative, all steel structures would be directly embedded into the ground using a drill rig to auger the holes with average hole depths of 15 to 30 feet. Dead end steel pole structures could also require a concrete footing.

Similar to the North Alternative, a flat, graveled pad would be constructed at each structure (except in flat areas) along the South Alternative corridor (about 0.07 acre permanent disturbance). Most pads would be left in place depending on land use.

Permanent guy wires would not be required on steel pole structures, except for on one or two structures adjacent to the Hooper Springs Substation, similar to the North Alternative. Temporary guy wires would be used to support construction of the dead-end steel pole structures from the Hooper Springs Substation to the connection facility with LVE. Similar to the North Alternative, ground disturbance would be about 10 feet by 40 feet and within the 0.2 acre temporary disturbance area for dead-end steel structures.

Conductors, Overhead Ground Wires, and Counterpoise

The materials and installation methods used for conductors, overhead ground wires, and counterpoise under the South Alternative would be the same as described for the North Alternative except there would be six conductors (for double circuit) instead of the three conductors (for single circuit). Also, the double-circuit steel structures for the South Alternative would require installation of two overhead ground wires on each structure.

Fiber Optic Cable (138-kV Transmission Line)

A fiber optic cable similar to the one described for the North Alternative would be installed from Threemile Knoll Substation to the proposed Hooper Springs Substation along the 0.2 mile 138-kV transmission line. Similar to the North Alternative, no fiber optic cable is proposed for the 115-kV transmission line.

Staging Areas and Pulling and Tensioning Sites

Two temporary staging areas about 10 acres each would be needed along or near the South Alternative for construction. Construction of about 11 pulling and tensioning sites with installation of snubs also would be required for the South Alternative plus about 2 pulling sites for the 0.2 mile 138-kV line.

Substation and Connection Facilities

The location, size, and components of the proposed Hooper Springs Substation under the South Alternative would be the same as under the North Alternative.

The new connection facility would be constructed within LVE's existing transmission line ROW along Diamond Creek Road, at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road. The new double-circuit line would connect into the existing LVE line through overhead line disconnect switches. An approximately 400-foot by 100-foot area would be required for installation of the disconnect switches. A 16 foot by 11 foot platform would be installed at ground level for the disconnect switches.

Access Roads

New and existing access roads for the South Alternative would be constructed, reconstructed, or improved to provide a 14- to 20-foot-wide travel surface with about a 20- to 30-foot-wide total disturbed area. The South Alternative would require about 22.8 miles of new, permanent access road including 900 feet of new road to access the Hooper Springs Substation. Approximately 2 miles of existing access road would need to be improved or reconstructed. The same travel surface widths would be used for the South Alternative options except for Option 3A where it crosses the Blackfoot River WMA; road widths would be 12 feet wide in those areas.

Construction, reconstruction, or road improvement methods for the South Alternative would be similar to those described for the North Alternative. Temporary access roads required for the South Alternative would be reclaimed according to landowner requirements. For permanent roads, BPA, in coordination with landowners, would install gates at the entrances to access roads to prevent motorized public access and where fences separate animals or denote property lines. Gate locks would be coordinated with the landowners to ensure both BPA and landowner access. Road turnarounds also would be constructed along the South Alternative where access roads end or to minimize disturbance to adjacent sensitive resources.

Vegetation Clearing

Vegetation clearing under the South Alternative would be the same as described for the North Alternative. The South Alternative also would cross forested C-TNF lands where BPA would, at the request of the C-TNF, clear a 250-foot-wide area along the length of transmission line. Like the North Alternative, only the 100-foot ROW would be managed for low-growing species during operation of the transmission line.

Construction Sequence, Schedule, and Work Crews

Construction of the South Alternative would follow the same sequence, under the same schedule, and with the same work crews as described for the North Alternative. However, under the South Alternative, there would be no substation work at the Lanes Creek Substation, so it would not be included in the construction process. Instead the connection facility with LVE’s system would be constructed.

Maintenance

Maintenance activities under the South Alternative would be the same as those described for the North Alternative.

Estimated Cost

Construction cost for the Hooper Springs Substation and the proposed 22.5-mile-long double-circuit 115-kV and 0.2-mile-long 138-kV transmission lines is estimated to be about $62.4 million. Annual maintenance costs would be about $10,000 to $20,000.

S.4.3 No Action Alternative

Under the No Action Alternative, BPA would not construct the Project. Without the new line, it is expected that voltage stability and reliability problems on the transmission grid in this area could continue. Additionally, the growing energy requirements of Southeastern Idaho and the Jackson Hole valley area of Wyoming may not be met.

S.5 Alternatives Considered but Eliminated from Detailed Study

During the scoping process, BPA considered a wide range of potential alternatives for the Project. Alternatives that did not meet the purpose and need, including whether they were practical or feasible, or would obviously have greater adverse environmental effects than the proposed project, were eliminated from detailed study. The following alternatives did not meet the purpose and need.

Higher Voltage Transmission Line Alternative

BPA considered an alternative that would allow a direct connection of the proposed transmission line to PacifiCorp's existing 345/138-kV Threemile Knoll Substation rather than constructing the proposed 138/115-kV Hooper Springs Substation. To allow this direct connection, this alternative would require that the proposed transmission line be constructed as a 138-kV line instead of as a 115-kV line as currently proposed. This alternative also would require that LVE's existing Lanes Creek Substation be expanded to accommodate the necessary 138/115-kV transformer banks for the proposed transmission line, rather than locating these facilities at the proposed Hooper Springs Substation. The structures under this alternative would be taller than the 115-kV structures under the North Alternative, which would result in a small increased impact on visual resources. Further, the 138-kV line would require a 150-foot-wide ROW, which would require additional ROW clearing in those areas containing incompatible vegetation types (such as forests). This alternative also would require surface disturbance for substation equipment in a previously undisturbed area. Given these potentially greater environmental effects, this alternative was considered but eliminated from study in this EIS.

Blackfoot River Road Route Alternative

This transmission line route alternative was a variation of the four route options considered in detail in the 2009 Preliminary EA and also being considered in this supplemental draft EIS. It generally followed the same transmission line routes as the South Alternative and route options, except for a routing variation where these alternatives would have first crossed Blackfoot River Road near the existing power substation at the intersection of Haul Road and Blackfoot River Road. After studying this route, it was eliminated because it would result in more acres of impacts on wetland areas than the South Alternative, and would only shift (rather than reduce) land use impacts on other landowners. For these reasons, this alternative was considered but eliminated from detailed study in this EIS.

Goshen-Lanes Creek Transmission Line Alternative

BPA considered constructing a new 161-kV transmission line from PacifiCorp's Goshen Substation near Idaho Falls, Idaho, to a connection with LVE's existing transmission system at a point near Lanes Creek, Idaho, about 10 miles southeast of Grays Lake National Wildlife Refuge. Because this alternative would require adding shunt capacitors to the system and be much longer than other alternatives (about 52 miles long), its cost would be much greater than the North or South alternatives. The additional miles of ROW would require more vegetation clearing than other alternatives potentially creating more severe impacts on land use, vegetation, wildlife, and other resources. Finally, this alternative would connect to the Goshen Substation. At this point in time, any additional interconnections to this substation would be difficult to configure and could result in reliability problems. This alternative was eliminated from further consideration because of cost, potential environmental impacts, and reliability issues.

U.S. Forest Service Land Routing Alternatives

The C-TNF Forest Plan Guideline Number 3, RFP 3-10, states new transmission lines should be located within or adjacent to existing transmission lines. There are no existing transmission line corridors within or near the North or South alternative corridors (or their option corridors) where they cross the C-TNF. The closest existing transmission line to the North Alternative is LVE's Tincup-Dry Creek line, which enters LVE's Lanes Creek Substation at the eastern end of the North Alternative. The South Alternative and its route options would connect to this same line at the eastern border of the C-TNF in the project area. A new transmission line corridor is necessary to cross the C-TNF. For this reason, this alternative was considered but eliminated from detailed study.

The C-TNF Forest Plan Guideline RFP 3-10, Standard 2 states new transmission lines should be routed so they do not cross C-TNF lands. Routing the new transmission line off of C-TNF lands is physically impossible because the power must be transmitted from LVE's Threemile Knoll Substation on the west side of the C-TNF to LVE's Tincup-Dry Creek transmission line or Lanes Creek Substation both located on the east side of the C-TNF. BPA did look at routing the North Alternative to the north of C-TNF lands along Highway 34. However, routing the line off of the C-TNF would have placed it closer to Grays Lake National Wildlife Refuge and within a large wetland area to the south of the refuge. Placing the line in the wetland area would have increased the risk for bird collisions because many avian species likely use this area. An alternative that routed the line to the north or south to avoid the C-TNF would be about 150 miles longer than the proposed transmission line routes increasing project costs, environmental impacts, and impacts to private landowners. For this reason, this alternative was considered but eliminated from detailed study.

Alternative BPA Substation Sites

BPA considered other possible locations for its proposed Hooper Springs Substation that would connect the proposed transmission line to PacifiCorp's existing Threemile Knoll Substation. All of these locations would be farther away from the Threemile Knoll Substation than the currently proposed location, and would require longer transmission line connections and would increase costs. Because of the increased costs and the potential for increased environmental impacts from longer transmission line connections, BPA eliminated these sites from further consideration.

Non-wires Alternatives

In addition to considering alternatives that involve building new transmission lines, BPA evaluated "non-wires" alternatives to meet the project purpose and need. These alternatives are referred to as non-wires alternatives because they would address the purpose and need through measures not directly related to transmission facility construction. General examples of non-wires measures include energy conservation that reduces overall and peak electrical demand, development of new generation at or near areas of increasing electrical loads, and contractual load reductions from industry and others to reduce peak demand.

Overall, the combination of potential non-wires measures could at most defer, but not eliminate, the need to construct a transmission line, and there is a fundamental uncertainty about whether these measures could be fully implemented in time to effectively address the growing need for the Project. Given these factors, BPA has eliminated non-wires alternatives from further detailed consideration in this EIS.

Undergrounding

BPA received comments on the draft EIS that suggested burying the new transmission line underground for its entire length or for certain portions. Underground high-voltage transmission cables typically are used only for relatively short distances in areas where it is physically impossible to install towers for overhead transmission lines. The cost of burying transmission lines is typically 10 to 20 times more expensive than overhead lines. It is also difficult to keep high voltage underground transmission cables from overheating. When they get overloaded and overheat, the insulation material can breakdown quickly and either cause a failure at the time of overheating or later from damage caused by overheating. Because the line is buried and cannot be inspected directly, it can be difficult and time consuming to determine where and how much damage has occurred. Uncovering and replacing the buried cable is a specialized process and can take much longer than repairing an overhead line. For these reasons, outages on underground cables tend to be much longer and can compromise the reliability of the system. Placing lines underground requires continuous trenching and a continuous access road system, resulting in potentially more impacts to the environment. Placing portions of the 23 to 34-mile new line underground would have the same reliability and environmental issues, plus a higher per mile cost for the initial design and set-up requirements for manufacturing a shorter length of cable. In addition, expensive transition facilities would be required at each end of any section of underground transmission line. For these cost, reliability, and environmental reasons undergrounding the transmission line has been eliminated from further detailed consideration.

S.6 Affected Environment

The Project is located in Caribou County in southeastern Idaho. Populated areas include the cities of Soda Springs, Henry, and Wayan, although most of the project area is sparsely populated with development mainly limited to rural homes, ranches, and farms interspersed with parcels of federal and state lands. Land uses on private land in the project area include agricultural (rangeland and cultivated cropland), with some land enrolled in conservation easement programs. Land uses on federal lands include phosphate mining and grazing leases, along with developed recreational areas and areas managed for timber harvest or wildlife habitat. The North Alternative and its route options do not cross any mining areas; however, it passes in close proximity to the Henry Mine. The South Alternative and its route options cross several areas of past, current, and potential future mining.

Both the North and South alternatives primarily cross private land (approximately 21 miles of the 33-mile North Alternative corridor and 15 miles of the 24-mile South Alternative corridor), in addition to a mix of state land (about 4 miles for the North Alternative and 1 mile for the South Alternative). Option 3A is the only route option that crosses approximately 1.3 miles of state lands located on the Blackfoot River WMA. Federal land crossed by the North Alternative includes about 5 miles on C-TNF lands managed by the Soda Springs Ranger District; slightly less than 2 miles crossed on lands managed by the BIA; and approximately 0.7 mile of BLM lands managed by the Pocatello Field Office. Federal land crossed by the South Alternative includes about 3.4 miles on the C-TNF also managed by the Soda Springs Ranger District and approximately 2.7 miles of BLM lands also managed by the Pocatello Field Office.

Agriculture is a major economic force in the area. Also driving the local economy are phosphate mining, construction, manufacturing, health care, government and professional services, recreation and tourism, and retail and food services. Phosphate mining and processing have been sources of soil and groundwater contamination in Caribou County with some contaminated mine sites within and adjacent to the North and South alternative corridors.

As is typical of a mostly rural area, local motorists are served primarily by two-lane state and county roads including Blackfoot River Road that crosses through private, BLM, and C-TNF lands and the Blackfoot River WMA before ending at Diamond Creek Road. Highway 34 is the major rural collector highway within the project area. Other local transportation facilities include road systems owned and maintained by the C-TNF, BLM, and BIA.

The project area's main waterways include the Blackfoot River, the Little Blackfoot River, Gravel Creek, and Meadow Creek. In addition, there are many scattered wetlands and intermittent streams throughout the area. The Blackfoot River supports a resident population of native cutthroat trout.

Vegetation communities within the North and South alternative corridors include sagebrush steppe, rangeland, cropland, woodlands (including riparian woodlands), forest, and wetlands. Converted lands used for grazing or crop cultivation, with interspersed areas of intact sagebrush steppe habitat, are the predominant vegetation type throughout much of the project area. Conifer- and aspen-dominated forest types are prevalent on C-TNF lands at the northeastern extent of the North Alternative corridor and at the eastern extent of the South Alternative corridor. No federally protected or candidate plant species are known to occur within the North or South alternative corridors, route options, or substation sites.

The project area provides habitat for a variety of wildlife. There are no federally listed threatened or endangered species likely to occur within the North or South alternatives or route option corridors, but several federal or state "species of concern," USFS sensitive species, and USFS management indicator species have the potential to occur.

Recreational activities in the project area and Caribou County as a whole include camping, fishing, hunting, hiking, boating, wildlife viewing, cross-country skiing, and off-highway vehicle use. The Blackfoot River provides a world-class trout fishery. BLM lands surrounding the Blackfoot River and Reservoir are managed as part of the Blackfoot Reservoir Special Recreation Management Area, where the main recreational use point is the Blackfoot River Reservoir and associated camping, fishing, boating, and bird watching opportunities. The Blackfoot River WMA is managed to provide opportunities for fishing, hunting, wildlife viewing, hiking, cross-country skiing, and primitive camping.

Southeastern Idaho has been populated by various cultural groups for at least the past 12,500 years. Historical data demonstrate continuous use of the project area from well before the time of the first Euro-American exploration through the present. Several historic roads and trails also exist in the project area, and may be crossed by the alternatives.

S.7 Environmental Impacts

The following sections provide a summary of the environmental impacts from the North and South alternatives and their route options and the No Action Alternative by potentially affected resource. Mitigation measures are listed in Table 2-4 and at the end of each resource chapter.

S.7.1 Land Use

Construction of the transmission lines and access roads under the North and South alternatives would temporarily disrupt land uses along the corridor in staging areas and at pulling/tensioning sites; it would permanently remove land from current uses for structure footings, access roads, and the Hooper Springs Substation, and could permanently limit some land uses and activities within the North and South alternative corridors. Changes in land ownership and land use entitlements would result from purchase of the Hooper Springs Substation site and ROW easements on private land. Impacts to land uses from the North and South alternatives during construction would be ***low***.

Generally, existing agricultural uses could continue along the line after construction. While land uses such as logging are incompatible with the Project, BPA recognizes that surface uses such as the proposed transmission line cannot unreasonably interfere with mining leases and the full extraction of the phosphate. The mining leases do allow for other authorizations or surface uses. Given the small quantity of land that would be occupied by the South Alternative relative to the lands available for logging, the overall impact associated with the prohibition of incompatible uses in the ROW would be long term, but ***low***.

While periodic operation and maintenance activities could result in temporary noise, visual, and other impacts to private land uses adjacent to the ROW, they would not result in actual changes or substantial limitations in adjacent land use. Therefore, long-term impacts during operation and maintenance for the North and South alternatives are expected to be ***low*** to ***none***.

The Long Valley Road Option would not cross state lands but would cross agricultural land uses, resulting in a ***low*** to ***moderate*** impact during construction. The North Highland Option would cross generally the same lands as the North Alternative, but would remove approximately 1.5 miles of ROW from private grazing lands and add approximately 1.2 miles of ROW to C-TNF lands. Impacts from this route option would be ***low***.

Impacts to land uses under Options 1 and 2 would be the same as the South Alternative because these options would cross generally the same private, state, and federal lands. Land use impacts for these two options would be ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed. Construction of the western portions of Options 3, 3A, and 4 would occur in private agricultural lands west of Highway 34 and would result in additional short-term impacts on agricultural and grazing uses. Land use impacts for these three options would be ***low*** to ***moderate*** during construction where agricultural or forested lands are crossed. Similar to the South Alternative, Options 1 through 4 including Option 3A would not be allowed to unreasonably interfere with mining activities in phosphate mining areas.

S.7.2 Recreation

Construction of the North and South alternatives would result in short-term disruption to recreational uses and activities within the project area. Although there would be no direct impacts on developed recreational facilities because there are no developed facilities within the North or South alternative corridors, indirect impacts on recreational facilities could include the use of USFS roads by construction vehicles and workers during construction; temporary delays and road closures; and diminished access to recreational use areas. Additionally, lands and roads in close proximity to the proposed transmission line may be closed to users for the duration of the construction period for safety and security reasons. Direct impacts to recreational users would include noise from construction, construction vehicles, equipment and workers; wildlife disruption; and dust from construction. The majority of the proposed line would be close to existing roadways so that recreational use farther from roads would remain relatively unaffected. Following construction, access to recreational facilities and roads would return to normal.

Overall, construction of the North or South alternative would have short-term***, low*** to ***moderate*** impacts to recreation. The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational use in the long term; therefore, the impacts of the both the North and South alternatives during operation and maintenance are expected to be ***low***.

Impacts to recreation from the Long Valley Road and North Highland options would be similar to those described for the North Alternative (***low*** to ***moderate*** during construction and ***low*** during operation and maintenance).

Impacts from Options 1 through 4, with the exception of Option 3A, would be the same as those described for the South Alternative. The impacts to recreational use from the presence of construction equipment would be ***low*** to ***moderate*** during construction. The presence of the cleared ROW and access roads would have a ***low*** impact on recreational users.

Option 3A would have the same impacts to recreational uses on private and federal lands as the South Alternative (***low*** to ***moderate***). On the Blackfoot River WMA, long-term impacts would be ***low*** to ***moderate*** depending on the proximity of recreational uses to Option 3A's corridor. The ROW would be along the southern edge of the Blackfoot River WMA and would not be near fishing areas. However, photography, wildlife viewing, bird watching, sightseeing, camping, and cross-country skiing on the Blackfoot River WMA could occur in areas near the proposed ROW and access roads. Like the South and North alternatives, ROW tree clearing would reduce security cover for game animals during hunting season, potentially causing a ***low*** to ***moderate*** impact to hunting, depending on location. Increased access on the Blackfoot River WMA is possible in line miles 23 to 24 from an existing WMA access road along Diamond Creek Road. BPA would gate the road and only use it for transmission line maintenance activities. There also may be short-term ***moderate*** impacts during construction within the Blackfoot River WMA.

S.7.3 Visual Resources

The North Alternative would require the installation of both wood H-frame and steel structures and the South Alternative would include the installation of steel structures. During construction of the line, visual impacts would be short term and ***low*** to ***moderate*** because the presence of construction equipment and materials from the alternatives would attract attention.

During operation, both the North and South alternatives would appear most visible where the structures cross the skyline or are in viewers' foregrounds, as well as near highways and small populated areas, and across agricultural landscapes. Because the transmission line under the North and South alternatives would be visible along Highway 34, both alternatives would likely have a long-term, ***low*** to ***moderate*** impact on the landscape in this primarily privately owned area. In the Wayan area of the North Alternative corridor, short- and long-term impacts to private and federal lands would be ***moderate*** to ***high*** because the transmission line would be constructed in a relatively undeveloped and natural setting. On other federal lands along the North Alternative, impacts to visual resources would be ***low*** to ***moderate*** because wood pole structures for a portion of the North Alternative would reduce the line's visibility to some extent and topography may hide portions of the line.

Impacts to visual resources under the South Alternative would be short term and ***low*** during construction and ***low*** to ***moderate*** during operation. While few residences are present along this alternative, the steel structures would create an obvious human-made or industrial element to the landscape.

Near the proposed Hooper Springs Substation, the visual character of the land has already been largely altered and none of the alternatives would substantially change the current character of the landscape; impacts would be ***low***.

Under the Long Valley Road and North Highland options, both the short- and long-term impacts to visual resources would be similar to those described for the North Alternative (***low*** to ***high***), except that portions of both options would not be visible to viewers on Highway 34.

Impacts to visual resources along Options 1, 2, 3, and 4 would be same as those described for the South Alternative (***low*** to ***moderate***). Options 1, 2, 3, and 4 would all be visible to visitors and motorists at the Blackfoot River Narrows although these options would cross in slightly different alignments than the South Alternative. Impacts to visual resources along the western portion of Option 4 through agricultural lands and mining areas would be the same those described for the North and South alternatives (***low*** to ***moderate***).

Similar to the southwestern portion of the North Alternative, Option 3 would be visible to travelers and residents traveling along Highway 34 through private land. Depending on the viewer, Option 3 would likely have both short- and long-term ***low*** to ***moderate*** impacts in the Highway 34 area north of Conda.

Similar to the southwestern portion of the North Alternative and Option 3, Option 3A would be visible to travelers and residents traveling along Highway 34 through private land. Impacts would be both short- and long-term and ***low*** to ***moderate*** in the Highway 34 area north of Conda depending on the viewer. Long-term visual impacts along Blackfoot River Road from line miles 10 to 17 would be ***moderate*** as described for Option 3 and the South Alternative.

Long-term impacts to visual resources along Option 3A on the Blackfoot River WMA would be ***moderate*** because the line would be readily visible within the WMA. Recreational visitors to this state-owned land would experience views of the transmission line and associated structures that would create a visual contrast to the surrounding natural landscape. Option 3A also would be visible to the public and Blackfoot River WMA visitors where it traverses the east-facing slopes of the WMA and ties into the existing LVE line next to Diamond Creek Road.

S.7.4 Vegetation

Impacts to vegetation would include vegetation removal, changes in vegetation type, and the potential spread of noxious weeds. At structure sites, along new permanent access roads, and at the Hooper Springs Substation site, vegetation would be permanently removed. In some ROW areas, trees would need to be removed. Habitat fragmentation could occur where removal of canopy trees reduces habitat suitability for plant species that grow in non-edge forest habitats. Although vegetation would be allowed to reestablish in most disturbed areas, these areas could be vulnerable to noxious weed infestations in the short term; however, mitigation measures would be implemented to reduce weed spread.

The North Alternative would require the permanent removal of approximately 257.2 acres of native vegetation. The South Alternative would require the permanent removal of approximately 144.9 acres of native vegetation. The North Alternative would require the clearing of approximately 124.9 acres of aspen-dominated forest and 39.3 acres of conifer-dominated forest. The South Alternative would require the clearing of approximately 48.2 acres of aspen-dominated forest and 38.1 acres of conifer-dominated forest. These impacts would be long term. Roads would be permanent, although they would be reseeded with native or landowner approved vegetation. The ROW would be maintained in low-growing vegetation throughout operation of the transmission line, resulting in long-term conversion of forested vegetation. Therefore, both the North and South alternatives would result in long-term, ***moderate*** impacts to forested vegetation communities. However, the North Alternative would result in the removal of 77.9 more acres of forested vegetation compared to the South Alternative.

The proposed Hooper Springs Substation would be constructed on approximately 5.8 acres of tilled agricultural land, which is not a native vegetation type, and would not represent an impact to native vegetation communities. There have been no documented occurrences of special status plant species within either the North or South Alternative corridor; therefore, the potential for impacts to special status plant communities would be ***low.*** The majority of both the North and South alternative corridors traverse grassland and sagebrush vegetation communities with no tall-growing vegetation. Low-growing vegetation in these areas would not be removed. Operation and vegetation management over the long term would also result in ***low*** impacts under either alternative.

Impacts under the Long Valley Road Option and the North Highland Option would be similar to those described above for the North Alternative.

Impacts on vegetation from Options 1 through 4 would be similar to those described for the South Alternative. Impacts to aspen- and conifer-dominated vegetation communities within the Blackfoot River WMA from Option 3A also would be similar to those described for the South Alternative (***moderate***). Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species.

S.7.5 Geology and Soils

Soils within the North and South alternative corridors could be susceptible to liquefaction during seismic events and could also exhibit landslide hazard potential given current mapping, but the chances of such events occurring would be small. Vegetation clearing would expose soils to direct rain and wind, but lower-growing vegetation, if left intact, should continue to provide protection. The extent to which tree clearing would expose soils depends primarily on the level of impact on lower-growing vegetation during logging activities. Accordingly, impacts to the transmission lines, access roads, and substations related to liquefaction and landslides are expected to be ***low***.

Impacts to soils from the North and South alternatives may include loss of farmland soils and topsoil removal, increased erosion rates, blasting for temporary roads and/or structure sites that may produce rocks, and potential exposure to exposed bedrock, waste rock, and soils containing elevated selenium levels. The potential impacts of the North and South alternatives would not differ appreciably. Approximately 8.3 acres of agricultural fields would be taken out of production within the fenceline surrounding the Hooper Springs Substation to construct the substation and associated structures (BPA 2009). Soil productivity on the 5.8 acres occupied by the substation footprint would be permanently lost; however, soils present on the proposed substation site are common soil types in Caribou County and are not prime farmland soils. Prime farmland soils within the North Alternative corridor are found north of the proposed Hooper Springs Substation site (between line miles 1 and 2), along the southeast and east sides of the Blackfoot Reservoir (between line miles 11 and 20), and north of the North Alternative corridor crossing of Gravel Creek (between line miles 26 and 28). The corridors for the South Alternative cross areas of prime farmland in the western portion of the project area, between South Alternative line miles 1 and 11. The acreage of prime farmland within the North Alternative ROW and associated access roads is about 85 acres, while the acreage of prime farmland within the South Alternative ROW and associated access roads is about 34 acres.

Heavy machinery (logging trucks, graders, and excavators) and log movement would compact soils, potentially causing a reduction in soil productivity, thus making it harder for plants to revegetate and increasing erosion potential. On C-TNF lands, compaction to a level that impacts soil productivity would not be permitted. Compaction around tower sites or under temporary roads would be alleviated. Little erosion would occur where terrain is level along most of the project corridors. Most at risk are slopes on C-TNF lands that exceed 40 percent. Potential impacts on exposed soils would continue to occur if soils were left bare or were slow to revegetate after construction. Localized changes in runoff and erosion patterns could occur as a result of soil placement or removal for temporary access roads and leveling of structure sites. Soil erosion impacts from construction and operation of the transmission line would be ***low***.

Maintenance and vegetation management over the life of the line would cause ***low*** impacts to soils for all alternatives.

The Long Valley Road and North Highland options would have similar impacts to soils and soil productivity as those described for the North Alternative.

Impacts to soils under Options 1, 2, and 4 would be similar to those described for the South Alternative. Impacts to prime farmlands from Options 3 and 3A would be ***moderate***. These options would require more towers in agricultural areas than the South Alternative and would permanently impact approximately 0.7 acre of prime farmland.

S.7.6 Water Resources, Floodplains, and Wetlands

Construction of the North and South alternatives would cause ground disturbance with the potential to affect waterways and groundwater. The proposed transmission line would span a number of streams within the North and South alternative corridors. Certain structures on the North Alternative would be within 50 feet of smaller intermittent streams but no structures would be within 100 feet of the Blackfoot River, Little Blackfoot River, Meadow Creek, or Gravel Creek. Minimal vegetation clearing would occur within riparian areas associated with ROW clearing. With the implementation of mitigation measures, impacts from the North and South Alternatives to surface waters are expected to be ***low***.

The North and South alternatives would have ***low*** to ***no*** impacts to groundwater resources because few wells are located within the corridors. Short- and long-term water quality impacts would be ***low*** for both of the alternatives because of the low potential for groundwater infiltration, and also because short- and long-term vegetation impacts would deliver minor quantities of sediment relative to the overall sediment loading in the watersheds. State water quality standards would not be impacted.

The North Alternative would result in about 1.1 acres of short-term impacts and approximately 1.5 acres of long-term direct impacts to wetlands. Short-term impacts from the North Alternative would result from temporary vegetation disturbance at structure construction sites and vegetation removal for temporary access roads. Long-term impacts would result from permanent access road construction and would be ***low*** to ***moderate***. No wetlands would be permanently lost for structure footings. The South Alternative would result in about 2.8 acres of short-term impacts but would have no long-term direct impacts to wetlands. Short-term impacts associated with the South Alternative would be ***low*** to ***moderate***; there would be ***no*** long-term impacts. Option 3A would result in approximately 2.7 acres of short-term impacts and approximately 0.1 acre of long-term direct impacts to wetlands. Short-term impacts associated with the Option 3A Alternative would be ***low*** to ***moderate*** and long-term impacts would be ***low***.

Impacts to floodplains under the North or South alternatives would be ***none*** to ***low***; any changes to natural floodplain functions would be expected to be small and localized.

Impacts to water resources, floodplains, and wetlands from operation and maintenance of the transmission line for the North and South alternatives are expected to be ***none*** to ***low***.

Impacts from the Long Valley Road Option would be similar to the floodplain and indirect surface and groundwater impacts described above for the North Alternative (***low***). The North Highland Option would reduce impacts to wetlands and perennial streams because the option would move the corridor to non-wetland areas. Impacts to water resources from the North Highland Option would be ***low***.

Options 1, 2, 3, and 3A would have the same impacts to water resources, floodplains, and wetlands as those described for the South Alternative. Impacts would be ***low*** to ***moderate*** where new and improved access roads crossings require culverts or temporary work in wetlands, and ***low*** where vegetation clearing or soil disturbance occurs. Option 4 would cross a large wetland complex and open waters associated with Woodall Springs. Access road construction requiring wetland fill could result in ***moderate*** to ***high*** impacts to wetlands and surface waters if roads are permanent.

S.7.7 Wildlife

Impacts to wildlife from the North and South alternatives would be similar; however, because the South Alternative is shorter than the North Alternative by about 9 miles, it would have fewer impacts to wildlife and wildlife habitat. Potential impacts on wildlife would be short- and long-term habitat modification resulting from construction of the proposed transmission line. Neither alternative would be expected to adversely impact federal threatened or endangered wildlife species. However, suitable habitat for some federal and state species of concern, USFS sensitive species, and USFS management indicator species could be impacted; thus, the North and South alternatives would have short- and long-term, ***low*** impacts to certain sensitive species. Short-term direct impacts to wildlife habitat would be associated with temporary vegetation disturbance at structure construction sites and vegetation removal for the construction of temporary access roads. Temporary construction-related noise impacts would be expected to have a short-term, ***moderate*** impact to some wildlife species because they could be temporarily displaced at a critical time causing impacts on overall reproductive success. Long-term impacts to wildlife habitat would be the permanent loss of habitat in those areas associated with permanent access road construction and structure footing installation, forested vegetation removal within the North and South alternative corridors, and construction of the Hooper Springs Substation. In addition, while some individual game animals could be affected, neither alternative would be likely to result in any measurable impact to any big game species. Therefore, impacts to game animals associated with the construction and operation of the North or South alternative would be ***low***.

Impacts to forested wildlife habitats would be ***moderate*** to ***high***, because of the potential for long-term impacts on forested vegetation that would be both detectable and measurable. However, a network of forested habitat would remain at the regional scale to ensure no net loss of habitat function. Impacts to non-forested wildlife habitats within either the North or South alternative corridors would be ***low***; most impacts would be of short duration and localized. Temporarily affected vegetation would be expected to grow back within two growing seasons.

Direct mortality impacts related to construction would be expected to be short term and ***low***, and limited to species that are less mobile than others. The North Alternative could have a long-term ***moderate*** to ***high*** impact to migratory birds from collisions because it is located near important flyways for swans and cranes, including the Grays Lake National Wildlife Refuge and Blackfoot Reservoir. Impacts to migratory birds from the South Alternative would likely be ***moderate*** because the South Alternative is shorter than the North Alternative and is not adjacent to Grays Lake National Wildlife Refuge or the Blackfoot Reservoir. However, the South Alternative would cross flyways and riparian habitats associated with the Blackfoot River that are frequented by swans and cranes. With the installation of bird flight diverters on overhead ground wires in areas determined to represent the highest risk, both alternatives would likely have long-term, ***low*** to ***moderate*** impacts to avian species from collisions.

Operation and maintenance of both alternatives would require regular vegetation maintenance to ensure that tall-growing woody vegetation does not grow in the ROW and that permanent access roads remain drivable. Maintenance could include mowing, herbicide application, and mechanical cutting. As such, operation and maintenance would have a long-term, ***low*** impact to wildlife under both alternatives because routine maintenance could result in temporary disturbance of wildlife including nesting birds and wintering big game; however, maintenance would only occur every few years and would be of short duration.

The Long Valley Road Option would result in the removal of fewer acres of sagebrush habitat and more acres of cultivated habitat. Because cultivated land does not provide native habitat to wildlife, this route option would have slightly lower impacts to wildlife than the North Alternative (impact would ***low*** to ***none***).

The North Highland Option would result in the removal of fewer acres of sagebrush and grass-dominated habitat and more acres of conifer and aspen-dominated habitat. Therefore, impacts would be lower for wildlife species that use sagebrush and grass-dominated habitat, such as the Columbian sharp-tailed and greater sage-grouse, and higher for wildlife species that use conifer and aspen-dominated habitat, such as the northern goshawk and boreal owl. Nonetheless, overall impacts would be similar to those described for the North Alternative (***low*** to ***high***).

Impacts on wildlife from Options 1 through 4, with the exception of Option 3A, would be similar to those described for the South Alternative. Option 3A would impact approximately 20 acres of wildlife habitat in the Blackfoot River WMA, including approximately equal parts of aspen and sagebrush habitat. When compared to the 1,720 acre WMA, sufficient amounts of vegetation diversity would remain to serve the mission of the WMA. The proposed ROW is located along the southern border of the WMA and is more than 0.5 mile from the Blackfoot River. Areas of the WMA supporting cutthroat trout and high quality fish habitat would not be impacted.

The portion of Option 3A that crosses the southern portion of the Blackfoot River WMA represents suitable habitat for big game including elk and mule deer, and is designated as BLM non-critical big game winter range habitat. Short-term impacts to big game habitat on the WMA associated with Option 3A would include temporary vegetation removal or disturbance in non-forested habitats; however, these areas would be expected to recover quickly. Long-term impacts to big game habitat within the WMA would be associated with tree removal for the construction of access roads and transmission line ROW. Similar to the South and North alternatives, fragmentation of forested habitat would cause ***moderate*** impacts to wildlife.

S.7.8 Fish

Fish could be impacted by any alterations to water quality and habitat resulting from the construction of transmission lines and access roads. Potential impacts would be due to erosion and related sedimentation of streams, pollution from petroleum spills, stream alterations, and riparian vegetation (shade) removal. The proposed transmission line would span a number of streams within the North and South alternative corridors. Certain structures would be within 50 feet of smaller intermittent streams, but no structures would be within 100 feet of the Blackfoot River, Little Blackfoot River, Meadow Creek, or Gravel Creek. The North Alternative would have ***no*** impacts to fish in the Blackfoot River or the Little Blackfoot River because no road work, structure construction, or vegetation clearing would occur in the riparian areas, and there would be no new road-stream crossings on these rivers. The South Alternative would span the Blackfoot River in two locations and span 14 intermittent tributaries and ephemeral drainages that convey water to the Blackfoot River. While no work to construct the proposed transmission line would occur within actively flowing channels, construction of new access roads and new transmission structures would have the potential to temporarily increase sediment loading and temperature in the Blackfoot River and its tributaries. With the implementation of best management practices (BMPs), impacts to fish and fish habitat are expected to be short term and ***low*** from the South Alternative.

Operation and maintenance would occur over the life of the transmission line. Most impacts would result from increased turbidity due to soil-related impacts to water quality and corresponding fish habitat. It is expected that those impacts would be ***low*** and short term under both the North and South alternatives.

The Long Valley Road Option would result in similar impacts to fish and fish habitat as those described for the North Alternative (***none*** to ***low***). The North Highland Option would not cross aquatic resources or fish habitat, and would have ***no*** impact to fish or fish habitat.

Options 1, 2, 3, and 3A would result in the same impacts to fish and fish habitat from the crossing of the Blackfoot River and its tributaries as those described for the South Alternative (short term and ***low***). Option 4 would impact a wetland complex and open waterbodies associated with Woodall Springs causing unavoidable impacts to fish and fish habitat. Access roads, structures, and construction vehicle use could potentially increase sediment loading, turbidity, and temperature in fish-bearing streams and waterbodies. Short-term impacts during construction of Option 4 would be ***moderate*** to ***high*** with the implementation of BMPs; long-term impacts would be ***moderate***.

S.7.9 Cultural Resources

BPA evaluates cultural resource sites under the National Historic Preservation Act (NHPA) to determine if project components would impact them. BPA also attempts to avoid known sites whenever possible and uses trained cultural resource monitors on large-scale projects to ensure unidentified sites are not inadvertently impacted. Sites have been and would continue to be identified using a variety of methods. Archaeological sites would be delineated both by surface observations and subsurface testing before construction to avoid physically impacting sites during construction. Appropriate mitigation procedures would be in place to stop construction activities and determine protective measures (e.g., avoidance) if artifacts are found (see Section 3.9.4, Mitigation). Impacts should not occur to unknown sites with these procedures in place.

Along the North Alternative, the nine prehistoric lithic scatter sites, one historic trash scatter, and one historic pond identified during previous cultural resource surveys are all outside of the North Alternative corridor, so ***no*** impact to these cultural resources would occur. In addition, historic structures identified near in the town of Henry near the North Alternative corridor also would be avoided, so ***no*** direct impacts to these cultural resources would occur. However, depending on the placement of the North Alternative within the Henry area, the transmission line would potentially have a ***low*** to ***moderate*** impact to the viewshed of these structures. ***No*** impact would occur to the two prehistoric isolated artifact sites because they are located outside of the North Alternative corridor.

Impacts to the Lander Road viewshed and direct impacts to the physical road bed where it crosses the North Alternative corridor are unknown at this time. Maps of the historic road system indicate that the portion of the Lander Trail through the North Alternative corridor is no longer visible while other data suggest the segment of the road has visible tracks, which may make it a National Register of Historic Places-eligible segment. Surveys were not conducted in this area because access was not provided by the landowners. Four other roads potentially crossed by the North Alternative would potentially have a ***low*** to ***moderate*** impact if the viewsheds are affected.

Given that two of the six historic isolated artifact and scatter sites appear to have been disturbed, impacts to these cultural resources from the North Alternative would be ***low***. There would be ***no*** impact to the four remaining historic isolated artifact and scatter sites because they would not be disturbed during or after construction of the North Alternative. Impacts to three of the five historic debris/dumps sites located in basalt crevices near proposed structures and an access road would be ***low*** if construction disturbance crosses over into the basalt crevices. Impacts to the two remaining sites within the North Alternative ROW would be ***low*** because of the low quality of information that could be gathered from these sites to connect people to their past. The impact to an isolated arborglyph (tree carving) located at northern edge of the North Alternative ROW would be ***high*** if it is cut down if ROW or danger tree clearing occurs in this area.

Along the South Alternative corridor, impacts to the historic debris site would be ***low*** because of the low quality of information that could be gathered from this site to connect people to their past. The historic agricultural or mining site (a concrete building foundation) would not be disturbed because a structure or road would not be constructed over the site; therefore, ***no*** impact would occur. The impact to the historic farmstead located along the South Alternative corridor would be ***low*** because the farmstead lacks the quantity of outbuildings and strong association with the landscape elements that are typically affiliated with farmsteads. There would be ***no*** impact to the historic splash dam because no structures along the South Alternative would be placed in East Mill Creek.

Operation and maintenance of the transmission lines and substations would not directly affect cultural resources because the areas would be surveyed before project construction and any impacts to the sites would have been previously determined and mitigated if needed. Maintenance of structures or access roads would not affect known resources. If any maintenance activities need to occur outside of structure locations or off access roads, a survey of these areas would be conducted to avoid disturbing cultural resources.

No known cultural resources are present along the portion of the Long Valley Road Option surveyed. If surveys of the remaining portions of the Long Valley Road Option are identified, consultation with SHPO and the landowner would occur. No known cultural resources are present along the North Highland Road Option.

Options 1, 2, and the portion of 4 east of Conda would have the same impacts to cultural resources as those described for the South Alternative, because they would cross the same sites (***none*** to ***low***). The southwest portions of Options 3, 3A, and 4 (west of Conda) parallel to Highway 34, would have the same impacts to cultural resources as the southwest portion of the North Alternative because they would cross the same sites (***none*** to ***low***). Impacts to two additional historic debris/dumps along Option 3 and 4 would be ***low*** due to the low quality of information that could be gathered to connect people to their past. No sites were identified along the eastern portions of Options 3 or 3A.

S.7.10 Socioeconomics

Construction of the Project would be short term and likely have a ***low*** socioeconomic impact within the project area. There may be some beneficial impacts as a result of increased spending in the local community during construction. Approximately 40 jobs are expected to be filled by workers who would likely temporarily relocate to communities near the Project, although operation of the transmission line is not anticipated to generate new employment and no change in population would result. Population changes in the area are expected to be short term and ***low***.

Because permanent employees would not be required to support the operation of the transmission line, no additional housing would be necessary within the project corridor following completion of construction. As a result, short-term but likely beneficial, ***low*** impacts to lodging options would occur.

Impacts to public facilities and services (law enforcement, fire protection, medical services, schools, and utilities) would be ***low*** and would occur over the short term given the temporary increase in the local population from construction employees.

The Project is not expected to have long-term impacts to property values.

The majority of agricultural lands within the North and South alternative corridors would be temporarily disturbed during construction activities, but not affected in the long term. Short-term impacts would be ***low***. There would be some positive economic effects resulting from the timber harvest associated with ROW clearing for the North and South alternatives. However, it is anticipated that this effect would be ***low*** and short term.

The North Alternative would not cross any past, present, or potential future mining areas or leases and therefore would have ***no*** impact on mining activities. For the South Alternative, construction activities could cause minor delays to mining activities although construction would not interfere in the long term.

BPA would acquire land rights from private property owners for the construction, operation, and maintenance of the North and South alternative transmission lines and access roads. The property owner would retain ownership of the property and continue to pay property tax on the entire parcel, including the land within BPA's easement. Therefore, tax impacts under the North Alternative in both the short term and long term would be ***low***.

Impacts to agricultural production and farm income along the Long Valley Road Option would occur because the land is currently in active grazing and crop cultivation; however, impacts to agricultural use would remain ***low.*** The North Highland Option would require an additional area of tall-growing vegetation be cut so some positive economic effects associated with the timber harvest would occur: likely this effect would be ***low*** and short term.

Options 1 through 4, including Option 3A, would likewise have similar ***low*** impacts to socioeconomic resources.

S.7.11 Transportation

During construction, both the North and South alternatives could cause temporary impacts to motorists resulting from increased traffic volumes with possible delays and road closures, and possible wear and tear to public roadways from construction vehicles accessing the Project. Highway 34 would likely be the most traveled road during the construction period if the North Alternative is selected. The South Alternative would impact traffic on Highway 34 to a lesser extent, but would create traffic impacts on Blackfoot River Road.

Daily peak construction activities and movement of construction vehicles would temporarily increase traffic and reduce the overall speed of travel. Traffic delays may occur, but these would be periodic, short term, and limited to specific areas and times of day. The use of all other county, local, C-TNF, and BLM roads for construction traffic would be limited to roads necessary to access staging areas and work sites. Based on the relatively low average daily traffic counts on such roads, and the relatively short-term use any one road is likely to receive, temporary traffic delays are likely to occur at localized spots, but only while construction is taking place in adjacent or nearby areas. Impacts from the North and South alternatives would be short term and ***low***.

Operation and maintenance of the proposed transmission line and substation would not be expected to disrupt traffic or impact transportation infrastructure in any way and would be expected to be ***low*** for either alternative.

The Long Valley Road Option and the North Highland Option would have similar ***low*** impacts to traffic and road conditions as described for the North Alternative.

Options 1 through 4, including Option 3A, would have similar ***low*** impacts to traffic and road conditions as described for the South Alternative.

S.7.12 Noise

Noise levels in the project area are generally very low. In more developed areas, traffic and noise associated with human activity are major contributors to background noise. Construction of the North and South alternatives would generate elevated noise levels. Noise levels also may periodically increase during operation and maintenance. This noise would have the potential to affect nearby residences, recreational users, wildlife, and other receptors. Noise levels and related impacts would be similar for the both project alternatives.

Potential sources of noise during the construction phase would include construction of access roads and foundations at each structure site; structure site preparation; construction of steel or wood structures; helicopter assistance during structure construction and stringing of conductors;

and potential blasting. Noise impacts during construction would be ***moderate*** to ***high***, although intermittent and short term. Construction noise would be localized (affecting a few residents or business owners at a time) and temporary, as crews would complete line segments and move on.

Overall noise impacts during operation of the Project are expected to be negligible. In areas where homes or businesses are already near existing lines, the potential for corona noise (hum and/or crackling) from the energized conductors would remain the same. In areas where homes or businesses would be near new ROW (e.g., no transmission line currently exists), corona could be audible but would be rare, because it occurs most often during foul weather and is typically associated with transmission lines in excess of 238-kV. About twice annually, a helicopter would fly the line to inspect for problems or repair needs.

Potential noise impacts associated with operation and maintenance activities would be considered ***low*** for both project alternatives.

The Long Valley Road Option and the North Highland Option would have the same noise impacts as those described for the North Alternative.

Options 1 through 4, including Option 3A, would have the same noise impacts as those described for the South Alternative.

S.7.13 Public Health and Safety

The principal impacts of both the North and South alternatives on public health and safety would be related to the potential mobilization of contamination from excavation and handling of contaminated soil, which could result in exposure to the environment, workers, and the general public, along with public exposure to electric and magnetic fields (EMF). The North Alternative corridor is located approximately 3,500 feet east of the footprint of the Henry Mine and does not come into direct contact with waste dumps, seeps, or mine pits. Because the transmission line would not require excavation in areas of known contamination, impacts related to possible mobilization of contamination associated with mining areas would be ***low***. Four mines crossed by the South Alternative corridor are currently undergoing investigation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). While the transmission line and access roads would be designed to avoid areas of contamination, construction activities could come into direct contact with waste dumps, seeps, or mine pits. If contaminants are disturbed, impacts to workers, the general public, and environmental features from the South Alternative could be ***moderate*** to ***high***. Likewise, if ground-disturbing maintenance activities result in disturbance and release of contaminants during the operating phase of the South Alternative, the resulting impacts would be ***moderate*** to ***high.***

Maximum and average values expected for electric fields at the edge of the transmission line ROWs would be below BPA's guidelines of 5 kilovolts per meter for all of the alternatives and route options. These electric field levels would be comparable to or less than those from existing transmission lines in the area and elsewhere. Overall, electric field level impacts would be ***low.*** Transmission line magnetic fields would approach common indoor ambient levels a few hundred feet beyond the edge of the ROW. Overall, impacts from magnetic fields outside of the transmission line ROWs would be ***low***.

BMPs would be implemented for both the North and South alternatives to manage construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills. If a release should occur, BMPs would be in place to ensure such releases are contained and cleaned up promptly in accordance with all applicable regulations. As a result, impacts associated with construction-related hazardous materials for both alternatives would be expected to be ***low***.

Similar to the North Alternative, both the Long Valley Road Option and the North Highland Option would span waterbodies downgradient of mining areas and would have ***low*** impacts related to contamination associated with mining areas. EMF impacts would also be ***low***.

Options 1 through 4 including Option 3A would have the same impacts to public health and safety as those described for the South Alternative including possible ***moderate*** to ***high*** impacts if contaminants are disturbed.

S.7.14 Air Quality

Construction activities associated with the Project could create dust as a result of road building and grading, on-site travel on unpaved surfaces, work area clearing and preparation, and soil disrupting operations. Air quality impacts associated with the Project are expected to be localized and temporary, and would be controlled as practicable. Wind erosion of disturbed areas could also contribute to fugitive dust until revegetation of these areas occurs. Heavy equipment and vehicles would emit carbon monoxide, carbon dioxide (CO_2), sulfur oxides, and other air pollutants. The amount of pollutants emitted from construction vehicles and equipment would be small relative to existing air pollution sources in the airshed; therefore, the expected impacts would be short term and ***low***.

Air quality impacts during operation and maintenance would be the same for the North and South alternatives. Impacts would be long term in nature but low in intensity. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be very small, temporary, and localized. Overall, both alternatives would have ***low*** to ***no*** air quality impacts.

Under the Long Valley Road and North Highland options, air emissions and dust generation would be ***low*** and impacts would be similar to those described above.

Options 1 through 4, including Option 3A, would have ***low*** impacts similar to those described above for the South Alternative.

S.7.15 Greenhouse Gases

The Project could have the potential to contribute to greenhouse gas (GHG) concentrations. Construction vehicles and equipment would generate emissions of gases such as CO_2 that are known to contribute to climate change. The removal of trees and other vegetation that act to sequester carbon would result in lost carbon storage.

Vegetation removal associated with the North Alternative would result in lost carbon storage equivalent to 9,952 metric tons of CO_2. Construction of the North Alternative would be estimated to produce about 12,244 metric tons of GHG emissions over the course of one year. Vegetation removal associated with the South Alternative would result in lost carbon storage equivalent to 4,919 metric tons of CO_2. Construction of the South Alternative would be estimated to produce about 8,081 metric tons of GHG emissions over the course of one year. The carbon impacts from either Alternative would be well beneath the U.S. Environmental Protection Agency's mandatory reporting threshold of 25,000 metric tons of CO_2 equivalent GHG emissions per year. Based on these estimates, the contribution to GHG levels during construction would be lower for the South Alternative than the North Alternative given the reduced area for construction; however, the impacts for both alternatives would be ***low***.

Operation and maintenance of the line would be expected to produce about 126 metric tons for the North Alternative and approximately 84 metric tons for the South Alternative over the life of the Project. Thus, the GHG contributions from these activities would be negligible. Overall, the South Alternative would have slightly lower GHG impacts than the North Alternative, but both alternatives would have ***low*** to ***no*** impacts to GHG concentrations.

Under the Long Valley Road Option, GHG emissions would be slightly larger, but would still result in ***low*** impacts on GHG emissions. Under the North Highland Option, GHG emissions would be slightly reduced and would still result in a ***low*** impact to GHG emissions.

Under Options 1 through 4 including Option 3A, GHG emissions would be similar to the South Alternative, but would still result in ***low*** impacts to GHG emissions.

S.8 Cumulative Impacts

Cumulative impacts are environmental impacts that result from the incremental impact of an action, such as one of the proposed alternatives, when added to other past, present, and reasonably foreseeable future actions.

Past actions that have affected natural and human resources in the project area include conversion of land to agricultural uses; residential, commercial, and other development; mining operations; logging; road construction; and installation of transmission and distribution lines and related facilities. Currently and in the reasonably foreseeable future, many of these activities will continue and grow. New development will continue as population growth and demand for resources increase. If a decision is made to build the North or South alternative or one of their route options, the selected alternative would add to these impacts with construction and operation of additional transmission line facilities and the new substations.

The Hooper Springs Transmission Project's incremental contribution to potential cumulative impacts on resources would vary as follows.

Land Use: Land use in the project area has incrementally changed due to cumulative past and present development, and this trend would be expected to continue with future development. These changes have predominantly introduced agricultural uses (mainly crops and livestock grazing), rural residential uses, and mining uses throughout the area. Future increases in development could reduce agricultural and undeveloped land uses. Existing non-forested land uses are not expected to significantly change along the transmission line ROW as a result of project construction. However, the Project would add to the ongoing development of utility-related land uses in the project area. Based on the current land uses in the project area, it is unlikely that changes in land use as a result of the Project would contribute to meaningful cumulative impacts to land uses.

In areas of past mining disturbance along the South Alternative and its route options that are currently engaged in reclamation activities, construction of the transmission line could disrupt some activities in the short term. The siting and operation of the transmission line within areas leased for phosphate mining would not be allowed to unreasonably interfere with mining or reclamation activities in the long term; therefore, the South Alternative and its route option corridors would not contribute to the cumulative impacts to land use in mining areas in a meaningful way.

Recreation: Several recreational uses such as hiking, fishing, hunting, camping, and off-highway vehicle (OHV) use occur within the project area. Cumulative past and current activities such as mining; agriculture; transportation and utility facility development; and residential and commercial development have limited recreational opportunities in some locations. Current and reasonably foreseeable future mine development on federal and private lands could contribute to a cumulative negative effect on recreational use through the introduction of additional evidence of human occupation in the area, disruption of wildlife, degraded viewsheds, and potential contamination. The temporary disturbance during construction and the long-term presence of the North or South alternatives or their route options would not contribute in a meaningful way to cumulative impacts to recreation on federal lands. However, placing Option 3A within the Blackfoot River WMA would have the potential for a relatively moderate contribution to cumulative impacts to state lands because past, present, and proposed future mining activities already encroach upon the WMA. The presence of the Option 3A ROW, structures, access roads, and connection facility would increase evidence of human occupation and possibly cause disruption of wildlife and some recreational activities such as hunting.

Visual Resources: Past and present actions such as agriculture, mining, grazing, logging, and road and utility infrastructure have resulted in cumulative changes to the natural landscape and visual resources within the project area. Reasonably foreseeable future actions involving development and resource use would be expected to continue this trend. Changes in the visual landscape due to logging and mining on C-TNF lands and agricultural uses on BLM and BIA lands will continue into the future consistent with their resource management planning. On non-federal lands, continued rural development and agriculture will likely continue to shape the visual landscape. Mining will continue throughout the foreseeable future, which would result in cumulatively large areas of soil and vegetation clearing that would alter the viewshed.

ROW and road clearing for the North and South alternatives and route options would result in a cleared swath in forested areas, which would make the transmission line corridor more visible and open due to the removal of vegetation. Residents in the Wayan area of the North Alternative would see portions of the cleared ROW and some structures. Some transmission line structures for the South Alternative and all five route options would be visible from the few rural residences located along the Blackfoot River and Blackfoot River Road. Overall, the western portion of the North and South alternatives and Options 3, 3A, and 4 would contribute incrementally, in a moderate way, to cumulative visual impacts in that area, due to their location along Highway 34 (a scenic byway) just west of mining activities at Conda. The eastern portions of both alternatives and their options would pass through more undeveloped areas and require new cleared ROWs and some new access roads. These portions of the corridors thus would have the potential to have a relatively high level of contribution to cumulative visual impacts from vantage points along the transmission line ROW.

Similar to cumulative impacts to recreational uses, placement of Option 3A within the Blackfoot River WMA would have a relatively moderate contribution to cumulative impacts to visual resources on state lands. A portion of the Option 3A corridor would be visible within the WMA in the long term.

Vegetation: Agricultural conversion, mining, grazing, logging, and road and utility construction have substantially altered native vegetative communities and habitat through removal and permanent conversion. In addition, proposed new mines would result in the removal and conversion of native vegetation communities in the mine footprint. The North and South alternatives and route options would result in temporary impacts on sagebrush habitats and lands already converted to agricultural uses, but would also have long-term impacts on forest vegetation. Relative to the scale of forest disturbance from other development in the area, the North and South alternatives and their route options would result in a small increase in the overall cumulative impact to vegetation communities.

Construction and operation of the Project would not contribute to cumulative impacts on special status species in the project area because there are no documented occurrences within 1 mile of the North or South alternative corridors or their route options.

The spread of noxious weeds will continue with vegetation and soil disturbance during the implementation of ongoing and reasonably foreseeable actions. Implementation of mitigation measures during construction of the North and South alternatives or their route options would minimize the spread of noxious weed populations. Thus, the Project would result in minor way to the potential cumulative impacts from noxious weed populations in the project area.

Geology and Soils: Erosion, compaction, decreased soil productivity, impacts to hydric soils, and loss of upland soils, prime farmland soils, and rock outcrops have occurred and continue to occur from natural weathering processes and mining, livestock grazing, logging, residential and commercial development, and utility and road infrastructure. This soil disturbance and loss will likely continue as these activities continue to occur in the project area. Implementation of mitigation measures, regardless of alternative or option, would reduce impacts to soil compaction and erosion during construction and soil loss from structure and access road placement. Overall, the Project's contribution to the cumulative soil compaction, erosion, and loss in the project area would be minor.

Water Resources, Floodplains, and Wetlands: Past and present activities that have cumulatively impacted surface and groundwater, floodplains, and wetlands within the project area include agricultural activities, mining, timber harvest, and road and utility construction and operation. Proposed and future mining activities coupled with future land development and ongoing agricultural uses and logging could result in cumulative impacts to water resources, floodplains, and wetlands. Construction and operation of the North and South alternatives and their route options, with the exception of Option 4, would contribute in a relatively minor way to potential cumulative sediment input and riparian and vegetation disturbance along surface waters and wetlands. Option 4 could result in a moderate contribution to cumulative impacts if wetland fill occurs within the Woodall Springs wetland complex.

Wildlife: Native vegetation communities have been substantially altered (through conversion, loss, or fragmentation) by agriculture, mining, grazing, timber harvest, and road and utility construction, resulting in the cumulative removal and permanent alteration of significant quantities of native wildlife habitat. Agricultural activities, grazing, mining, and timber harvest are expected to continue within the project area in the foreseeable future. The North and South alternatives and route options would result in temporary impacts on sagebrush, grassland, and wetland habitats and lands already converted to agricultural uses, but would also have some long-term impacts on forested habitats. The temporary impacts on non-forested habitats and the long-term impacts on C-TNF and Blackfoot River WMA forested habitats would contribute to the overall cumulative loss and fragmentation of wildlife habitat in the project area.

The construction and operation of the North and South alternatives and their route options would contribute incrementally to potential cumulative impacts on special-status wildlife species through short- and long-term habitat avoidance, incidental mortality, and habitat alteration in the alternative corridors. A portion of the North and South alternatives and Options 1 through 4 corridors would cross big game winter range habitat and big game disturbance and habitat alteration would be minimized by avoiding construction during sensitive wintering periods. Overall, the impact to big game winter range from the North and South alternatives and all route options, with the exception of Option 3A, would result in a minor contribution to cumulative disturbance and habitat fragmentation of winter habitat. Option 3A crosses the southern portion of the Blackfoot River WMA where long-term impacts to big game winter range would result in a moderate contribution to cumulative impacts to wildlife.

Fish: Runoff of sediment and contaminants such as selenium from past and present mining activities into area streams has contributed to cumulative effects, adversely affecting aquatic habitat and associated fish resources. Effects from livestock grazing also cumulatively contribute to impacts to fish and fish habitat in grazing areas. The stream crossing associated with the North and South alternatives and their route options would have a low, temporary impact on fish and their habitat. Therefore, impacts from the Project when combined with ongoing grazing activities, mining, agriculture, and other actions would have a small contribution on the overall cumulative impacts to fish resources in the project area.

Cultural Resources: Past actions that have impacted cultural resources include agricultural activities, highway and railroad construction, mining operations, construction of transmission lines, and commercial and residential development. Present and ongoing activities that alter the landscape and have the potential to affect cultural resources include agricultural activities, mining and logging operations, and operation and maintenance of existing power lines. Cumulative impacts associated with these activities include disturbance of cultural sites, reduction of the cultural integrity of certain sites, and removal of cultural artifacts. Construction of the North or South alternatives and all route options could contribute incrementally, albeit in a very minor way, to these cumulative impacts.

Although the Project would be implemented in such a way to avoid impacts to cultural resources there is the potential for impacts to previously undiscovered cultural resources or artifacts. Implementation of mitigation measures would lessen or avoid the potential for impacts to archaeological resources. However, the Project may still contribute incrementally to the adverse cumulative impact on cultural resources in the project area.

Socioeconomics: Past and present actions that have cumulatively affected socioeconomics, including population growth, taxes, and public services, in the project area include construction activities associated with mining, agriculture, logging, and road and utility construction. Reasonably foreseeable future actions include ongoing agricultural activities, construction activities associated with new and existing mine expansion and development, road maintenance and construction, and the construction of the Gateway West Transmission Line.

Impacts occurring to the local economy as a result of project-related expenditures, employment, and construction-related earning would be increased if construction of the mines were to coincide with the Project, but would still be low relative to the overall economy. The Project would not be expected to cause significant demands on public services or facilities. During construction, public services such as police, fire, and medical facilities would be needed only in cases of emergency. Based on these considerations, construction of either the North or South alternatives or their route options would not be expected to result in a measurable contribution to overall cumulative socioeconomic impacts.

Transportation: Agricultural activities, mining, logging, and other development activities will continue to occur and expand in the project area; however, there are no identified specific projects that would combine with the Project to result in cumulative impacts to transportation infrastructure within the immediate project area. Because both the North and South alternatives and their route options would result in only small, short-term increase in traffic during construction, significant traffic delays are not expected; therefore, it is expected that Project would not be a major contributor to cumulative transportation impacts.

Noise: Past, present, and reasonably foreseeable future actions that have or would create noise impacts associated with the operation of vehicles and other noise-producing equipment include agricultural activities, development construction, mining, operation of existing energy infrastructure, road maintenance, and OHV use. Noise from construction activities during the construction phase of the North or South alternative would result in temporary increases in sound levels beyond ambient levels, including noise from helicopters and blasting that may be experienced by area residents up to 1 mile from construction activities. The Project thus could contribute incrementally to noise in the project area, which would likely result in a temporary and intermittent cumulative noise impacts.

Public Health and Safety: Past and present actions that have potentially affected public health and safety related to the increased risk of release and exposure of contaminants include mining development, agricultural use of herbicide and pesticides, and industrial activities. Based on the CERCLA status of some of mine areas and potential impacts of the future mines that are developed in the area, the project area would experience increased potential for contamination and the mobilization of these contaminants in soils, surface waters, or groundwater. The North Alternative would not directly cross any identified contaminated areas or mineral lease blocks.

The South Alternative and its route options would all cross identified contaminated areas and proposed mine areas; therefore, there is the potential for mobilization of contaminants resulting in considerable contributions to the cumulative impacts on public health. Implementation of mitigation measures would reduce the potential for disturbance of contaminants by construction.

Although the North and South alternatives and their route options would result in higher levels of EMF under and immediately near the proposed transmission line, it would not cumulatively increase the overall level of EMF exposure in the project area.

Air Quality: Past and present actions that have cumulatively affected air quality include fires, mining, construction activities, residential wood burning, wildfires, and agricultural practices in the airshed, all of which are expected to continue for the foreseeable future. Ongoing and future mine development in the project area would generate fugitive dust, vehicle and equipment emissions, and processing plant emissions. In addition to mining activities, agriculture, vehicle traffic, logging activities, wildfires, and residential wood burning would also continue to contribute emissions and particulates, though at a smaller scale, throughout the year in the project area.

Air emissions from construction of the North and South alternatives and their route options would occur during the 16-month project construction period, spread over 2 years. Air impacts from the alternatives or route options over the long term would occur, but would be much lower than those experienced during construction. Overall, the Project's emissions would result in a small contribution to cumulative impacts on air quality, compared to the larger-scale emitters in the project area.

Greenhouse Gases: Cumulative GHG concentrations in the atmosphere and corresponding climate change occurring over the past 50 years have been primarily caused by the burning of fossil fuels and clearing forests around the world. In terms of the cumulative impacts on atmospheric GHGs, any addition, when considered globally, could contribute to long-term significant effects to climate change. The contributions of the North and South alternatives or their route options to GHG concentrations would be low. Therefore, the concentrations estimated for the Project, when compared to the regional, national, and global rates, are negligible and comparatively insignificant.

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1 Purpose of and Need for Action

Bonneville Power Administration (BPA) is proposing to build a new, 115-kilovolt (kV) transmission line in Caribou County, Idaho. This proposed line would extend from a proposed new 138/115-kV BPA substation, referred to as the Hooper Springs Substation, near the city of Soda Springs, Idaho, to either an existing Lower Valley Energy (LVE) substation or a proposed BPA connection facility that would connect with LVE's existing transmission system in northeastern Caribou County (see Map 1-1). BPA also would construct an approximately 0.2-mile-long, single-circuit 138-kV transmission line between the proposed Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation to connect the new line to the regional transmission grid. The proposed 115-kV and 138-kV transmission lines, substation, and ancillary facilities are collectively referred to as the Hooper Springs Transmission Project (Project). BPA is considering a North Alternative including two route options, a South Alternative including five route options, and a No Action Alternative.

This chapter provides background concerning BPA and the Project, describes the need for action to which BPA is responding in proposing the Project, and identifies the purposes that BPA is attempting to achieve in meeting this need. This chapter also identifies the lead and cooperating agencies for this supplemental draft environmental impact statement (EIS) and provides a summary of the public involvement that has been conducted for the EIS and information about the scope and organization of this supplemental draft EIS.

BPA, as a federal agency, is required by the National Environmental Policy Act (NEPA) to consider the potential environmental consequences of its proposal before taking action, and to inform the public of those potential impacts. Preparation of this EIS assists in meeting those requirements.

1.1 Background

1.1.1 About Bonneville Power Administration

BPA is a federal agency within the U.S. Department of Energy (DOE) that owns and operates more than 15,000 circuit miles of high-voltage transmission lines in the Pacific Northwest. BPA's electrical transmission system transmits most of the Pacific Northwest's power to serve customers in Idaho, Oregon, Washington, western Montana, and small parts of California, eastern Montana, Nevada, Utah, and Wyoming. BPA sells transmission services in order to accommodate requests to transmit power across its transmission system. BPA's transmission customers—typically utilities, independent power producers, and power marketers—use these services to deliver power over BPA's transmission lines to their buyers. Users of power include public utility districts, municipalities, direct service industries (e.g., aluminum plants), and investor-owned utilities that in turn use their own facilities to provide electricity to homes, businesses, industries, and farms throughout the Pacific Northwest.

BPA has a statutory obligation to ensure it has sufficient capability to serve its customers through a safe and reliable transmission system. The Federal Columbia River Transmission Act directs BPA to construct improvements, additions, and replacements to its transmission system that the BPA Administrator determines are necessary to provide service to BPA's customers and to maintain electrical stability and reliability (16 United States Code [U.S.C.] 838b[b-d]).

1.1.2 Electrical Service in the Vicinity

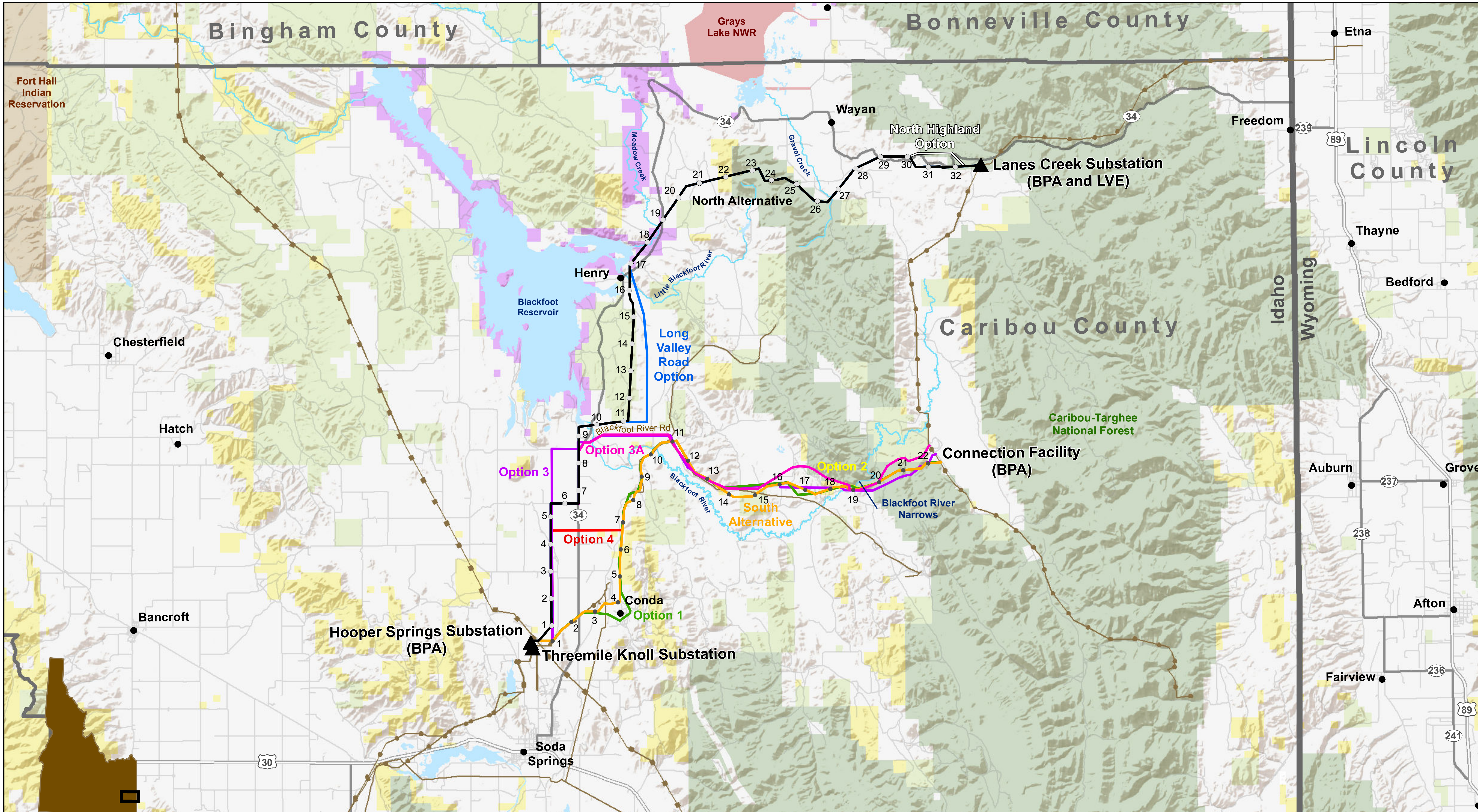
LVE and Fall River Electric Cooperative (FREC) are BPA customers who purchase all, or almost all, of the electric power required to serve their electrical loads from BPA. LVE and FREC provide electrical service to eastern Idaho, northwestern Wyoming, and southwestern Montana. BPA has an obligation to serve LVE and FREC loads under existing contracts. BPA also has an obligation to adhere to reliability criteria established by the North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC). NERC, the national electric reliability organization, and WECC, the regional reliability organization, help coordinate the operation and planning of the bulk transmission system in the region. Utilities are required to meet the standards of both organizations when planning new facilities.

Existing BPA transmission lines that serve LVE and FREC include the Palisades-Goshen line, the Swan Valley-Goshen and Swan Valley-Teton lines, and the Goshen-Drummond line. BPA has completed various upgrades and other improvements of these transmission lines that have increased the voltage stability and reliability of the FREC transmission system and the northern portion of LVE's transmission system. However, reliability and voltage stability of the southern portion of LVE's transmission system is a concern. LVE's system experiences extreme peaks in electrical load during winter when temperatures can drop to -50 degrees Fahrenheit (°F) and electricity is needed for heat. If LVE's Palisades-Snake River transmission line that serves the southern portion of LVE's system were to lose service due to weather or other events, voltage instability could occur and LVE and FREC customers, including residential customers, could lose power and heat. Such an outage could cause low voltage conditions at LVE's Tincup and Snake River substations and BPA's Teton Substation if the system is not improved in the near future. Low voltage conditions can cause brown outs and lead to voltage instability elsewhere in the system leading potentially to outages.

Additionally, LVE's Teton-Wilson and Palisades-Swan Valley transmission lines are expected to reach 101 percent of their thermal capacity by winter and summer 2015, respectively. When a transmission line reaches its thermal capacity, it must be opened up, possibly causing outages to customers. Opening a line may have ripple effects in the system, causing increased loading on other lines that would require they also be opened up, which would result in additional outages to customers. This is a major concern, given these outages would likely be associated with potentially life-threatening low temperatures. Further, these reliability concerns likely will continue and increase as electricity demand in LVE and FREC's service area increases.

1.1.3 Developing the Proposal and its Environmental Analysis

In 2006, BPA developed a proposal to address the voltage stability and reliability concerns in the southern portion of LVE's transmission system and to meet projected load demands. The 2006 proposal involved construction, operation, and maintenance by BPA of the Hooper Springs Substation currently proposed, as well as the partial funding by BPA of LVE's construction, operation, maintenance, and ownership of a new 22-mile-long, double-circuit 115-kV transmission line in Caribou County, Idaho similar to the current BPA South Alternative.



▲	Substation
	Mile Markers - North Alternative
	North Alternative
	Long Valley Road Option
	North Highland Option
	Mile Markers - South Alternative
	South Alternative
	Option 1
	Option 2
	Option 3
	Option 3A
	Option 4

Land Ownership

- Caribou-Targhee National Forest
- Bureau of Land Management
- US Fish and Wildlife Service
- Tribal Land
- Bureau of Indian Affairs
- State Land
- Private Land

- City
- Local Road
- State Route
- US Highway

Existing Transmission Lines

- 46 kV
- 138 kV
- 345 kV

N S W E

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

0 1 2 4 6 8 10 Miles

BONNEVILLE POWER ADMINISTRATION

Date: 12/9/2013

Hooper Springs Transmission Project

Map 1-1
Hooper Springs Transmission Project Overview

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BPA issued a preliminary environmental assessment (EA) (DOE/EA-1567) for that proposed project in May 2009 (BPA 2009). Based on comments received on the 2009 Preliminary EA, BPA discovered that the South Alternative and its route options all crossed one or more areas that may have heavy metal and selenium soil contamination from phosphate mining activities (see Section 2.3). Because of environmental and other concerns about these sites, BPA decided to develop an alternative transmission line route (i.e., the current North Alternative) for consideration and determined that preparation of an EIS for the Project was appropriate. BPA also decided to fully fund the proposed transmission line. Relevant information from the 2009 Preliminary EA has been incorporated into this EIS, either in its entirety or by reference as appropriate. The 2009 Preliminary EA is also available on-line at www.bpa.gov/go/HooperSprings, and a printed copy can be obtained by calling BPA's toll-free document request line at 1-800-622-4520.

BPA began the EIS process for the Project in June 2010 and issued a draft EIS in March 2013 (see Section 1.5 for information concerning public involvement for the draft EIS). The draft EIS evaluated a North Alternative and two route options, and a South Alternative and four route options. After release of the draft EIS, BPA continued to evaluate comments and suggestions concerning the alternatives and options. As a result, BPA has identified an additional route option for the South Alternative. Because it is largely similar to Option 3, this additional route option has been identified as Option 3A. While similar to South Alternative route options included in the draft EIS, Option 3A was not specifically evaluated in the draft EIS. BPA therefore has prepared this supplemental draft EIS to evaluate this route option in detail. This supplemental draft EIS includes an evaluation of Option 3A along with updated evaluations of all of the other alternatives and options previously addressed in the draft EIS. This supplemental draft EIS also includes responses to all comments received on the draft EIS and identifies a preferred alternative for the Project.

1.2 Need for Action

BPA needs to address the current voltage stability and reliability concerns related to the southern portion of LVE's transmission system. The proposed Hooper Springs Transmission Project would provide increased reliability to the southern portion of LVE's transmission system by providing transmission reinforcement to avoid loss of LVE's entire load during peak winter conditions. The Project would enhance the existing system in the southern Idaho region and would prevent violation of NERC reliability standards. The Project also would provide redundancy in the transmission system in southeast Idaho/northwest Wyoming. Currently all of the transmission lines for the FREC and LVE service areas from West Yellowstone, Montana south to Afton, and Wyoming originate from PacifiCorp's Goshen Substation. If a major power failure occurs at Goshen Substation, the Project in southeast Idaho would help alleviate major outages to FREC and LVE customers.

BPA also needs to address ongoing electricity use (load) growth in southeast Idaho and the Jackson Hole valley area in northwestern Wyoming. Electricity use in these areas has been growing at about 3 percent per year with historic winter peak load levels in the SE Idaho area increasing by approximately 1.7 percent per year since January 2007. BPA studied a range 0.5 to 2 percent load growth levels to determine the project need. As discussed above, BPA recently upgraded and improved several of its existing transmission lines in southeast Idaho. In addition to strengthening aging equipment, these improvements help meet the growing electricity need in these areas by providing additional transmission capacity. However, additional action is needed to ensure that the transmission system can adequately handle all expected load growth in the area.

1.3 Purposes

In meeting the need for action, BPA will attempt to achieve the following purposes:

- Maintain reliability of BPA's transmission system at BPA and industry standards.
- Meet BPA's contractual and statutory obligations.
- Minimize project costs.
- Minimize impacts to the natural and human environment.

1.4 Lead and Cooperating Agencies

As the project proponent, BPA is the lead agency responsible for preparing this EIS under NEPA. BPA will use this EIS to assist in its decision concerning whether or not to build the proposed transmission lines, substation, and ancillary facilities. If the decision is to build the Project, BPA also would use the EIS to help select the route for the transmission lines from among the alternatives and route options under consideration, and to assist in determining the exact locations of transmission structures and access roads.

The Council on Environmental Quality (CEQ) regulations implementing NEPA allow for the designation of other federal, state, and local agencies and Native American Tribes as cooperating agencies for an EIS where appropriate. At this time, the U.S. Forest Service (USFS), the U.S. Bureau of Land Management (BLM), and the Idaho Office of Energy Resources have been identified as cooperating agencies to assist with preparation of this EIS.

The USFS manages the Caribou-Targhee National Forest (C-TNF), portions of which would be crossed by the proposed transmission line regardless of route. The C-TNF will help provide information concerning environmental resources for these portions, and will help ensure that this EIS is sufficient for supporting C-TNF decisions related to issuance of rights-of-way (ROWs) for the line and associated access roads. More specifically, the C-TNF will use the information contained in this EIS, its current Forest Plan, associated planning requirements, and comments from the public to make the following decisions:

- Whether to grant BPA a special use permit across forest lands to construct the transmission line and associated access roads, and allow for maintenance of the transmission line and roads, as necessary.
- If the C-TNF decides to grant BPA the special use permit, it must amend its current Forest Plan in order to adjust the management prescriptions associated with the lands crossed by the Project (see Appendix A, Caribou National Forest [CNF] Revised Forest Plan Amendment).

The C-TNF also will help to ensure this EIS is sufficient for supporting the C-TNF in complying with the Settlement Agreement for the Section 368 West Wide Energy Corridors. The primary objectives of the Settlement Agreement are to ensure future energy transmission corridor revisions, deletions, or additions consider the following principles:

1. Location of corridors in favorable landscapes (see Section 2.1, Transmission Line Siting)

2. Facilitation of renewable energy projects where feasible (see Section 3.16.2, Cumulative Actions)

3. Avoidance of environmentally sensitive areas to the maximum extent practicable (see Chapter 3)

4. Diminution of the proliferation of dispersed ROWs crossing the landscape (see Section 2.5.4, U.S. Forest Service Land Routing Alternatives, and Section 4.16, Caribou-Targhee National Forest Revised Forest Plan)

5. Improvement of the long-term benefits of reliable and safe transmission (see Section 1.1, Background)

BLM also manages lands potentially crossed by the proposed transmission line regardless of route. Similar to the C-TNF, BLM will help provide information concerning environmental resources and will help ensure that this EIS is sufficient for supporting BLM decisions related to issuance of ROWs for the line and associated access roads. More specifically, BLM will use the information contained in this EIS, its current Resource Management Plan (RMP), and comments from the public to decide whether to grant BPA a ROW easement across BLM lands to construct the transmission line and associated access roads and allow for maintenance of the transmission line and roads, as necessary.

The Idaho Office of Energy Resources is the state agency responsible for coordinating state review of proposed energy and transmission projects in the state of Idaho; it will help identify state interests that should be addressed in the EIS and help coordinate the review of the EIS by various state agencies.

As BPA proceeds through the NEPA process, it also will coordinate with other agencies that may have a role in the Project. For example, the route for the North Alternative would cross lands managed by the Bureau of Indian Affairs (BIA) for the BIA Fort Hall Irrigation Project. In addition, because the Project has the potential to affect wetland resources and would cross several rivers, a permit may be required from the U.S. Army Corps of Engineers (USACE), which has permitting jurisdiction over waters of the United States under Section 404 of the Clean Water Act.

1.5 Public Involvement

1.5.1 EA Scoping Outreach

BPA initiated public involvement in May 2006, when it sent a letter concerning the Hooper Springs Transmission Project, as described in the 2009 Preliminary EA, to adjacent landowners; tribes; federal, state, regional, and local agencies; interest groups; and others. This letter provided notice of the Hooper Springs Transmission Project and BPA's intent at that time to prepare an EA, and invited public comment on the Project and issues to be addressed in the EA. BPA also held public scoping meetings for the EA in 2006 and 2007, and conducted other public outreach efforts during that time. The public involvement that was conducted as part of the EA process and the issues that were raised at that time are summarized in more detail in the 2009 Preliminary EA (BPA 2009).

1.5.2 EIS Scoping Outreach

After BPA decided to prepare this EIS, it again solicited comments from the public to help determine what issues should be studied in the EIS. Because these issues help define the scope of the EIS, this process is called "scoping." Public comments were received by mail, via fax, by telephone, through the BPA website, and at a scoping meeting.

During the scoping period for the EIS, BPA requested comments through the following means:

- On June 29, 2010, BPA published a Notice of Intent to prepare an EIS and conduct public meetings for the Hooper Springs Transmission Project in the Federal Register (75 FR 39241). The Notice of Intent initiated a 30-day public scoping period.
- On June 30, 2010, BPA sent a letter to potentially interested and affected persons requesting comments and inviting the public to a scoping meeting. The letter was sent to people who live along the proposed transmission line routes; federal, state, regional, and local agencies that may have expertise or require permits for the Project; tribes with interest in the area; and other interest groups.
- BPA sent a press release to local media, and placed paid ads in local newspapers about the public scoping meeting and the comment period.
- An open-house style public meeting was held in Soda Springs, Idaho on July 29, 2010, to provide information about the Project and the EIS process, and to receive comments on the Project and its potential environmental impacts.
- Additional meetings were held with federal agencies, tribes, state agencies, and county staffs to provide project information and receive comments.
- BPA established a website with information about the Project and the EIS process: www.bpa.gov/go/HooperSprings. BPA posted a link to all comments it received on the project website.

The July 29, 2010, public scoping meeting featured topic-specific stations and information. BPA staff was available to answer questions and help landowners locate their property on maps in relation to the alternative routes. BPA staff recorded verbal public comments in notes and on flip charts, and members of the public had an opportunity to provide written comments.

In addition, throughout the EIS preparation process, the BPA project manager, environmental project lead, and other staff have continued to hold meetings and maintain contact with landowners, local governments, state agencies, representatives of tribes with interests in the area, C-TNF, BLM, BIA, the U.S. Fish and Wildlife Service (USFWS), and other agencies and interested parties.

1.5.3 EIS Scoping Comment Summary

BPA received seven written comments during the EIS scoping period. Verbal comments were also submitted by multiple individuals and organizations during the July 29, 2010, public scoping meeting. People expressed opinions about a wide range of issues for BPA to consider. Issues and concerns identified included the following:

- Overall need of the Project
- Project cost efficiency to reduce electricity user rates
- Ground and surface water quality, stormwater generation, and public drinking water impacts
- Soil compaction, erosion, and changes in runoff patterns
- Habitat fragmentation and wildlife disturbance, including migratory birds, bald and golden eagles, and Endangered Species Act (ESA) listed species
- Wildlife impacts associated with blasting
- Forest and sensitive plant impacts due to clearing
- Introduction of noxious weeds and invasive plants
- Vegetation management measures and herbicide use
- Wetlands and floodplain clearing and fill
- Historic resources, including historic structures and National Historic Trails
- Visual impacts to private property, public lands, and key viewing areas, such as scenic highways, the Blackfoot Reservoir, and National Historic Trails
- Potential decreases in property value
- Potential disproportionate effects on minority and low-income populations (environmental justice)
- Disturbance to hunting and other recreational activities
- Farming and other land use disruptions
- Crossing of federal lands withdrawn for the Fort Hall Irrigation Project
- Disruption of future mining leases and expansions
- Availability of transmission lines to support future mine development

- Private landowner liability for BPA facilities placed on their property
- Alteration of lands enrolled in the Conservation Reserve Program (CRP)
- Compliance with land use and zoning plans
- Crossing of lands undergoing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site investigation for selenium soil contamination and associated liability issues
- Mobilization and/or release of contaminants or toxic substances due to soil and sediment disturbance
- Degradation of air quality and the generations of greenhouse gas (GHG) emissions that contribute to climate change

This is a partial list of issues identified from the comments received. All comments received were logged and forwarded to resource specialists to include in their environmental impact analyses for the EIS. All written comments submitted and other project information are posted at: http://www.bpa.gov/comment.

1.5.4 Draft EIS Release and Outreach

In March 2013, BPA distributed a draft EIS to the public (landowners; tribes; federal, state, and local agencies; interested groups; and others) for review and comment. BPA accepted comments through April 22, 2013. All comments received were posted online on the Hooper Springs Transmission Project comments webpage and are included in Volume 2 of this supplemental draft EIS. During the public comment period for the draft EIS, BPA requested comments through the following means:

- On March 8, 2013, BPA published a Notice of Availability for the Hooper Springs Transmission Project draft EIS and announced public meeting dates in the Federal Register (Vol. 78, No. 46). The Notice of Availability initiated a public comment period extending over more than 45 days.
- Also in March 2013, BPA sent a letter to about 375 potentially interested and affected persons requesting comments and inviting the public to an open-house style public meeting. The letter was sent to people who live along the proposed transmission line routes; federal, state, and local agencies that may have expertise or require permits for the project; tribes with an interest in the area; and other interest groups.
- BPA sent a press release to local media, and placed paid ads in the following newspapers about the draft EIS public meeting and the comment period:
  - Pocatello/Idaho State Journal—Wednesday, March 20, 2013, Wednesday, March 27, 2013, and Sunday, March 31, 2013
  - Soda Springs/Caribou County Sun—Thursday, March 21, 2013, and Thursday, March 28, 2013
  - Idaho Falls Post Register—Wednesday, March 27, 2013, and Sunday, March 31, 2013

- One open-house style public meeting was held on April 3, 2013, in Soda Springs, Idaho. At this meeting BPA received comments on the draft EIS.
- The draft EIS was posted on BPA's project website: http://efw.bpa.gov/environmental_services/Document_Library/HooperSprings/. Comments were accepted online. BPA also posted a link to all comments it received.
- BPA also held a project update meeting in September 2013 in Soda Springs to provide information on the current alternatives being considered.

About 45 people commented on the draft EIS during the comment period. Opinions and concerns expressed during this comment period echoed those received during the scoping period. In addition, people submitted questions and concerns about the following issues.

- Requests for additional information on project need
- Requests for information on public involvement
- Requests for additional information on project alternatives and options
- Requests for additional information on project costs
- Requests for information on the preferred alternative
- Requests for additional information on potential impacts to wildlife species

This is a partial list of issues identified from the comments received. Volume 2 of this supplemental draft EIS provides all comments received on the draft EIS and BPA's responses to the comments.

1.5.5 Supplemental Draft EIS Release and Outreach

On October 22, 2013, BPA sent a letter was sent to all potentially interested and affected persons describing its intent to prepare a supplemental draft EIS to evaluate Option 3A. During the supplemental draft EIS public comment period, BPA is requesting comments by publishing a notice for the Hooper Springs Transmission Project supplemental draft EIS and announcing public meeting dates in the Federal Register; sending a letter to potentially interested and affected persons, requesting comments and inviting the public to an open-house style public meeting; sending a press release to local media, placing newspaper ads about the supplemental draft EIS public meeting and the comment period; and posting the supplemental draft EIS on BPA's project website:
http://efw.bpa.gov/environmental_services/Document_Library/HooperSprings/.

1.6 How this EIS is Organized

This EIS is organized into three volumes. Volume 1 contains the supplemental draft EIS, Volume 2 provides responses to comments received on the draft EIS, and Volume 3 consists of appendices for the supplemental draft EIS. In addition to this chapter, Volume 1 of this supplemental draft EIS contains the following chapters:

- Chapter 2: Proposed Project and Alternatives provides a description and comparison of the alternatives.
- Chapter 3: Affected Environment, Environmental Consequences, and Mitigation Measures describes the affected environment, environmental consequences of the North Alternative, South Alternative and No Action Alternative, and proposed mitigation measures to lessen or avoid impacts.
- Chapter 4: Consultation, Review, and Permit Requirements discusses the laws, regulations, and consultation requirements applicable to the Project.
- Chapter 5: References provides the references cited throughout the document.
- Chapter 6: Agencies, Organizations, and Person Receiving the EIS lists those that have been provided copies of the EIS.
- Chapter 7: List of Preparers identifies and describes personnel that contributed to drafting the EIS.
- Chapter 8: Glossary and Acronyms defines specific terms and abbreviations used throughout the EIS.
- Chapter 9: Index includes key terms used throughout the EIS.

This supplemental draft EIS also includes a cover sheet and summary.

2 Proposed Project and Alternatives

This chapter provides a summary of how transmission lines are sited and describes the North Alternative and two route options, the South Alternative and five route options, and the No Action Alternative. Map 2-1 provides an overview of the project area and shows the location of the project alternatives and route options. This chapter also discusses the alternatives that were considered but eliminated from detailed study, identifies the preferred alternative, and provides a summary comparison of the North and South alternatives and their route options, and the No Action Alternative.

2.1 Transmission Line Siting

When a potential new transmission line has been identified, BPA's transmission system planners and engineers are usually the first to begin the process of developing potential routes for the new line. First, transmission system planners determine the size or voltage needed and the beginning and end points for the new transmission line. Engineers then determine the type of structures required and the amount of ROW needed for safety clearances. In general, a 100-foot-wide ROW is typically required for single-circuit 115-kV transmission lines; a 100 to 120-foot-wide ROW is typically required for double-circuit 115-kV transmission lines; and a 150-foot-wide ROW is necessary for 138-kV transmission lines. Each potential location for individual structures must also be accessible for construction and maintenance, so road access is required.

With the technical requirements outlined, BPA considers a wide variety of factors as it looks for ways to site the new transmission facilities. Some of these factors include:

- Ensuring the electrical feasibility of the new facilities, with an eye toward maximizing transmission system performance.
- Assessing opportunities for use of existing transmission corridors with vacant ROW or where a new transmission line could parallel an existing or proposed transmission line.
- Considering potential transmission line routings that have at least some existing roads or routes present that could be used to access the new transmission line.
- Seeking to avoid homes, schools, businesses, historic structures, and sensitive cultural resource areas.
- Attempting to route as much as possible over more compatible land uses, such as industrial and agricultural lands, while minimizing impacts to residential land, parks, and any special districts or areas of local or regional interest.
- Generally seeking to follow fence lines and span agricultural fields, orchards, or vineyards, where possible.
- Avoiding certain land uses that can pose compatibility issues such as gravel pits, mine leases, and airstrips, as well as land uses with environmental contamination.

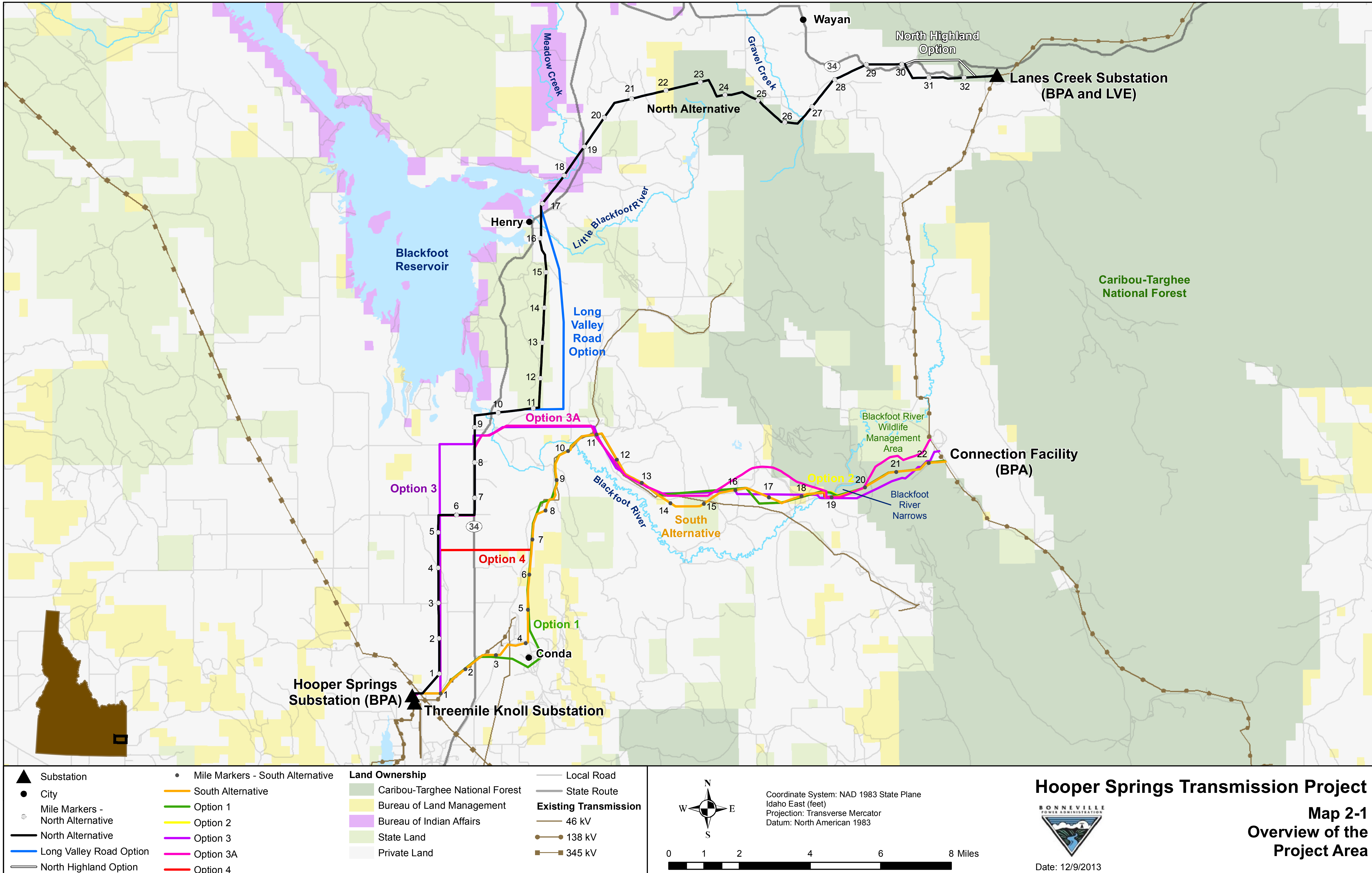
- Looking to site transmission structures on gentle terrain if available to avoid the greater difficulty in construction and access and the greater likelihood of erosion or landslides associated with steep slopes.
- Seeking to avoid wetlands, nesting sites, habitats of threatened and endangered species, and other sensitive areas wherever possible.
- Attempting to minimize costs by developing a route that is as short and straight as possible and that uses less expensive land (such as agricultural or forest lands) as much as is possible, given the consideration of the above factors.

Through the consideration of these factors, BPA develops a proposal for a route for the new transmission line, and, where feasible, identifies potential routing alternatives or options that could be implemented while still meeting the need for the Project. Because BPA's engineers work with BPA's environmental staff in identifying potential environmental and other constraints, the potential routes that are developed typically provide a good start at minimizing or avoiding effects on sensitive environmental resources, as well as minimizing or avoiding conflicts with existing land uses where feasible. These potential routes are then carried through the NEPA and other environmental review processes for further consideration. Through these processes, BPA gathers additional information about environmental resources and constraints, receives comments and suggestions from resource reports and the public concerning the potential routes, and works with potentially affected landowners along these routes. As a result, BPA may modify the routing of one or more of the previously identified routes, add in additional route, or further develop design details (such as road design and tower locations) for certain routes.

2.2 North Alternative

The North Alternative would consist of the following facilities (see Map 2-2 and Table 2-1):

- A new, approximately 33-mile-long, single-circuit 115-kV transmission line in Caribou County, Idaho that would extend from the proposed BPA Hooper Springs Substation generally north and then east to the existing LVE Lanes Creek Substation.
- A new 138/115-kV BPA Hooper Springs Substation, which would be located about 3 miles directly north of the city of Soda Springs, Idaho, along Threemile Knoll Road in Caribou County, Idaho, and would occupy approximately 5.8 acres.
- New 115-kV substation facilities within the boundaries of LVE's existing Lanes Creek Substation, which is located east of the unincorporated community of Wayan, Idaho.



Hooper Springs Transmission Project

Map 2-1
Overview of the Project Area

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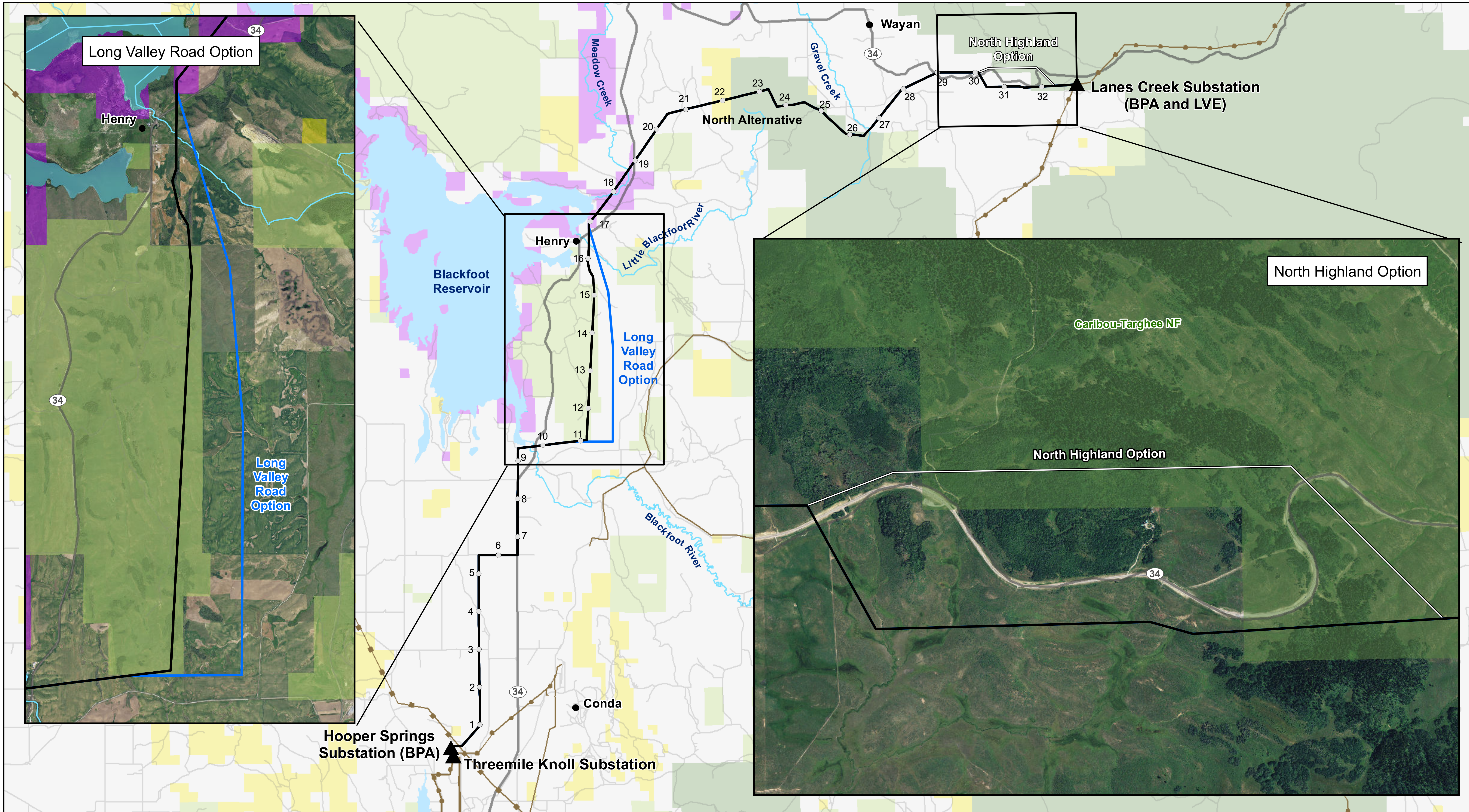

- Substation
- City
- Mile Markers - North Alternative
- North Alternative
- Long Valley Road Option
- North Highland Option

Land Ownership

- Caribou-Targhee National Forest
- Bureau of Land Management
- Bureau of Indian Affairs
- State Land
- Private Land

- Local Road
- State Route

Existing Transmission

- 46 kV
- 138 kV
- 345 kV

N S W E

0 1 2 4 6 8 Miles

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

BONNEVILLE POWER ADMINISTRATION

Date: 12/19/2013

Hooper Springs Transmission Project

Map 2-2
North Alternative Route Options

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Table 2-1. Engineering Characteristics of the Proposed Alternatives and Route Options[1]

Characteristics	North Alternative	Long Valley Road Option (North)[2]	North Highland Option (North)[2]	South Alternative	Option 1 (South)[3]	Option 2 (South)[3]	Option 3 (South)[3]	Option 3A (South)[3]	Option 4 (South)[3]
Line lengths	33 miles (115-kV); 0.2 mile (138-kV)	34 miles (115-kV); 0.2 mile (138-kV)	33 miles (115-kV); 0.2 mile (138-kV)	22.5 miles (115-kV); 0.2 mile (138-kV)	23 miles (115-kV); 0.2 mile (138-kV)	22.4 miles (115-kV); 0.2 mile (138-kV)	24 miles (115-kV); 0.2 mile (138-kV)	24 miles (115-kV); 0.2 mile (138-kV)	23.2 miles (115-kV); 0.2 mile (138-kV)
Voltage/circuits	115-kV and 138-kV/single	115-kV and 138-kV/single	115-kV and 138-kV/single	115-kV/double; 138-kV single	115-kV/double; 138-kV single	115-kV/double; 138-kV single	115-kV/double; 138-kV single	115-kV/double; 138-kV single	115-kV/double; 138-kV single
Right-of-way widths	100 feet (115-kV); 150 feet (138-kV)	100 feet (115-kV); 150 feet (138-kV)	100 feet (115-kV); 150 feet (138-kV)	100 feet (115-kV); 150 feet (138-kV)100 feet	100 feet (115-kV); 150 feet (138-kV)	100 feet (115-kV); 150 feet (138-kV)	100 feet (115-kV); 150 feet (138-kV)	100 feet (115-kV); 150 feet (138-kV)	100 feet (115-kV); 150 feet (138-kV)
Corridor clearing widths	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet	C-TNF: 250 feet; All other lands: 100 feet
Structure types and materials	Single-circuit: -steel single pole (12 miles) -wood H-frame (0.2 mile for 138-kV line) -wood H-frame (21 miles)	Single-circuit: -steel single pole (12 miles) -wood H-frame (0.2 mile for 138-kV line) -wood H-frame (22 miles)	Single-circuit: -steel single pole (12 miles) -wood H-frame (0.2 mile for 138-kV line) -wood H-frame (21 miles)	Single-circuit: -wood H-frame (0.2 mile for 138-kV line) Double-circuit: -steel single pole (22.5 miles)	Single-circuit: -wood H-frame (0.2 mile for 138-kV line) Double-circuit: -steel single pole (23 miles)	Single-circuit: -wood H-frame (0.2 mile for 138-kV line) Double-circuit: -steel single pole (22.4 miles)	Single-circuit: -wood H-frame (0.2 mile for 138-kV line) Double-circuit: -steel single pole (24 miles)	Single-circuit: -wood H-frame (0.2 mile for 138-kV line) Double-circuit: -steel single pole (24 miles)	Single-circuit: -wood H-frame (0.2 mile for 138-kV line) Double-circuit: -steel single pole (23.2 miles)
Structure heights	Wood: 55 to 105 feet (ave. 80 feet) Steel: 80 to 110 (ave. 95 feet)	Wood: 55 to 105 feet (ave. 80 feet) Steel: 80 to 110 (ave. 95 feet)	Wood: 55 to 105 feet (ave. 80 feet) Steel: 80 to 110 (ave. 95 feet)	Wood: 85 feet Steel: 55 to 120 feet (ave. 90 feet)	Wood: 85 feet Steel: 55 to 120 feet (ave. 90 feet)	Wood: 85 feet Steel: 55 to 120 feet (ave. 90 feet)	Wood: 85 feet Steel: 55 to 120 feet (ave. 90 feet)	Wood: 85 feet Steel: 55 to 120 feet (ave. 90 feet)	Wood: 85 feet Steel: 55 to 120 feet (ave. 90 feet)
Number of new structures	234 (74 steel/160 wood)	241 (74 steel/167 wood)	234 (74 steel/160 wood)	210 steel	214 steel	211 steel	176 steel	174 steel	215 steel
Span length between structures	Average: 751 feet Max: 1,400 feet Min: 339 feet	Same as North Alternative	Same as North Alternative	Average: 730 feet Max: 1,071 feet Min: 198 feet	Same as South Alternative	Same as South Alternative	Same as South Alternative	Same as South Alternative	Same as South Alternative
Miles of new access roads needed	21.7	21.7	21.7	22.8	22.8	22.8	14	13.7	22.8
Miles of access roads needing improvement or reconstruction including construction of temporary roads	10.6	10.6	10.6	2	2	2	2	2.4	2
Number of pulling/tensioning sites	17	17	17	11	11	11	12	12	11
Overhead ground wire	1 wire steel, 2 wires wood	1 wire steel, 2 wires wood	1 wire steel, 2 wires wood	2 wires	2 wires	2 wires	2 wires	2 wires	2 wires
Substation or connection facility	New Hooper Springs Substation and new substation facilities within Lanes Creek Substation	New Hooper Springs Substation and new substation facilities within Lanes Creek Substation	New Hooper Springs Substation and new substation facilities within Lanes Creek Substation	New Hooper Springs Substation and new connection facility with LVE's transmission system	New Hooper Springs Substation and new connection facility with LVE's transmission system	New Hooper Springs Substation and new connection facility with LVE's transmission system	New Hooper Springs Substation and new connection facility with LVE's transmission system	New Hooper Springs Substation and new connection facility with LVE's transmission system	New Hooper Springs Substation and new connection facility with LVE's transmission system
Construction costs	$72.5 million	Same as North Alternative	Same as North Alternative	$62.4 million	Same as South Alternative	Same as South Alternative	Same as South Alternative	Same as South Alternative	Same as South Alternative
Projected annual operational and maintenance costs	$10,000-20,000	$10,000-20,000	$10,000-20,000	$10,000-20,000	$10,000-20,000	$10,000-20,000	$10,000-20,000	$10,000-20,000	$10,000-20,000

[1] All alternatives and options include the 0.2-mile, single-circuit 138-kV transmission line from Threemile Knoll Substation to the proposed Hooper Springs Substation.

[2] North Alternative options all start at Hooper Springs Substation and end at LVE's Lanes Creek Substation.

[3] South Alternative options all start at the Hooper Springs Substation and end at the connection facility with LVE.

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- A new 0.2-mile, single-circuit 138-kV transmission line that would extend from the proposed Hooper Springs Substation generally south to PacifiCorp's existing 345/138-kV Threemile Knoll Substation (required to connect the new line to the regional transmission grid).

Improvement or reconstruction of approximately 8.1 miles of existing access roads along the transmission line ROWs, along with associated spur roads within the ROWs; and construction of approximately 23.8 miles of new permanent access roads along the transmission line ROWs and at Hooper Springs Substation, along with associated spur roads within the ROWs. The following describes the various components of the North Alternative in more detail.

2.2.1 Easements and Land

The corridor for the North Alternative is composed of private property and lands under federal and state ownership. Construction of the North Alternative would require easements for single-circuit transmission line ROWs and access roads. In general, a 100-foot-wide ROW would be needed for the new single-circuit 115-kV transmission line, a 150-foot-wide ROW for the new 138-kV line, and a 50-foot-wide easement for new and reconstructed access roads (see Table 2-1). A 20-foot-wide easement would be needed for access roads that need improvement only (see Section 2.2.4, Access Roads, for a description of new construction, reconstruction, and improvement activities). The width needed (100 and 150 feet) for the transmission line ROWs is intended to ensure that the transmission line is a safe distance from other objects and structures, such as trees and buildings.

Where transmission line facilities and access roads would be located on privately owned land, BPA would purchase easements from the underlying private landowner. Similarly, BPA would purchase easements for facilities located on state of Idaho lands. Most easements for the transmission lines would give BPA the rights to construct, operate, and maintain the lines in perpetuity. On C-TNF, BLM, and BIA-managed lands, BPA would apply to those federal agencies to secure the necessary special use permits or easements. Although the underlying landowner would still own and use the property, BPA would not permit any uses of the transmission line ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities except where the ROWs would cross mining leases. These restrictions would be part of the legal rights that BPA would acquire for the transmission lines. Where the ROW would cross a mining lease, the rights on the leased phosphate reserves supersede all surface use special use permits or easements, including those for the transmission line, and therefore BPA would be unable to restrict use of these areas. However, the leases do allow for other authorizations or surface uses as long as they do not unreasonably interfere with the rights of the lessee.

Construction of the North Alternative also would require the purchase of land for the proposed Hooper Springs Substation. Through this purchase, BPA would own approximately 11 acres of the property in fee (absolute) title.

The existing LVE Lanes Creek Substation currently operates under a special use permit from the C-TNF. BPA would negotiate and enter into a tenant agreement with LVE to use a portion of its existing substation land. Substation construction work within the boundaries of the existing Lanes Creek Substation would not require additional lands outside of the existing fenced area.

2.2.2 Transmission Lines

As described above, the North Alternative would involve construction of a single-circuit 115-kV transmission line between the proposed Hooper Springs Substation and LVE's existing Lanes Creek Substation, and a 138-kV transmission line between the Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation. This section describes the elements of each of these transmission lines. Although many aspects of these two transmission lines would be similar, some aspects would differ as discussed below.

Transmission Line Routing

From the proposed Hooper Springs Substation, this line would head generally northeast for about 1 mile and then turn due north for approximately 5 miles west of Three Mile Road to China Hat Road (see Map 2-2). Parallel to China Hat Road, the route would travel east about 1 mile, cross Idaho State Highway 34 (Highway 34), and then turn north. The line would continue for about another 10 miles generally north-northeast to a point near the unincorporated community of Henry, Idaho along the eastern side of the Blackfoot Reservoir, making two 90-degree turns along the way. From Henry, the line would cross Highway 34 and turn in a more northeasterly direction and continue for approximately 8 miles to a point about 1 mile west of the unincorporated community of Wayan, Idaho. From that point, the line would continue generally east for about 8 miles crossing Highway 34 twice more before reaching LVE's existing Lanes Creek Substation.

The proposed 138-kV transmission line would travel south from the proposed Hooper Springs Substation to PacifiCorp's existing Threemile Knoll Substation for its entire 0.2-mile length (see Map 2-2).

Alternative Route Options

<u>Long Valley Road Option</u>

The first route option for a segment of the 115-kV transmission line has been identified north of Soda Springs and south of Henry, Idaho. This route option is referred to as the Long Valley Road Option because it generally parallels Long Valley Road. The southern end of this route option begins at the North Alternative corridor transmission line mile (line mile) 11 and the northern end, where the option rejoins the proposed transmission line route, is located at line mile 17 (see Map 2-2). This route option traverses private agricultural and grazing lands, and would be located east of lands owned and managed by the state of Idaho. This option would increase the length of the transmission line by approximately 0.6 mile (see Table 2-1).

<u>North Highland Option</u>

A second route option has been identified for a segment of the transmission line that traverses private land and C-TNF lands at the northeastern extent of the North Alternative corridor. This route option is referred to as the North Highland Option because it travels north of Highway 34.

The North Highland Option would move a portion of the North Alternative corridor approximately 0.5 mile to the north between line miles 31 and 33. This option is about 2.2 miles long and is the same length as the portion of line replaced on the North Alternative (see Map 2-2 and Table 2-1).

Transmission Structures

The North Alternative would require approximately 234 new structures over its 33-mile length. Approximately 10.9 miles would be constructed using approximately 74 steel single-pole structures between Hooper Springs Substation and line mile 12 (see Map 2-2 and Table 2-1). Steel single-pole structures would be used certain agricultural areas to minimize impacts on crop cultivation activities, because they have a smaller footprint than H-frame structures. Approximately 160 wood, H-frame structures would be installed over the remaining approximately 21 miles between line mile 12 and the Lanes Creek Substation (see Map 2-2). The proposed 138-kV transmission line would require two wood, H-frame structures over its approximately 0.2-mile length.

The Long Valley Road Option would be constructed using steel single-pole structures rather than wood H-frame structures (requiring the use of 7 additional steel structures compared to the North Alternative (see Table 2-1). All of the North Highland Option would be composed of wood, H-frame structures and would require about the same number of wood-pole structures as the North Alternative portion of line described above.

A flat, graveled pad would be constructed at each steel pole structure (except in flat areas) along the North Alternative corridor. The area would be about 40 feet wide by 80 feet long (0.07 acre permanent disturbance) and would provide a pad for a crane to sit on during assembly of the steel pole structures (see Table 2-2). Most of these pads would be left in place during operation depending on the type of land use present.

To assemble and erect the steel single-pole and wood H-frame structures for both lines, an area about 100 feet by 100 feet (0.2 acre) would be temporarily disturbed at each site for construction equipment maneuvering and structure assembly (see Table 2-2). The area permanently disturbed would be about 0.012 acre for steel single-poles and 0.01 acre for wood H-frame structures. The disturbed areas would be restored to their original contours and revegetated. Structure heights at particular locations would depend on terrain, the length of the span, and other factors.

Wood Structures

The wood, 115-kV H-frame structures for the North Alternative would be approximately 20 inches in diameter at the base and 55 to 105 feet tall (typical height would be 80 feet tall). Figure 2-1 depicts the proposed structures. The 138-kV wood structures would be similar and about 80 to 85 feet tall. Individual poles for each H-frame structure for the 115-kV line would be spaced about 12 feet apart and about 23 feet apart for the 138-kV line. Structures for the 115-kV and 138-kV lines would be generally spaced about 750 and 400 feet apart, respectively.

BPA would use three types of H-frame structures for the North Alternative: suspension structures, angle suspension structures, and dead-end structures (see Figure 2-1). These structures may be made up of two or three wood poles depending on their purpose. Most of the proposed

H-frame structures would be two-pole suspension structures that would be used on relatively straight stretches of line or where turning angles between structures are generally less than 8 degrees. Only two poles would be used because the structures would not have to withstand the stresses created by angles in the conductor. Angle suspension structures would be used on smaller angles and would look like suspension structures.

Three-pole angle structures would be located at points where the line changes direction, generally at angles of 6 degrees or more. Three-pole dead-end structures would be used where the line makes a sharp turn or when the conductor tension changes. Dead-end structures are much stronger than suspension structures to hold the tension of the conductors.

Dead-end structures would be placed at intervals along the transmission line to independently carry the weight and tension of the conductors. Dead-end structures could also be used on very long spans, such as river crossings.

Some structures, such as dead-end or angle structures may require guy wires that provide stability to structures subject to stress. Guy wires would be attached at various points along the structure and anchored into the ground with anchor plates. The guy wire disturbance area would be included in the structure work area. Most guy wires would be within the North Alternative ROW; however, about 25 structures would have guy wire anchors from 1 to 48 feet outside of the ROW, and no further than 50 feet from the ROW edge.

Steel Pole Structures

The steel poles for the North Alternative would be about 3 to 6 feet in diameter (3 to 4 feet diameter for suspension and 6 feet diameter for dead-end structures) at the base and range from 80 to 110 feet tall, with an average height of 95 feet. Steel poles consist of multiple hollow sections of various lengths that are connected and embedded in the ground.

Permanent guy wires would not be required on steel pole structures except for one to two structures adjacent to Hooper Springs Substation, which may require guy wires. For those structures, permanent guy wire anchors would be secured with in-ground anchors with a permanent disturbance area of about 10 feet by 40 feet (0.009 acre). Temporary guy wires would be used to support construction of the dead-end steel pole structures from Hooper Springs Substation to line mile 10.9. The temporary guy wires would be secured with temporary in-ground anchors or with large equipment as the guy wire anchor. Ground disturbance for temporary anchors would be about 10 feet by 40 feet and would be within the 0.2 acre temporary disturbance area at dead-end steel structure sites.

Table 2-2. Ground Disturbance for the Proposed Alternatives and Route Options[1] (acres)

Disturbance	North Alternative	Long Valley Road Option (North)[2]	North Highland Option (North)[2]	South Alternative	Option 1 (South)[3]	Option 2 (South)[3]	Option 3 (South)[3]	Option 3A (South)[3]	Option 4 (South)[3]
Construction									
Structure Installation[4]	47	48	47	42	43	42	35	35	43
Counterpoise Installation[5]	2.1	2.2	2.1	1.9	1.9	1.9	1.6	1.6	1.9
Access Roads (new, improved, reconstructed, and temporary)[6]	117	117	117	84	84	84	58	59	84
Substation[7]/Connection Facility	Hooper Springs: 8.3	Hooper Springs: 8.3	Hooper Springs: 8.3	Hooper Springs: 8.3 Connection Facility: 0.9	Hooper Springs:8.3 Connection Facility: 0.9	Hooper Springs: 8.3 Connection Facility: 0.9	Hooper Springs: 8.3 Connection Facility: 0.9	Hooper Springs: 8.3 Connection Facility: 0.9	Hooper Springs: 8.3 Connection Facility: 0.9
Pulling/Tensioning Sites[8]	12	12	12	8	8	8	8.4	8.4	8
Total Construction	**186**	**188**	**186**	**145**	**146**	**145**	**112**	**113**	**146**
Permanent									
Structure Footings[9]	2.5	2.5	2.5	2.5	2.6	2.5	2.1	2.1	2.6
Crane pads[10]	12.2 (174 pads)	12.7 (182 pads)	12.2 (174 pads)	11.4 (163 pads)	11.7 (167 pads)	11.4 (163 pads)	8 (113 pads)	8 (113 pads)	11.7 (167 pads)
Access Roads (new, improved, and reconstructed)[6]	117	117	117	84	84	84	56	57	84
Substation[11]/Connection Facility	Hooper Springs: 5.8	Hooper Springs: 5.8	Hooper Springs: 5.8	Hooper Springs: 5.8 Connection Facility: 0.008	Hooper Springs:5.8 Connection Facility: 0.008	Hooper Springs: 5.8 Connection Facility: 0.008	Hooper Springs: 5.8 Connection Facility: 0.008	Hooper Springs: 5.8 Connection Facility: 0.008	Hooper Springs: 5.8 Connection Facility: 0.008
Total Permanent	**137.5**	**137**	**137.5**	**103.7**	**104**	**103.7**	**72**	**73**	**104**

[1] All alternatives and options include the 0.2-mile, single-circuit 138-kV transmission line from Threemile Knoll Substation to the proposed Hooper Springs Substation.

[2] North Alternative options all start at Hooper Springs Substation and end at LVE's Lanes Creek Substation.

[3] South Alternative options all start at Hooper Springs Substation and end at the connection facility with LVE.

[4] A construction disturbance area of 0.2 acre (100 feet by 100 feet) was used to calculate temporary disturbance at structure sites for both steel poles and wood H-frame structures. This area includes the disturbance area for crane pads.

[5] Because a portion of the construction disturbance area from installation of counterpoise is within the temporary structure disturbance area the following method was used to determine ground disturbance for counterpoise: the distance between the structure and edge of the temporary structure disturbance area was subtracted from the length of the counterpoise trench (100 feet – 50 feet = 50 feet x 4 wires = 400 feet x 2 foot wide trench x number of structures = acres).

[6] Access road disturbance for construction and permanent ground disturbance was calculated using a width of 30 feet because access roads would be constructed and maintained to provide a 12 to 20 feet wide travel surface.

[7] Assumes that the area within the proposed substation fenced area for Hooper Substation would be disturbed during construction. Assumes all ground disturbance at Lanes Creek Substation for the North Alternative is within already disturbed ground.

[8] A disturbance area of 0.7 acre (100 feet by 300 feet) was used to calculate temporary disturbance at pulling/tensioning sites.

[9] A disturbance area of 0.012 acre (26 foot diameter) was used to calculate permanent footing disturbance for steel poles and 0.01 acre (10 feet by 30 feet) for wood H-frame structures.

[10] disturbance area of 0.07 acre was used to calculate the permanent disturbance area for crane pads at all structures not located in a flat area.

[11] Assumes permanent ground disturbance would occur within the actual Hooper Springs Substation footprint within the larger 11 acre parcel.

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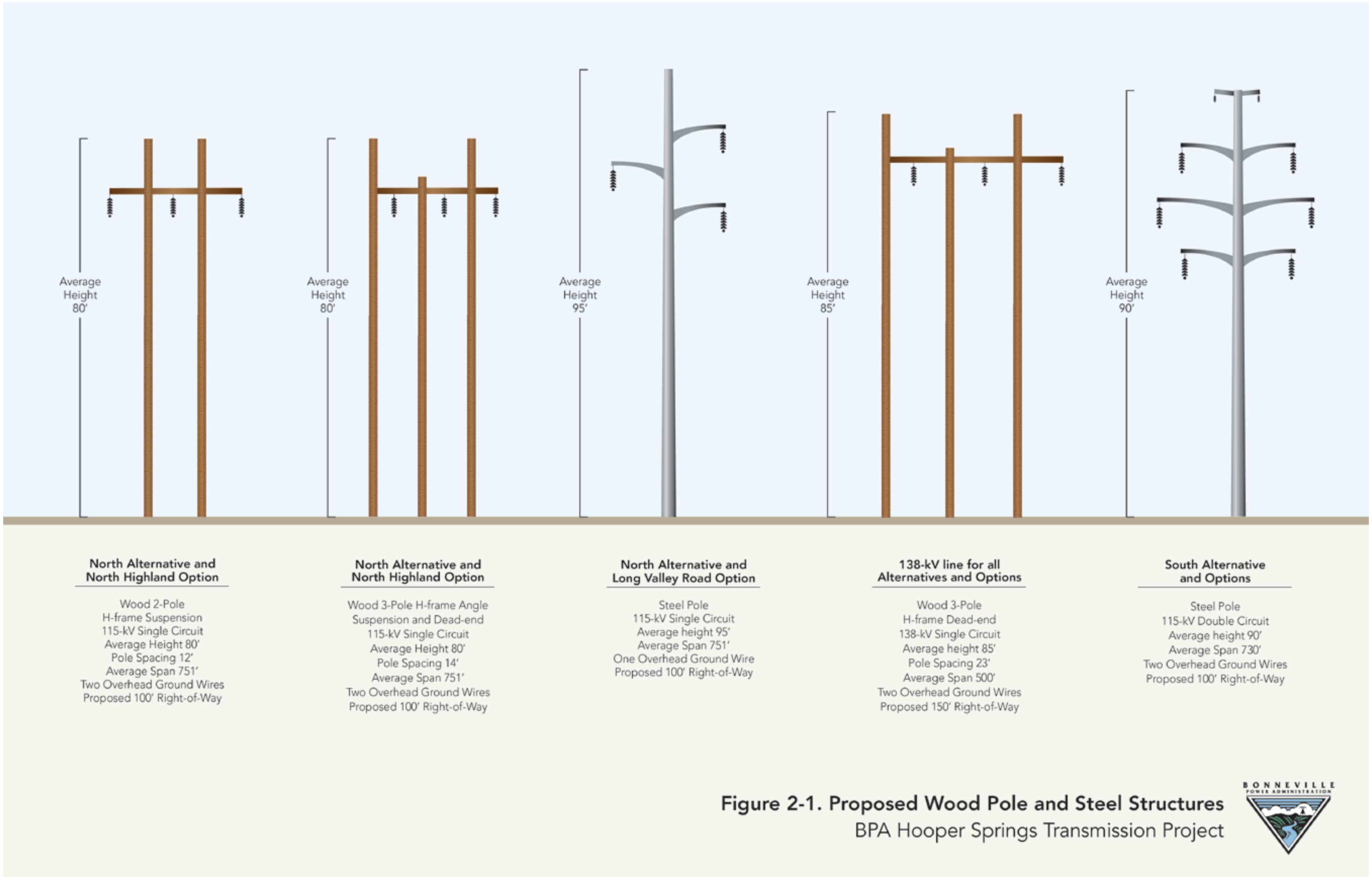
Figure 2-1. Proposed Wood Pole and Steel Structures



Structure Footings

All wood structures and most steel structures for the North Alternative would be directly embedded into the ground. A drill rig would be used to auger the holes for the poles in areas of minimal rock. The average hole depth for suspension structures would be approximately 10 feet for wood poles and 15 feet for steel poles. Dead-end steel pole structures would require a concrete footing approximately 6 feet in diameter and 30 feet deep. Backfill for the structures would typically be brought from offsite, although in limited access areas, soil and rock removed during excavation may be used to backfill after the structures are installed.

Conductors

The wires that carry the electrical current on transmission lines are called conductors. For alternating-current transmission line circuits, a three-phase system is used, with each phase requiring a conductor. Accordingly, three conductors make up one circuit; each single-circuit structure for the line would thus hold three conductors. The conductors are not covered with insulating material as are those on, for example, electrical appliances, but are physically separated from one another on the transmission structure. Air serves as the insulating material.

Conductors are attached to the structures using insulators. Insulators are bell-shaped devices that prevent electricity from jumping from the conductors to the structure and going to the ground. The North Alternative would use non-reflective ceramic insulators.

The conductor would need to be fitted together where one reel of conductor ends and a new reel begins. Conductor fittings would be made using hydraulic compression where a press is used to compress the fittings on the conductor. Conductors would need to be fitted once about every 1.5 to 2 miles. See Pulling and Tensioning Sites, for a description of the area needed to pull and tighten conductors.

For safety reasons, BPA has established minimum conductor heights above ground and other obstacles that meet or exceed National Electrical Safety Code (NESC) clearance requirements.

Overhead Ground Wires and Counterpoise

One to two small wires (0.38-inch diameter), called overhead ground wires, would be attached to the top of the structures for the North Alternative. Steel pole structures would have one overhead ground wire, while wood pole structures would have two. The ground wires are strung from the top of one structure to the next. Ground wires are used for lightning protection. If lightning strikes, the overhead ground wire takes the charge instead of the conductors.

To take the lightning charge from the overhead ground wires and dissipate it into the earth, a series of wires called counterpoise would be buried in the ground at the base of the steel and wood pole structures and within the North Alternative transmission line ROW. Counterpoise could be needed at every structure, depending on the soil types present. Up to four counterpoise wires could be buried up to 100 feet from the structure. The wires would be buried at a distance and depth designed to meet BPA soil resistivity standards. The wire is usually buried 12 to 18 inches deep depending on excavation method, except in cultivated areas where it could be buried about 30 inches deep or to an even greater depth if a farmer uses deeper plowing methods.

Typically, counterpoise wires would run down the centerline of the ROW from each side of the structure. Two other wires would run at 90-degree angles away from each side of the structure and would be located within the ROW at a distance of approximately 40 feet off centerline. For wood pole structures, two ground rods would be driven into the ground between 1.5 and 6 feet from each of the outside poles and connected to counterpoise. Where there are obstructions, buried utilities, or environmentally sensitive areas, the counterpoise design would be changed to avoid these areas.

During construction, the counterpoise could be buried several ways. Installers could use backhoes, trenchers, vibrating plows, or occasionally hand digging depending on the depth, soils, terrain, and size of buried rock. With a backhoe, the trench would be 12 or more inches wide. Removed soil and rocks would be piled to the side and placed back in the trench to cover the counterpoise. If a trencher is used, the trencher would open up a 4 to 6 inch trench and lift up the soil to the side. The soil would be pushed back into the trench after the counterpoise is installed. Large tractors would use a vibrating plow to force a blade into the ground. The counterpoise would then run through a hole in the blade and trail out behind the blade at a specified depth. For the purpose of this analysis, it is assumed that the trench associated with installation would be approximately 24 inches wide and 3 feet deep (see Table 2-2 for a description of the temporary disturbance area used for counterpoise installation).

Fiber Optic Cable (138-kV Transmission Line)

A fiber optic cable would be installed from Threemile Knoll Substation to the proposed Hooper Springs Substation along the 0.2 mile 138-kV transmission line. No fiber optic cable is proposed for the 115-kV transmission line. The fiber would be used for communications as part of the power system. Fiber optics technology uses light pulses rather than radio or electrical signals to transmit messages. This communication system can gather information about the system (such as the line-in service and the amount of power being carried, meter reading at interchange points, and status of equipment and alarms). The fiber optic cable allows voice communications between power dispatchers and line maintenance crews and provides instantaneous commands that control the power system operation.

The fiber optic cable would be less than 1 inch in diameter and would be installed underground between Threemile Knoll Substation and the southern structure and between the northern structure and Hooper Springs Substation. Between the two structures, the cable would be installed either as the overhead ground wire or independently on the structure.

Pulling and Tensioning Sites

Pulling and tensioning sites are areas used for pulling and tightening the conductors to the correct tension once they are mounted on the transmission structures. As is typical for transmission lines, pulling and tensioning sites for the North Alternative would be needed about every 2 to 3 miles along the transmission line route (see Table 2-1). About 17 temporary pulling and tensioning sites would be required for construction of the North Alternative and two sites would be required for the 138-kV line. Pulling sites would be within or next to the North Alternative ROW. These sites would include a flat area to place a large flatbed trailer that holds the reels of conductor or a tensioning machine. An area about 100 feet wide by 300 feet long, or about 0.7 acre, would be temporarily disturbed at each pulling and tensioning site.

Pulling and tensioning of the proposed lines also may require "snubs," which are trenches about 8 feet deep by 4 feet wide by 12 feet long. These snubs would be located in the ROW. After the conductor is pulled through the structures and before it is strung under tension, it is tied off on poles buried in the snub. These trenches would be backfilled and restored following construction.

The appropriate locations for pulling sites and snubs are determined by the construction contractor using environmental and land use information provided by BPA. If pulling sites are identified outside of the North Alternative ROW, additional surveys for cultural resources and/or flora and fauna could be required.

Staging Areas and Other Work Areas

Two temporary staging areas would be needed along or near the proposed transmission line for construction crews to store materials, equipment and vehicles, and house a small office trailer. One of the staging areas would be located near the Hooper Springs Substation and would be used for both the 115-kV and 138-kV lines. The second staging area would be located near the eastern end of the North Alternative corridor. It is anticipated that approximately 10 acres of land would be required for staging areas. The contractors hired to construct the transmission line would be responsible for determining appropriate staging area locations. Often contractors rent empty parking lots or already developed sites for this purpose. Other temporary work areas include field storage yards, soil borrow areas, conductor splice sites, heliports, and road turnarounds. Environmental review of staging and other work areas would be conducted prior to approval for use if necessary.

2.2.3 Substation Facilities

Substations are an important part of the electric transmission system that interconnect transmission lines; transform (i.e., change) voltages to higher or lower levels; regulate voltage; and disconnect lines for maintenance, fault, or outage conditions.

The proposed Hooper Springs Substation would be located at the southwestern end of the North Alternative corridor. This substation would be used primarily to transform voltages between the proposed 138-kV transmission line that would extend from PacifiCorp's existing Threemile Knoll Substation (a 345/138-kV substation) to the Hooper Springs Substation, and the proposed 115-kV transmission line that would extend from the Hooper Springs Substation to LVE's existing 115-kV Lanes Creek Substation. Accordingly, the Hooper Springs Substation would be constructed as a 138/115-kV substation. The Hooper Springs Substation would be located relatively close (about 0.2 mile) to the Threemile Knoll Substation, and would permenantly occupy approximately 5.8 acres (see Figure 2-2). An additional 3.5 acres surrounding the substation footprint would be temporarily disturbed during construction (see Table 2-2).

The proposed substation facilities that would be constructed at LVE's existing Lanes Creek Substation would be located at the northeastern end of the North Alternative corridor. These facilities would provide an interconnection at the Lanes Creek Substation of the proposed

115-kV transmission line with LVE's existing transmission system. These facilities would all be located within the existing fenced boundary of the Lanes Creek Substation (see Figure 2-3).

Figure 2-2. Area of the Proposed Hooper Springs Substation (Threemile Knoll Substation is to the left)

Figure 2-3. Existing Lanes Creek Substation

The proposed Hooper Springs Substation would contain electrical and other equipment typical of a utility substation, including the following:

- **Transformer**—a device for transferring electrical energy from one circuit to another by magnetic induction, usually between circuits of different voltages. It consists of a magnetic core on which there are two or more windings.
- **Power circuit breakers**—a switching device that can automatically interrupt power flow on a transmission line at the time of a fault, such as a lightning strike, tree limb falling on the line, or other unusual event. The breakers would be installed at the substation to redirect power as needed. Several types of breakers have been used in BPA substations.
- **Switches**—devices used to mechanically disconnect or isolate equipment. Switches are normally located on both sides of circuit breakers.
- **Bus tubing and pedestals**—Ridged aluminum pipes that the power flows on within the substation.
- **Control house and conduit**—typically a one-story building with communication equipment and switches necessary to turn equipment on and off. Some control houses are plumbed for bathroom facilities and have a work space for personnel. Underground conduit throughout the substation connects the yard equipment to the control house. Electrical service for the control house and conduit would be from the new transmission lines.
- **Substation dead-end structures**—structures within the substation where incoming or outgoing transmission lines end or begin. Substation dead-ends are typically the tallest structure within the substation.
- **Grounding mat**—a wire mesh mat laid about 18 inches below ground throughout the substation, extending outside the fence perimeter. Equipment is connected to the mat for grounding, for the protection and safety of both equipment and personnel.
- **Substation rock surfacing**—a 3-inch-thick layer of rock, selected for its insulating properties, placed on the ground within the substation to protect operation and maintenance personnel from danger during substation electrical failures.
- **Substation fence**—a chain-link fence with barbed wire on top surrounding the substation for security and public safety.
- **Stormwater retention system**—stormwater management involves careful measures to prevent sediment and other pollutants from entering surface or groundwater, treatment of runoff to reduce pollutants, and flow controls to reduce the impact of altered hydrology.

The Lanes Creek Substation would contain much of this same equipment, but would be different since it would be constructed within an already-established substation site and also would not require voltage transformer equipment. The main equipment that would be installed at the Lanes Creek Substation would include breakers, disconnect switches, dead end structures, and a control house. Electrical service for the new control house is already present at Lanes Creek Substation.

Both the Hooper Springs and Lanes Creek substations would be unmanned. The substations would be automated and could be controlled remotely. The substation operator would visit the substations as needed weekly or monthly. Maintenance crews would perform maintenance on equipment as necessary.

2.2.4 Access Roads

Access roads are the system of roads that BPA's construction and maintenance crews would use to get to the structures or structure sites along the transmission lines and to the substation. Engineers design roads to be used by cranes, excavators, supply trucks, boom trucks, log trucks, and line trucks. Roads are built within the transmission line ROW as much as possible. Access road approaches would be from public roads. If existing access roads can be used, they would be improved or reconstructed as necessary. Some new access roads, both temporary and permanent, would be needed. Temporary roads are typically constructed in areas where a permanent road is not desired but improvements are needed to get equipment across the existing ground. These areas include agricultural fields or wet areas where the ground is too soft to support equipment.

Spur roads would be needed from the existing access roads to the new structure sites; spur roads would generally be within the ROW. Road turnarounds would be constructed where access roads end, typically at structure sites. Other turnarounds may be constructed specifically to minimize disturbance to adjacent sensitive resources.

The North Alternative would require the following access roads:

- Approximately 21.7 miles of new, permanent access road would be constructed including 900 feet of new road to access Hooper Springs Substation.
- Approximately 10.6 miles of existing access road would be improved or reconstructed.

New road construction includes all work associated with excavating the existing ground, hauling material in and out of the area, blading and shaping the roadbed, and placing gravel on top. Access road reconstruction typically occurs when an existing roadbed has deteriorated or does not conform to BPA's access road standards. Some excavation of the existing ground would be required to bring the road up to BPA standards but excavation would be less than that required for new construction. Gravel is then placed on top of the regraded road's subgrade. Access road improvement would occur on existing roads that are in a condition that meets BPA standards for width and curves but also require some gravel be added. Roads that are reconstructed may also be widened. All types of access road work could include installation or improvement of approximately 10 culverts and 22 drain dips. Four culverts in unnamed non-fish-bearing drainages to Gravel Creek would be required for the North Alternative.

Temporary road construction would include stripping existing topsoil/vegetation and placing it to the side followed by leveling the subgrade surface if necessary. Geotextile fabric would be placed on the subgrade with gravel spread on top for a driving surface. After use, the road would be removed by gathering and hauling off the gravel and geotextile. The existing ground would then be regraded to match the existing grade with the removed topsoil placed back in the original location. All disturbed areas would be restored to meet or exceed the condition of the areas prior to construction of the temporary road.

New and existing access roads for the North Alternative would provide a 14- to 20-foot-wide travel surface with about a 20- to 30-foot-wide total disturbed area. If tree roots are present in the cleared area, or if drainage and embankment construction work is required, the disturbance area could be more than 30 feet. Typically, a 50-foot-wide easement would be obtained from the landowner for new and reconstructed access roads. A 20-foot-wide easement would be acquired for access roads that require only improvement.

Dirt roads in the North Alternative area become slippery and impassible when wet. Gravel would be placed on roads where needed for dust abatement, stability, load bearing, and to keep the roads passable during wet soil conditions. Drain dips or water bars may also be needed on steep slopes or where access roads cross drainages that carry seasonal runoff.

Temporary roads would be reclaimed according to USFS, BLM, BIA, and other landowner requirements (i.e., erosion control measures installed, regraded, reseeded, etc.) following completion of the North Alternative. For permanent roads, BPA, in coordination with landowners, would install gates at the entrances to access roads to prevent motorized public access. There also would be gates in fences that separate animals or denote property lines. Gate locks would be coordinated with the landowners to ensure both BPA and landowner access.

2.2.5 Vegetation Clearing

When vegetation grows or falls close to a transmission line it can cause an electrical arc that can start a fire, cause an outage of the line, or injure or kill someone. Tall vegetation cannot be allowed to grow within the 100 or 150 foot transmission line ROWs. On either side of the new ROW, danger trees that pose a hazard to construction activities and reliable operation of the transmission line would be removed. In deep valleys with sufficient clearance, some trees may be left in place. During construction, low-growing plant communities would be protected as much as practicable and promoted as the basis for ongoing vegetation management following construction. Clearing would consider line voltage, vegetation species height and growth rates, ground slope, conductor location, span length (which influences conductor swing), stringing requirements, and the clearance distance required between the conductors and other objects.

In addition to vegetation clearing within the North Alternative ROW, vegetation would need to be cleared where new access roads are proposed outside of the ROW. Temporary roads would be reclaimed according to landowner preference and permanent roads would be reseeded with native or landowner preferred vegetation. Access roads that cross the C-TNF would be reseeded with native or C-TNF approved seed. Most of the vegetation along the North Alternative transmission line ROW is prairie and open areas, both of which are compatible with transmission lines. However, a portion of the North Alternative corridor would cross forested C-TNF lands where the C-TNF has requested BPA clear a 250-foot-wide area for the transmission line. The 250 foot cleared area would be centered on the 100 foot transmission line ROW and initially be cleared of all tall growing vegetation. During operation of the North Alternative, only vegetation within the 100 foot transmission line ROW would be managed as low growing. C-TNF made this request to reduce long-term disturbance to wildlife and vegetation within the forested areas along the North Alternative corridor.

Wheeled and tracked logging equipment would be necessary to clear the ROW and set structures, and would be allowed where slopes do not exceed 40 percent. Non-ground based equipment (helicopters or cable) would likely be required on slopes exceeding 40 percent on C-TNF lands. On all USFS lands, the C-TNF and BPA would mark and cruise the timber prior to clearing. The C-TNF would then sell merchantable timber directly to BPA in a settlement sale and BPA would hire a logger to conduct the logging work. Whole tree yarding is the preferred method for timber removal on the C-TNF; however, helicopter yarding may also be used in areas that are inaccessible to ground-based equipment. Slash and non-merchantable timber (cut trunks and branches) from clearing the North Alternative ROW would be cut into smaller pieces and spread in upland areas throughout the ROW. BPA would coordinate with C-TNF foresters to identify hazard trees.

On BLM lands, the Pocatello BLM RMP (BLM 2012) limits the use of ground-based equipment based on soil stability with a maximum slope of 30 percent on saturated or highly unstable slopes. BLM would mark and cruise the timber prior to clearing on BLM lands. BPA or its contractor would be responsible for the purchase and removal of timber. BPA also would coordinate with BLM foresters to identify hazard trees.

2.2.6 Construction Sequence

Construction of the proposed Hooper Springs Substation would begin with clearing and grading the site to provide a level work area. A ground mat, conduit for control cables, drainage, concrete footings for all the high voltage equipment, and structures would then be installed. After all the below grade work is completed, the above grade construction work would begin with the erection of the dead-end structures and pedestals to support the electrical bus. Other support structures would be installed for the high voltage equipment. The high voltage equipment would be bolted on the support structures and connected to the electrical bus by a short length of flexible conductor. Control cables would then be attached to the high voltage equipment and routed to the control house. A fence would be installed around the perimeter of the substation to provide for public safety and security. Access to Hooper Springs Substation for construction activities would be via a portion of an existing road, Threemile Knoll Road, with construction of an additional 900 feet of new road from the end of Threemile Knoll Road to the substation.

The Lanes Creek Substation work for the North Alternative would be located inside the existing substation fence. Construction at the Lanes Creek Substation would require minimum site preparation and construction of the above grade components would be similar to that described above for the Hooper Springs Substation.

Typically construction of the transmission line begins with clearing the ROW and danger tree areas, access roads, pulling and tensioning sites, installing temporary guard structures, and constructing crane pads and other workspaces. Temporary spur and access roads along the proposed transmission line ROWs and work areas would be constructed. Structure sites would then be cleared and graded, as needed, and erosion control devices would be put in place. Transmission line materials would be stockpiled at the staging sites.

For structure footings, holes would be excavated with an auger. Drilling and blasting could be required in some areas with bedrock. Structure pieces would be brought to each site; constructed; lifted into place using a line truck, crane or helicopter; and set into the excavated holes.

Temporary guy wires would be installed to support steel dead-end structures during conductor stringing and tensioning. Temporary guy wires are not required for steel suspension or wood pole structures. Holes would be backfilled with previously excavated native material. Salvaged topsoil would be used during the final reclamation of temporarily disturbed areas.

Before stringing conductor, temporary guard structures would be installed at all road, railroad, and overhead utility crossings to protect the public and prevent the conductor from falling at these sites. Two wood guard structures would be placed in augered holes, one on each side of the road or railroad crossing. A third wood pole would be used as a cross-arm to prevent the conductor from dropping. Typically, one guard structure would be used to prevent the conductor from contacting overhead utility lines that cross under the line.

Next, the conductor would be strung from structure to structure. A sock line (thick rope) would be placed in pulleys atttached to structures via helicopter or by hand and pulled through each structure. A hard line (smaller wire than conductor) would be attached to the end of the sock line and pulled back to where the conductor reel is located. The hard line would be connected to the conductor, which would be pulled through the pulleys to the other end of the pull. Some sites may require the conductor to be secured by snubbing the conductors in the snub trenches. The ground wires would also be strung using a similar method, with pulling sites on the ground to tighten the cable.

After the structures, conductors, and ground wires are installed, the construction contractor would remove construction equipment and debris and restore the disturbed areas. Soils used for agriculture in the temporary disturbance area that become compacted would be restored and reseeded after construction to reestablish close to original conditions. Topsoil would be spread as necessary and disturbed areas would be reseeded with a suitable seed mix. Existing and new permanent access roads would be repaired, as necessary. Temporary roads on C-TNF land for the North Alternative would be reclaimed according to USFS requirements (i.e., erosion control measures installed, land regraded, areas reseeded, etc.) and then blocked to restrict unauthorized travel following completion of project construction. Other temporary access roads would be reclaimed in accordance with landowner requests, BPA standards, or permit requirements.

2.2.7 Construction Schedule and Work Crews

If BPA decides to proceed with the Project after completion of all necessary environmental review, construction of the proposed substation and transmission lines could begin in spring 2015. BPA likely would construct the transmission lines over two phases. The first phase would involve the clearing of the ROW, some access road construction, structure footing installation, and substation construction. The second phase would involve the construction of the remaining components of the transmission lines and would occur in 2016. If this occurs, the new substation and transmission lines may be energized as early as fall 2016. This expected schedule would result in a total construction period of about 16 months. However, weather or other factors could delay or prolong the construction schedule.

One or more construction crews would clear vegetation, improve/construct access roads, and construct the lines. A typical construction crew would have the following:

- 10 to 15 construction workers
- 10 vehicles (pickups, vans)
- 4 bucket trucks
- 2 line trucks with cranes
- 1 to 2 large cranes
- 1 reel machine
- 2 large excavators
- 1 line tensioner
- 1 helicopter
- 2 all-terrain vehicles (ATVs)
- 1 water truck
- 3 water buffalo trucks for fire protection

A typical crew can usually construct about 10 miles of transmission line in 2 to 3 months. Actual workforce numbers would vary over time. During peak construction, about 50 workers would be working on the transmission lines at one time.

2.2.8 Maintenance

During the life of the transmission lines, BPA would perform routine and periodic maintenance, and emergency repairs on the transmission lines. Maintenance would typically involve replacing insulators or repairing guy wires, vegetation management, and soil stabilization.

BPA would be responsible for all maintenance of the lines and would conduct maintenance and safety inspections by helicopter twice a year. BPA typically conducts routine inspection patrols of the 15,000 circuit-mile federal transmission system in the Pacific Northwest by helicopter. These patrols are a separate and independent activity from construction of the Project but are discussed here to provide information about this activity.

Patrols are essential to determine where line maintenance is needed and to ensure continued reliability of the transmission system. Helicopter teams look for damaged insulators, damaged support members, washed-out roads, hazardous vegetation, encroachments, and other problems indicating that a repair may be needed.

Aerial inspections typically are followed by annual ground inspections for each transmission line. Maintenance vehicles would use access roads where established, and maintenance workers would walk through agricultural fields when able to avoid damage to crops. If repairs are needed or in emergency situations, vehicles and equipment would need to drive through fields and could cause damage to crops, vegetation, and other property. BPA would compensate landowners for damages.

Vegetation control and soil stabilization are two main components of the maintenance program. Tall-growing vegetation is regularly removed from the corridor and from around structures so as not to interfere with the conductors. Access roads are graded, seeded, ditched, and rocked in order to reduce soil erosion as needed. In an effort to maintain native low growing vegetation, grass is not removed while brush within the road bed and on each side is mowed. Branches from roadside trees that could affect vehicle traffic are also removed.

BPA's vegetation management would be guided by its Transmission System Vegetation Management Program EIS (BPA 2000) and Record of Decision (August 23, 2000). BPA adopted an integrated vegetation management strategy for controlling vegetation along its transmission line ROWs. This strategy involves choosing the appropriate method for controlling the vegetation based on the type of vegetation and its density, the natural resources present at a particular site, landowner requests, regulations, and costs. BPA may use a number of different methods: manual (hand-pulling, clippers, chainsaws), mechanical (roller-choppers, brush-hogs), biological (insects or fungus for attacking noxious weeds), and herbicides.

Noxious weed control is also part of BPA's vegetation maintenance program. BPA works with the county weed boards and landowners on area-wide plans for noxious weed control. Prior to controlling vegetation, BPA would send notices to landowners and request information that might help in determining appropriate methods and mitigation measures (such as herbicide-free buffer zones around springs or wells). BPA also would conduct pre- and post-construction weed surveys to identify potential weed introduction or possible spread areas and focus monitoring and treatment in any areas where noxious weeds were present.

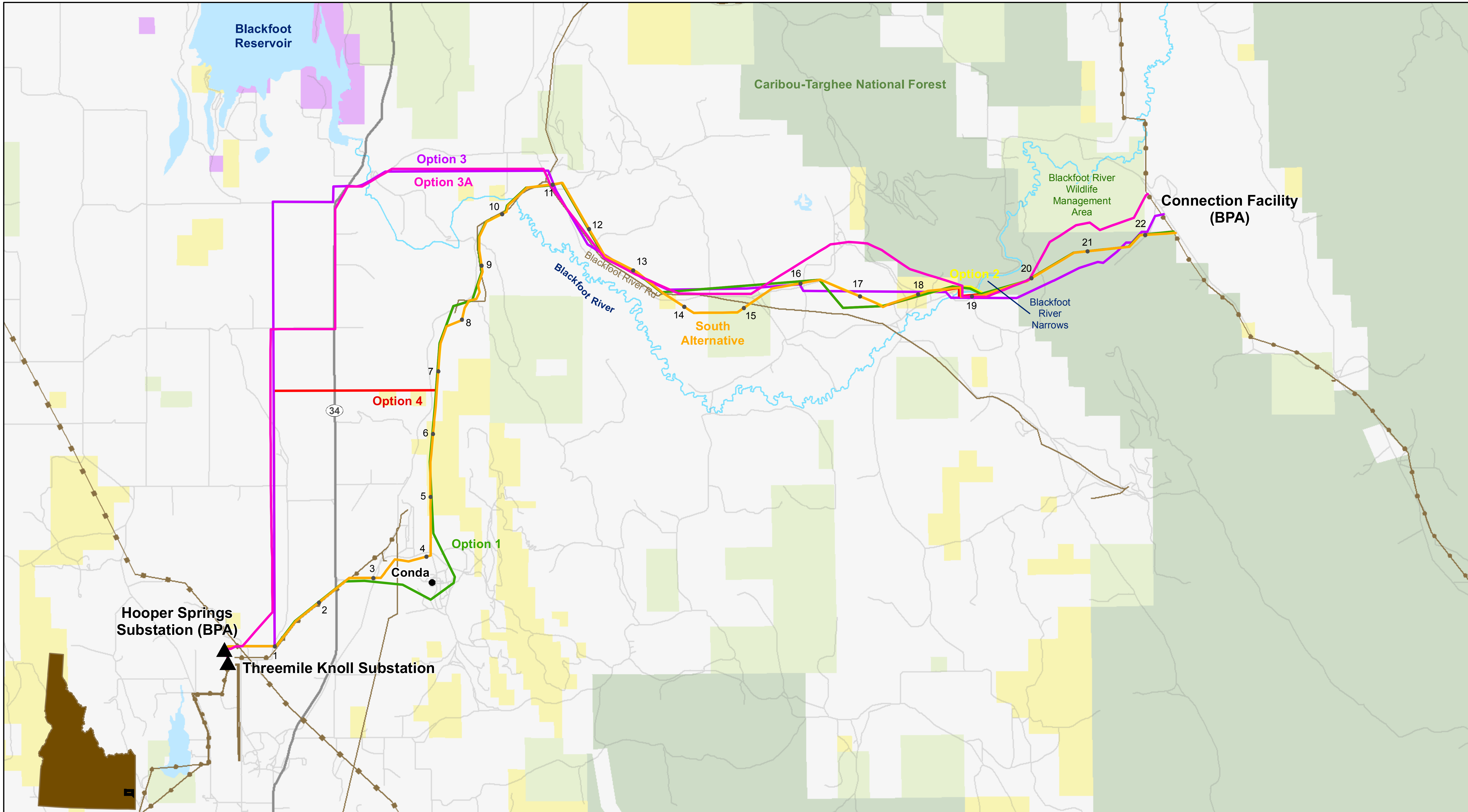
2.2.9 Estimated Cost

Construction cost of the Hooper Springs Substation, additions to Lanes Creek Substation, and construction of the proposed 33-mile-long single-circuit115-kV and 0.2-mile-long 138-kV transmission lines are estimated to total about $72.5 million (see Table 2-1). Annual maintenance costs would be about $10,000 to $20,000.

2.3 South Alternative

The South Alternative and its route options are the same as the action alternatives considered by BPA in the 2009 Preliminary EA for the Project except for an additional option (Option 3A). The South Alternative would consist of the following facilities (see Map 2-3 and Table 2-1):

- A new, approximately 22.5-mile-long, double-circuit 115-kV transmission line that would extend from BPA's proposed Hooper Springs Substation generally north to northeast for 6 to 8 miles before turning generally east to a proposed connection with LVE's existing transmission system in Caribou County, Idaho.
- A new 138/115-kV BPA Hooper Springs Substation, which would be located in the same location as discussed above for the North Alternative.
- A new connection facility with LVE's existing transmission system at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road.



Substation	Mile Markers - South Alternative	City
South Alternative	**Land Ownership**	Local Road
Option 1	Caribou-Targhee National Forest	State Route
Option 2	Bureau of Land Management	**Existing Transmission**
Option 3	Bureau of Indian Affairs	46 kV
Option 3A	State Land	138 kV
Option 4	Private Land	345 kV

N W E S

0 0.5 1 2 3 4 5 Miles

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

Hooper Springs Transmission Project

BONNEVILLE POWER ADMINISTRATION

Date: 12/9/2013

Map 2-3
South Alternative and Route Options

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- A new 0.2-mile, single-circuit 138-kV transmission line in the same location as described above for the North Alternative to connect the proposed Hooper Springs Substation to the regional transmission grid via PacifiCorp's Threemile Knoll Substation.
- Improvement or reconstruction of approximately 2 miles of existing access roads along the transmission line ROW, along with associated spur roads within the ROW; and construction of approximately 22.8 miles of new permanent access roads along the transmission line ROW and at Hooper Springs Substation, along with associated spur roads within the ROW.

Because the South Alternative and all five route options would cross one or more phosphate mining areas that may have heavy metal and selenium soil contamination, BPA has worked closely with the USFS, BLM, and the mining companies to identify a potential pathway for its transmission facilities through the phosphate mining areas in an effort to avoid known contamination and minimize its environmental liability.

2.3.1 Easements and Land

The South Alternative corridor crosses private property and lands under federal and state ownership. Construction of the South Alternative would require easements for transmission line ROWs (100-foot-wide for the new double-circuit 115-kV transmission line and 150-foot-wide for the new 138-kV line) and access roads (50-foot-wide easements for new and reconstructed roads and 20 feet for improved roads) (see Table 2-1). Similar to the North Alternative, the width needed (100 and 150 feet) for the South Alternative transmission line ROWs is intended to ensure that the transmission lines are a safe distance from other objects and structures, such as trees and buildings.

Similar to the North Alternative, where transmission line facilities and access roads for the South Alternative would be located on privately owned and state of Idaho lands, BPA would purchase easements from the underlying landowner. Most easements for the transmission lines would give BPA the rights to construct, operate, and maintain the line in perpetuity. On USFS- and BLM-managed land, BPA would apply to secure the necessary special use permits or easements. As with the North Alternative, while the underlying landowner would still own and use the property, BPA would not permit any uses of the transmission line ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities except where the ROWs would cross mining leases. These restrictions would be part of the legal rights that BPA would acquire for the transmission lines. Where the ROW would cross a mining lease, the rights on the leased phosphate reserves supersede all surface use special use permits or easements, including those for the transmission line, and therefore BPA would be unable to restrict use of these areas. However, the leases do allow for other authorizations or surface uses as long as they do not unreasonably interfere with the rights of the lessee.

Like the North Alternative, the South Alternative also would require the purchase of approximately 11 acres of property for the proposed Hooper Springs Substation. At the new connection facility with LVE's existing transmission system, BPA would apply to secure the necessary special use permit from the C-TNF within LVE's existing transmission line ROW. The connection facility for the South Alternative described below would be located within BPA's new ROW and LVE's existing ROW. Additional land would not be purchased for this facility (see Section 2.3.3).

2.3.2 Transmission Lines

As described above, the South Alternative would involve construction of both a double-circuit 115-kV transmission line between BPA's proposed Hooper Springs Substation and a connection facility on LVE's existing transmission system, and a single-circuit 138-kV transmission line between the proposed Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation. This section describes the elements of each of these transmission lines.

Transmission Line Routing

From the proposed Hooper Springs Substation, this line would head east for about 0.6 mile and then parallel the existing PacifiCorp 138-kV transmission line for about 1.4 miles until it crosses Highway 34 just south of Conda Road (see Map 2-3). The line would then travel east and northeast towards the Conda/Woodall Mountain Mine and from that point head north (just to the east of the Conda/Woodall Mountain Mine) for about 7 miles before turning in a south-easterly direction along the east side of Blackfoot River Road. Following Blackfoot River Road and the Union Pacific Dry Valley Branch Railroad for about 8 miles, the line would reach the mouth of the Blackfoot River canyon area known as the Narrows. The line would then cross perpendicular to the Blackfoot River just inside the west boundary of the C-TNF near the wider open area of the mouth of the canyon. Continuing east and northeast through C-TNF land, the line would connect the existing LVE 115-kV transmission line that runs along Diamond Creek Road at overhead line disconnect switches at the connection facility (see Section 2.3.3).

Map 2-3 also shows the proposed location of the 138-kV transmission line, which would be the same as for the North Alternative.

Alternative Route Options

Five route options have been identified as part of the South Alternative. Four of the route options were initially developed and discussed as alternatives in the 2009 Preliminary EA (see Table 2-3 and Map 2-3). Option 3A was developed to address comments received on the draft EIS.

Table 2-3. South Alternative Route Option Names with corresponding 2009 EA Alternative Names (except for Option 3A)

Current Draft EIS Option Names	Previous 2009 EA Alternative Names
Option 1	2007 Proposed Transmission Line Route[1]
Option 2	Narrows Transmission Line Route
Option 3	Original Proposed Transmission Line Route
Option 3A	Transmission Line Route Variation of Option 3
Option 4	Tailing Pond Transmission Line Route

Source: BPA 2009

[1] Option 1 was developed in 2007 to reflect comments received during the initial public scoping period for the transmission line route described in the 2009 EA as the Proposed Action (now called the South Alternative).

Option 1

Like the South Alternative itself, all route options for the South Alternative would extend from the proposed Hooper Springs Substation to the proposed LVE connection facility. Option 1 would follow the same route as the South Alternative corridor from the proposed Hooper Springs Substation to its crossing of Highway 34 and just south of Conda Road (Map 2-3). Option 1 would then head east on the south side of Conda Road and loop around the south and eastern edge of Conda before heading north. At a point directly east of the Conda/Woodall Mountain Mine, Option 1 would rejoin the same general route as the South Alternative corridor and head north-northeast along Haul Road to its intersection with Blackfoot River Road. Similar to the South Alternative corridor, Option 1 would generally follow Blackfoot River Road until it reaches the mouth of the Blackfoot River canyon known as the Narrows. From the Narrows to this option's connection with the existing LVE line, Option 1 would follow the same route as the South Alternative corridor. This route option would be about 23 miles long and would cross public lands, private agricultural and grazing lands, and mining areas.

Option 2

Option 2, requested by the C-TNF, provides for an alternative crossing of the Blackfoot River at the Narrows. This option would follow the same route as Option 1 except at the Blackfoot River where the crossing would be shifted slightly from Option 1 and approximately 2,000 feet east of the crossing for the South Alternative. The Option 2 crossing of the river is wider, more open, and at the mouth of the Narrows, compared to the South Alternative crossing, and would be located just inside the west boundary of the C-TNF (see Map 2-3). This route option would be about 22 miles long and also would cross private agricultural and grazing lands, and mining areas.

Option 3

Option 3 would travel east for about 0.5 mile to Three Mile Knoll Road along the same route as the South Alternative corridor before turning north for 7 miles parallel to and about 1 mile west of Highway 34 (see Map 2-3). The option would then turn east for about 1 mile and then northeast over the Blackfoot River for about 0.8 mile. The option would then travel about 2.7 miles before crossing over to the east side of the Blackfoot River Road. From this point, Option 3 would rejoin the same general corridor as the South Alternative with some differences to its point of connection with the existing LVE line. This route option would be about 24 miles-long and also would cross private agricultural and grazing lands, and mining areas.

Option 3A

For much of its length, Option 3A would generally follow the same path as Option 3 (see Map 2-3). From the proposed Hooper Springs Substation, Option 3A would head northeast for about 1 mile and then turn due north for approximately 5 miles along the same route as Option 3 to China Hat Road. At China Hat Road, Option 3A would turn east and parallel China Hat Road for about 1 mile, cross Highway 34, and then turn north. The option would then travel north for about 2 miles to Blackfoot River Road and turn east. Option 3A would then follow about the same route as Option 3 for about 7 miles before splitting off for about 3.5 miles and heading first northeast and then southeast to the Blackfoot River Narrows. From the Narrows, Option 3A would follow the same general corridor as the South Alternative for about 1 mile before heading northeast for about

2.5 miles to its point of connection with the existing LVE line. This route option would be about 24 miles long and also would cross federal lands, private agricultural and grazing lands, mining areas, and lands managed for wildlife and recreation.

As discussed in Chapter 1 of this supplemental draft EIS, Option 3A was identified after the draft EIS was released, based on comments and suggestions received on the South Alternative and its options. While Option 3A generally follows the same route as the South Alternative and its options (primarily Option 3), as indicated above there are two portions of Option 3A that would follow newly identified alignments. The first is the approximately 3.5-mile segment to the west of the Blackfoot River Narrows. This segment was identified to avoid private land to the south where a large wetland area is located.

The second newly-identified portion is the approximately 2.5-mile segment at the eastern end of Option 3A. This segment was identified to avoid areas on the C-TNF and the Blackfoot River WMA subject to mining leases associated with the Husky-North Dry Ridge Mine as well as the North Maybe Investigation Area (see Section 3.1). To avoid these areas, BPA had to locate a portion of Option 3A farther north than the South Alternative and its options on to the Blackfoot River WMA. In doing so, BPA sought to minimize intrusion of the proposed line and its associated facilities on the Blackfoot River WMA. Accordingly, this portion of Option 3A would cross only the southern edge of the WMA, close to the WMA's southern boundary.

Option 4

Option 4 would follow the same route as Option 3 for about 4.5 miles before turning east across Highway 34 to connect back with the proposed route for the South Alternative. From this point, the option would follow the same corridor as the South Alternative to its point of connection with the existing LVE line. This route option would be about 23 miles long and also would cross private agricultural and grazing lands, and mining areas.

Transmission Structures

The South Alternative would require approximately 210 new 115-kV double-circuit steel structures over about 23 miles. Route options would require about the same amount of steel structures as the South Alternative: Option 1 would be about 0.6 mile longer; Option 2 about 0.1 mile shorter; Options 3 and 3A about 1.5 miles longer; and Option 4 about 0.7 mile longer (see Table 2-1).

Like the North Alternative, the proposed 138-kV transmission line under the South Alternative would require two wood, H-frame structures over its approximately 0.2-mile length. The 138-kV wood structures would be the same as those described under the North Alternative (see Figure 2-1).

The steel poles for the South Alternative would be about 3 to 6 feet in diameter (3 to 4 feet diameter for suspension and 6 feet diameter for dead-end structures) at the base and range from 55 to 120 feet tall, with an average height of 90 feet (see Table 2-1). Structure heights at particular locations would depend on terrain, the length of the span, and other factors. Similar to the North Alternative, steel poles consist of multiple hollow sections of various lengths that are connected and embedded in the ground. To assemble and erect the suspension and dead end steel single-pole, an area about 100 feet by 100 feet (0.2 acre) would be temporarily disturbed at each site for construction equipment maneuvering and structure assembly (see Table 2-2). An area about 0.012 acre would be permanently disturbed for each steel single-pole structure along the South Alternative. The disturbed areas, except for the pads discussed below, would be restored to their original contours and revegetated with native or landowner-approved species.

Similar to the North Alternative, a flat, graveled pad would be constructed at each structure (except in flat areas) along the South Alternative corridor. The approximately 40 feet wide by 80 feet long (0.07 acre permanent disturbance) area would provide a pad for a crane to sit on during assembly of the steel pole structures (see Table 2-2). Most of pads would be left in place depending on land use.

Permanent guy wires would not be required on steel pole structures except one to two structures adjacent to Hooper Springs Substation similar to the North Alternative. For those structures, permanent guy wire anchors would be secured with in-ground anchors with a permanent disturbance area of about 10 feet by 40 feet (0.009 acre). Temporary guy wires would be used to support construction of the dead-end steel pole structures from Hooper Springs Substation to the connection facility with LVE. The temporary guy wires would be secured with temporary in-ground anchors or with large equipment as the guy wire anchor. As with the North Alternative, ground disturbance would be about 10 feet by 40 feet and within the 0.2 acre temporary disturbance area for dead-end steel structures.

Structure Footings

Like the North Alternative, all steel structures would be directly embedded into the ground using a drill rig to auger the holes. The average hole depth for suspension structures would be approximately 15 feet and about 30 feet for dead end structures. Dead end steel pole structures would require a concrete footing. As with the North Alternative, backfill structures would typically be brought from offsite except in limited access areas where soil and rock removed during excavation may be used as backfill.

Conductors, Overhead Ground Wires, and Counterpoise

The materials and installation methods used for conductors, overhead ground wires, and counterpoise under the South Alternative would be the same as under the North Alternative, with a couple of exceptions. First, because the transmission line from the proposed Hooper Springs Substation to the proposed LVE connection facility under the South Alternative would be a double-circuit line, six conductors (making up two circuits) would be installed under this alternative instead of the three conductors for the one circuit under the North Alternative. Second, the double-circuit steel structures for the South Alternative would require installation of two overhead ground wires on each structure, as compared to just one for the steel structures under the North Alternative.

Fiber Optic Cable (138-kV Transmission Line)

A fiber optic cable, similar to the one described for the North Alternative would be installed from Threemile Knoll Substation to the proposed Hooper Springs Substation along the 0.2 mile

138-kV transmission line. Similar to the North Alternative, no fiber optic cable is proposed for the 115-kV transmission line.

Pulling and Tensioning Sites

Construction of pulling and tensioning sites and installation of snubs also would be required for the South Alternative about every 2 to 3 miles. About 11 pulling and tensioning sites would be required for construction of the South Alternative and two sites would be required for the 138-kV line (see Table 2-1). Pulling sites would be within or next to the ROW. Similar to the North Alternative, appropriate locations for pulling sites and snubs are determined by the construction contractor using environmental and land use information provided by BPA.

Staging Areas and Other Work Areas

Two temporary staging areas about 10 acres each would be needed along or near the South Alternative for construction. As with the North Alternative, one of the staging areas would be located near the Hooper Springs Substation and used for both the 115-kV and 138-kV lines. The second staging area would be located near the eastern end of the South Alternative corridor. Other temporary work areas would be the same as those proposed for the North Alternative. Similar to the North Alternative, environmental review of staging and work areas would be conducted prior to approval for use if necessary.

2.3.3 Substation and Connection Facilities

The location, size, and components of the proposed Hooper Springs Substation under the South Alternative would be the same as under the North Alternative. Permanent and temporary disturbance areas would be the same as those displayed for the North Alternative (see Table 2-2).

The connection of the 115-kV double-circuit line under the South Alternative to LVE's existing transmission system at the northeastern end of the South Alternative corridor would require construction of a new connection facility at this location. This connection facility would be constructed within BPA new transmission line ROW and LVE's existing transmission line ROW along Diamond Creek Road, at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road. The new double-circuit line would connect into the existing LVE line through overhead line disconnect switches. One structure on the existing LVE line would be removed and replaced with two steel poles. One steel pole would have one switch and the other pole would have two switches mounted on them. An approximately 400-foot by 100-foot area would be required for installation of the disconnect switches. A 16 foot by 11 foot platform would be installed at ground level for the disconnect switches.

2.3.4 Access Roads

Like the North Alternative, new and existing access roads for the South Alternative would be constructed, reconstructed or improved to provide a 12- to 20-foot-wide travel surface with about a 20- to 30-foot-wide total disturbed area. Road work could include installation or improvement of approximately 9 culverts and 30 drain dips. None of these culverts would be installed in fish-bearing streams. Fish-bearing streams would be spanned by the transmission line, but no new or reconstructed access roads would cross over them. The same travel surface widths would be used for the South Alternative options except for Option 3A where it crosses the Blackfoor River WMA; road widths would be 12 feet wide in these areas. The disturbance area for access roads would be greater than 30 feet if tree roots are present or if drainage and embankment construction work is required. Typically, a 50-foot-wide easement would be obtained for new and reconstructed access roads and a 20-foot-wide easement would be acquired for access roads needing improvement similar to the North Alternative. Road turnarounds also would be constructed along the South Alternative corridor where access roads end or to minimize disturbance to adjacent sensitive resources.

The South Alternative would require the following access roads:

- Approximately 22.8 miles of new, permanent access road would need to be constructed including 900 feet of new road to access Hooper Springs Substation.
- Approximately 2 miles of existing access road would need to be improved or reconstructed.

Construction, reconstruction or road improvement methods for the South Alternative would be similar to those described for the North Alternative. As with the North Alternative, temporary access roads required for the South Alternative would be reclaimed according to landowner requirements. For permanent roads, BPA, in coordination with landowners, would install gates at the entrances to access roads to prevent motorized public access and where fences separate animals or denote property lines. Gate locks would be coordinated with the landowners to ensure both BPA and landowner access.

2.3.5 Vegetation Clearing

Vegetation clearing under the South Alternative would be the same as described for the North Alternative. The South Alternative corridor also would cross forested C-TNF lands where BPA would, at the request of the C-TNF, clear a 250-foot-wide area along the length of transmission line. As with the North Alternative, only the 100-foot ROW would be managed for low growing species during operation of the transmission line.

2.3.6 Construction Sequence, Schedule, and Work Crews

Construction of the South Alternative would follow the same sequence under the same schedule and with the same work crews as described for the North Alternative, with the following exceptions:

The Lanes Creek Substation would not be constructed under the South Alternative, so would not be included in the construction process. Instead the LVE connection facility would be constructed, which would involve installation of transmission line disconnect switches. After removing the one existing structure on the LVE line, holes would be excavated with an auger for the two new steel poles and construction of the platform would take place. Next, the conductor would be strung from existing structures on the LVE line through the connection facility with BPA's line. The ground wires would also be strung using a similar method, with pulling sites on the ground to tighten the cable. Counterpoise also would be installed at the base of the new facility.

2.3.7 Maintenance

Maintenance activities under the South Alternative would be the same as described for the North Alternative.

2.3.8 Estimated Cost

Construction cost of the Hooper Springs Substation and the proposed 22.5-mile-long double-circuit 115-kV and 0.2-mile-long 138-kV transmission lines is estimated to be about $62.4 million. Annual maintenance costs would be about $10,000 to $20,000.

2.4 No Action Alternative

Under the No Action Alternative, BPA would not construct the Project. Without the new line, it is expected that voltage stability and reliability problems on the transmission grid in this area could continue. Further, the growing energy requirements of Southeastern Idaho and the Jackson Hole valley area of Wyoming may not be met.

2.5 Alternatives Considered but Eliminated from Detailed Study

BPA has considered a wide range of potential alternatives for the proposal. These include alternatives developed by BPA based on its knowledge of, and experience in, transmission line design and possible environmental issues, as well as alternatives that either were suggested by the public or given in response to concerns raised during the scoping process for this EIS. For each potential alternative, BPA assessed whether the alternative merited detailed evaluation in this EIS, or whether it could be eliminated from detailed study.

BPA considered several factors in making this assessment of potential alternatives. BPA considered whether the potential alternative would meet the identified purposes and need (see Section 1.3, Purposes). In addition, BPA considered whether the alternative would be practical and feasible from both a technical and economic standpoint and using common sense; as well as consistent with CEQ guidance on assessing the reasonableness of alternatives. Finally, BPA considered whether an alternative would have obviously greater adverse environmental effects. The alternatives that did not meet these considerations and were thus eliminated from detailed study in this EIS are described in this section.

2.5.1 Higher Voltage Transmission Line Alternative

BPA considered an alternative that would allow a direct connection of the proposed transmission line to PacifiCorp's existing 345/138-kV Threemile Knoll Substation rather than constructing the proposed 138/115-kV Hooper Springs Substation. To allow this direct connection, this alternative would require that the proposed transmission line be constructed as a 138-kV line instead of as a 115-kV line as currently proposed. This alternative also would require that LVE's existing Lanes Creek Substation be expanded to accommodate the necessary 138/115-kV transformer banks for the proposed transmission line, rather than locating these facilities at the proposed Hooper Springs Substation. This transmission line would follow a route similar to the 32-mile-long route proposed under the North Alternative.

Transmission lines built as 138-kV lines use essentially the same transmission structures as those built as 230-kV lines. These structures would result in similar structure disturbance areas and access roads as structures that would be used for the North Alternative. However, the structures under this alternative would be taller than the 115-kV structures under the North Alternative, which would result in a small increased impact on visual resources. Further, the 138-kV line would require a 150-foot-wide ROW which would require additional ROW clearing in those areas containing incompatible vegetation types (such as forests).

This alternative also would require surface disturbance for substation equipment in a previously undisturbed area. In contrast to the existing cleared agricultural field for the proposed Hooper Springs Substation, the addition of 138/115 kV transformer facilities at the Lanes Creek Substation would require expansion of this substation beyond its existing footprint into nearby undisturbed areas on C-TNF. In addition, there are topographical constraints at the Lanes Creek Substation site that could require fairly substantial filling and grading for any expansion of this substation. Given these potentially greater environmental effects, this alternative was considered but eliminated from study in this EIS.

2.5.2 Blackfoot River Road Route Alternative

This transmission line routing alternative was a variation of the four route options considered in detail in the 2009 Preliminary EA and also being considered in this EIS. It generally followed the same transmission line routes as the South Alternative corridor and route options, except for a routing variation where these alternatives would have first crossed Blackfoot River Road near the existing power substation at the intersection of Haul Road and Blackfoot River Road. At this point, instead of following Blackfoot River Road, the transmission line route under this alternative would continue in an easterly direction for about 3 miles. This alternative then would head generally south-southeast for about 2 miles to rejoin the transmission line routes of the South Alternative corridor and route options. After studying this route, it was eliminated because it would result in much greater impacts to wetland areas than the South Alternative, and would only shift (rather than lessen) land use impacts to other landowners. For these reasons, this alternative was considered but eliminated from detailed study in this EIS.

2.5.3 Goshen-Lanes Creek Transmission Line Alternative

BPA considered an alternative of constructing a new 161-kV transmission line from PacifiCorp's Goshen Substation near Idaho Falls, Idaho to a connection with LVE's existing transmission system at a point near Lanes Creek, Idaho, about 10 miles southeast of Grays Lake National Wildlife Refuge. This alternative would require adding shunt capacitors on the system. The approximate length of this line alternative would be about 52 miles.

This alternative would require more capital from BPA due to increased length of the transmission line. This alternative also would require vegetation clearance and construction activities in a new 52-mile-long transmission line corridor that would create more impacts to land use, vegetation, wildlife, and other resources than the North Alternative or South Alternative. Finally, this alternative would connect to the Goshen Substation. At this point in time, any additional interconnections to this substation would be difficult to configure and could result in reliability problems. This alternative was eliminated from further consideration because of the cost, potential environmental impacts, and reliability issues.

2.5.4 U.S. Forest Service Land Routing Alternatives

The C-TNF Forest Plan Guideline Number 3, RFP 3-10 states new transmission lines should be located within or adjacent to existing transmission lines. There are no existing transmission line corridors within or near the North or South alternative corridors where they cross the C-TNF. The closest existing transmission line to the North Alternative is LVE's Tincup-Dry Creek line that enters LVE's Lanes Creek Substation at the eastern end of the North Alternative. The South Alternative and its route options would connect to this same line at the eastern border of the C-TNF in the project area. A new transmission line corridor is necessary to cross the C-TNF. For this reason, this alternative was considered but eliminated from detailed study in this EIS.

The C-TNF Forest Plan Guideline RFP 3-10, Standard 2 states new transmission lines should be routed so they do not cross C-TNF lands. Routing the new transmission line off C-TNF lands is not economically or environmentally feasible because the power must be transmitted from LVE's Threemile Knoll Substation on the west side of the C-TNF to LVE's Tincup-Dry Creek transmission line or Lanes Creek Substation both located on the east side of the C-TNF. BPA did look at routing the North Alternative to the north of the C-TNF lands along Highway 34. However, routing the line off the C-TNF would have placed it closer to Grays Lake National Wildlife Refuge and within a large wetland area to the south of the refuge. Placing the line in the wetland area would have increased the risk for bird collisions because many avian species likely use this area. An alternative that routed the line to the north or south to avoid the C-TNF would be about 150 miles longer than the proposed transmission line routes, and would increase project costs, environmental impacts, and impacts to private landowners. For this reason, this alternative was considered but eliminated from detailed study in this EIS.

2.5.5 Alternative BPA Substation Sites

BPA considered other possible locations for its proposed Hooper Springs Substation that would connect the proposed transmission line to PacifiCorp's existing Threemile Knoll Substation. All of these locations would be farther away from the Threemile Knoll Substation than the proposed location, and thus would require longer transmission line connections and would increase costs. Because of the increased costs and the potential for increased environmental impacts from longer transmission line connections, BPA eliminated these sites from further consideration.

2.5.6 Non-Wires Alternative

In addition to considering alternatives that involve building new transmission lines, BPA evaluated "non-wires" alternatives to meet the project purpose and need. These alternatives are referred to as non-wires alternatives because they would address the purpose and need through measures not directly related to transmission facility construction. General examples of non-wires measures include energy conservation that reduces overall and peak electrical demand, development of new generation at or near areas of increasing electrical loads, and contractual load reductions from industry and others to reduce peak demand.

The 2009 Preliminary EA summarizes the consideration of non-wires alternatives for the project at that time. As described in the EA, there was significant uncertainty as to whether sufficient non-wire measures could be implemented to fully meet the need to serve LVE during peak loads, which are continuing to increase. For this reason, non-wires alternatives were considered but eliminated from detailed study in the 2009 Preliminary EA.

Subsequent to the 2009 Preliminary EA, BPA contracted with a consulting firm, Energy and Environmental Economics, Inc. (E3), to further assess potential non-wires alternatives for the Hooper Springs Transmission Project. More specifically, E3 was asked to investigate non-wires measures that could reduce and meet winter peak power demand, and determine the length of time these measures could help maintain electrical reliability. The possible non-wires measures identified in E3's studies for consideration included the following: energy efficiency—increasing efficiency of existing buildings or appliances to reduce electricity use; demand response—managing when power is used at its source; distributed generation—constructing a new natural gas peaking generation facility at or close to the source of load; fuel switching—changing energy consumption from electricity to natural gas, primarily for space and water heating, to reduce peak demand.

E3 completed a Phase 1 non-wires screening study in January 2011 (GDS Associates, Inc. 2007). The Phase 1 study concluded that although non-wires measures could not completely replace the proposed transmission line, the Project theoretically could be deferred until 2016 or 2020 through a combination of potential energy efficiency and demand response measures, along with development of a new 20- to 30-megawatt (MW) natural gas peaking generation facility. Given the theoretical nature of the Phase 1 study, the study recommended that BPA continue to pursue the Project on its current schedule while simultaneously investigating the practical feasibility of a non-wires solution.

Based on this recommendation, BPA contracted with E3 to complete a Phase 2 study concerning non-wires practical feasibility. E3 completed the Phase 2 study in March 2012, and the study has been incorporated into this analysis by reference (E3 2012). To better assess non-wires feasibility, the Phase 2 study included refinements and updates to key parameters and assumptions, including a revised peak demand forecast for the region, revised electricity and fuel price forecasts, and revised power flow model results. Consistent with the Phase 1 study, the Phase 2 study focused on a combination of non-wires measures that included energy efficiency, demand response, fuel switching, and a new 25-MW natural gas-fueled local peaking generator. Specifically, the Phase 2 study investigated key questions such as whether permitting and constructing a natural gas generator could be feasible by the winter of 2013-2014, whether natural gas fuel supply could be sufficient to meet the fuel needs of the proposed generator, what extent fuel switching could reduce peak demand, and what energy efficiency and demand response options could be feasible.

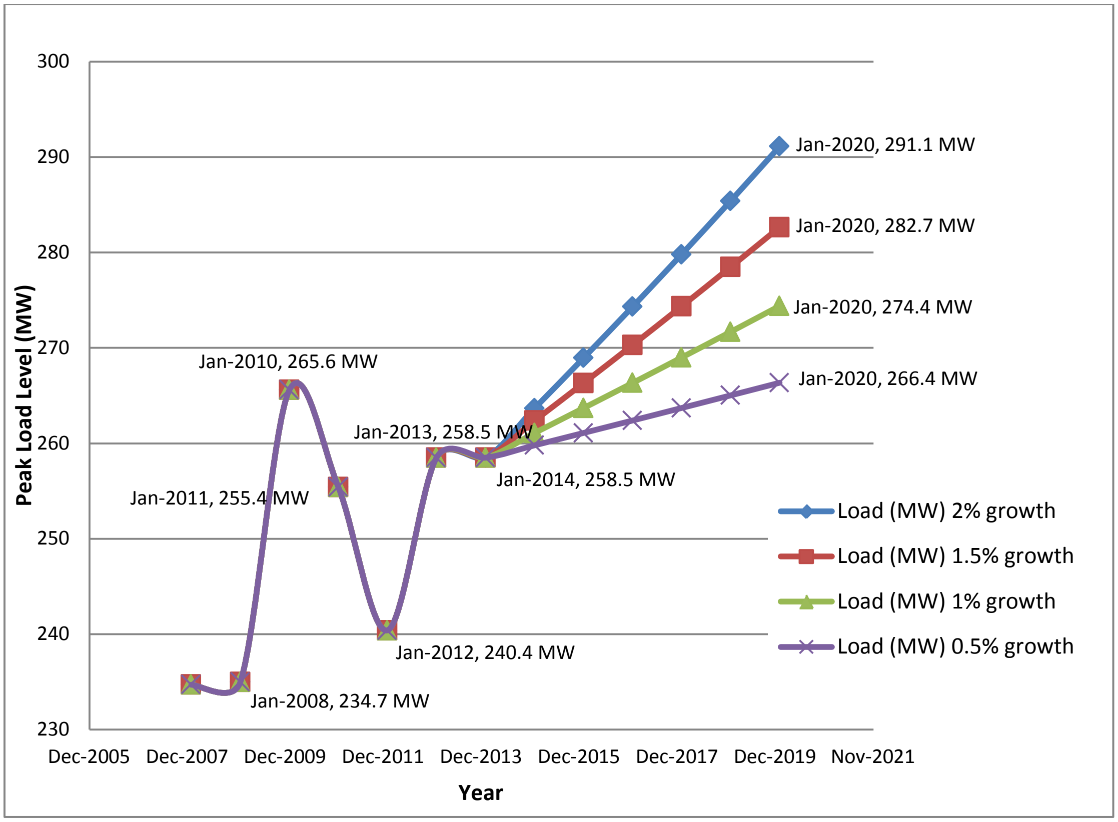
The Phase 2 study concluded that timely implementation of a combination of energy efficiency, demand response, and distributed generation, along with installation of a new capacitor bank, could make it technically feasible to defer the Hooper Springs Project beyond 2025. However, the study ultimately concluded that the non-wires solution is not feasible from a practical perspective because it would not meet the need to reliably serve LVE during peak loads within the timeframes required. BPA concurs with the study's ultimate conclusion primarily for the following reasons:

- LVE has not demonstrated a willingness to undertake the steps necessary for development of the new natural gas peaking generation facility that would be required for the non-wires alternative. Implementation of this alternative would require LVE to own and operate the new generation facility. The local generation component cannot progress further without LVE's commitment to complete the required evaluation of potential impacts, permitting, engineering design, financing, and procurement of long-lead-time items for the new generation facility. Further, LVE would need to cooperate with BPA to negotiate a long-term Power Purchase Agreement for the local generator. All indications are that LVE does not intend to pursue the local generation component of the non-wires alternative to meet the Project need.
- Even if LVE indicated that it was willing to pursue the development of a new generation facility, its existing natural gas pipeline and compression in the area are not adequate to meet winter peak-hour demands. To address this problem, an additional 120,000 gallons of storage capacity would need to be developed at LVE's existing liquefied natural gas (LNG) facility. LVE has expressed concern about the on-demand availability of winter-peak deliveries of LNG, and this would be a concern if relying solely on LVE's existing LNG storage and delivery; however, the addition of 120,000 gallons of LNG capacity for peak generation is expected to be more than sufficient to avoid the need for wintertime LNG deliveries.
- There is a very limited opportunity for fuel switching from electricity to natural gas (e.g., electric hot water heaters and electric space heating to natural gas heat) in the LVE and FREC service areas. This limitation exists because only about 19 percent of residential customers and 17 percent of commercial customers in LVE and FREC's combined service territory have access to existing natural gas service and do not already use gas to meet their heating needs. Fuel switching would therefore be of only marginal value in addressing the need for the Project. In actuality, LVE has credited a portion of its annual load growth to fuel switching from propane gas to electricity due to the lower prices of the latter.
- Telecommunications requirements for interconnection of the local generator remain unknown. Additional time would be required for the study process necessary to integrate distributed generation into Rocky Mountain Power's Balancing Authority. At this time there is no information on the communications plan of service that Rocky Mountain Power would require because no generation integration request has been submitted to PacifiCorp to initiate a study of the telecommunications requirements. It is expected, however, that the study process and development of required communication paths would not be completed in time to meet the need to serve LVE during peak loads.

The study's conclusion that non-wires alternatives are not feasible from a practical perspective remains accurate even if the proposed project would not be completed until 2016. The portion of the transmission system serving LVE's loads is currently at or near low voltage limits, particularly during winter-peak-load conditions. The entire load in eastern Idaho, northwestern

Wyoming, and southwestern Montana is served from three transmission lines originating from PacifiCorp's Goshen Substation. When the combined flows of these transmission lines plus generation at Palisades dam and the Horse Butte Wind Project equal or exceed 268 (MW), the loss of BPA's Palisades-Snake River line would cause voltages to drop on this part of the system. Based on the actual load observed in January 2014 (258.5 MW), and assuming 1-percent load growth for the next few years, the current system appears capable of remaining below the 268 MW threshold and reliably serving the area load through the 2016-2017 winter season (see Figure 2-4).

Figure 2-4. Winter Peak Load Levels in the Project Area



However, after 2016-2017, a combination of load growth and winter peak loads similar to the historical high in January 2010 could cause the system to reach the critical threshold for system low voltages. System low voltages could increase the likelihood of voltage instability, leading to a voltage collapse and subsequent loss of area load (power outages for FREC and LVE customers). In addition, low voltages present a risk of violation of mandatory NERC reliability standards governing voltage limits, and violation of these standards could result in the assessment of significant financial penalties against BPA. In short, the combination of potential non-wires measures could at most defer, but not eliminate, the need to construct a transmission line, and there is a fundamental uncertainty about whether these measures could be fully implemented in time to effectively address the growing need for the Project. Given these factors, BPA has eliminated the non-wires alternative from further detailed consideration in this EIS.

2.5.7 Undergrounding

BPA received comments on the draft EIS that suggested burying the new transmission line underground either for its entire length or for certain portions. Underground distribution cables of lower voltage are fairly common, but underground transmission cables of higher voltage such as that needed for the proposed project are not. In addition, underground high-voltage transmission cables typically are used only for relatively short distances in areas where it is physically impossible to install towers for overhead transmission lines.

There are several reasons why underground transmission lines of this length and voltage have not been built. The cost of underground is typically 10 to 20 times more expensive than overhead lines. It is also difficult to keep high voltage underground transmission cables from overheating. When they get overloaded and overheat, the insulation material used can breakdown quickly and cause a failure at the time of overheating, or later from damage caused by overheating. Since the line is buried and cannot be inspected directly, it can be difficult and time consuming to determine where the damage has occurred and the length of damaged cable. Uncovering and replacing the buried cable is a specialized process and can take much longer than repairing an overhead line. For these reasons, outages on underground cables tend to be much longer and can compromise the reliability of the system.

There are environmental tradeoffs also. With overhead lines, towers can typically be placed 1,000 to 1,500 feet apart and can span sensitive natural or human-made areas. Placing lines underground requires continuous trenching and a continuous access road system, resulting in potentially more impacts to the environment. Placing portions of the 23 to 34-mile new line underground would have the same reliability and environmental issues, plus higher per mile cost due to the initial design and set-up requirements for manufacturing a shorter length of cable. In addition, expensive transition facilities would be required at each end of any section of underground. For these cost, reliability and environmental reasons undergrounding the transmission line has been eliminated from further detailed consideration in this EIS.

2.6 Comparison of Alternatives

BPA has evaluated the North Alternative and two route options, the South Alternative and five route options, and the No Action Alternative, and compared the alter natives and options based on information found in the chapters and appendices of this EIS. The results of the comparison are summarized in Table 2-4 and 2-5. Mitigation measures listed in Table 2-6 would apply to the North Alternative and options and South Alternative and options.

The North and South alternatives and options would meet the need for the Project; the No Action Alternative would not.

2.7 Agency Preferred Alternative

BPA has evaluated the alternatives and route options, considered the purpose and need of the Project, the affected environment, and environmental consequences, and based on these factors, BPA's preferred alternative at this time is the South Alternative's Option 3A.

Table 2-4. Comparison of North Alternative, South Alternative, and No Action Alternative to Project Purposes

Purpose	North Alternative	South Alternative	No Action Alternative
Maintain reliability of BPA's transmission system to BPA and industry standards	The North Alternative would allow BPA to provide transmission system reinforcement that meets BPA and industry standards.	The South Alternative would allow BPA to provide transmission system reinforcement that meets BPA and industry standards. Crossing of current and planned mining areas and mineral lease blocks that could be developed in the future could present future operation and maintenance difficulties, including the need to relocate portions of the Project, if mining activities are conducted within proximity to the Project.	The No Action Alternative would limit BPA's ability to provide transmission line reinforcement to improve the stability and reliability of the southeastern Idaho transmission system.
Purpose	**North Alternative**	**South Alternative**	**No Action Alternative**
Meet BPA's contractual and statutory obligations	The North Alternative would help BPA to maintain winter service to LVE and FREC loads under existing contracts.	The South Alternative would help BPA to maintain winter service to LVE and FREC loads under existing contracts.	System instability has not occurred because WECC criteria mandates that BPA design and operate the system in a way that does not allow for collapse in case a critical outage occurs under peak loading. However, stability and reliability problems are projected to occur in the near future without implementation of the proposed project. This may prevent BPA from meeting its contractual obligations and addressing future load growth.
Minimize project costs	Project costs were minimized to the extent practical through transmission line siting and the use of lands adjacent to or within existing substation facilities.	Project costs were minimized to the extent practical through transmission line siting and the use of lands adjacent to or within existing substation facilities.	No immediate costs would be involved if the lines and substation were not built.

Purpose	North Alternative	South Alternative	No Action Alternative
Minimize impacts on the natural and human environment	Although constructing the proposed transmission lines and substations would not be free of environmental impacts, employing mitigation measures to protect resources and implementing best management practices (BMPs) during construction and operations would ensure consistency with BPA's environmental stewardship mandates.	Although constructing the proposed transmission lines and substation would not be free of environmental impacts, employing mitigation measures to protect resources and implementing BMPs during construction and operations would ensure consistency with BPA's environmental stewardship mandates.	If the lines were not built there would not be any environmental impacts due to construction or operation.

Table 2-5. Summary of Environmental Impacts

Resource	North Alternative	South Alternative	No Action Alternative
Land Use	Impacts to agricultural land uses would be ***low*** and long term because only about 8.6 acres of cultivated lands would be permanently removed from production compared to the more than 400,000 acres of farmland in the county. On federal and state lands, construction is anticipated to result in a long-term, ***low*** impact because a limited amount of land would have restricted use or require forest clearing. Highway 34, the Pioneer Historic Byway, would be crossed in several locations, which would have a ***moderate*** impact to the visual quality and recreational use of the highway. The North Alternative corridor would cross special land use areas, such as the Gravel Creek Special Emphasis Area and federal conservation easement lands. Crossing these areas would have a **low** to **high** impact, depending on the nature of the property and the mitigation measures implemented. The North Alternative does not cross any mining areas; therefore it would have ***no*** impact to mining uses. Long Valley Road Option—The Long Valley Road Option would not cross state lands and would primarily cross agricultural land uses, which would result in a ***low*** to ***moderate*** impact in the short term and a ***low*** impact in the long term. North Highland Option—The North Highland Option would cross generally the same lands as the North Alternative, but would remove approximately 1.5 miles of ROW from private grazing lands and add approximately 1.2 miles of ROW to C-TNF lands. Impacts from this route option would be ***moderate***.	Impacts to agricultural land uses would be ***low*** and long term because only about 10.7 acres of cultivated lands would be permanently removed from production compared to the more than 400,000 acres of farmland in the county. On federal and state lands, construction is anticipated to result in a long-term, ***low*** to ***moderate*** impact because a limited amount of land would have restricted use or require forest clearing. Highway 34, the Pioneer Historic Byway, would be crossed once, which would have a ***low*** impact on the visual quality and recreational use of the highway. Impacts of the South Alternative on proposed future mining use would be ***low*** to ***moderate***, due to its potential to affect access to phosphate resources. Options 1 and 2—Impacts on land uses under Options 1 and 2 would be the same as those described for the South Alternative because these options would cross generally the same private, state, and federal lands. Land use impacts for these two options would be ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed. Options 3 and 4—Construction of the western portions of Options 3 and 4 would occur in private agricultural lands west of Highway 34 and would result in additional short-term impacts on agricultural and grazing uses. Land use impacts for these two options would be ***low*** to ***moderate*** during construction where agricultural or forested lands are crossed. Option 3A—Similar to Options 3 and 4, the western portion of Option 3A would occur in private agricultural lands west of Highway 34 and would result in ***moderate*** impacts during construction where agricultural or forested lands are crossed. Option 3A would cross generally the same private, state, and federal lands for the remainder of its length. Near the connection with the existing LVE line at the eastern end of the Option 3A corridor, Option 3A would cross 1.3 miles of the Blackfoot River WMA. Impacts to the WMA would be ***low*** to ***moderate*** during construction and ***low*** during operation of the line.	Under the No Action Alternative, land use in the project area would not be impacted.
Recreation	Construction would have short-term, ***low*** to ***moderate*** impacts to recreational facilities on C-TNF lands. Following any construction-related closures, access to recreational facilities and roads would return to normal. There are no recreational facilities on BLM or BIA land in close proximity to the Project. Operation could cause long-term, ***low*** impacts to C-TNF users and dispersed recreation; the construction of the transmission line would disturb land that was in some cases previously undeveloped and forested. On non-federal (state and private) lands, impacts to recreation use from the presence of construction equipment would be ***low*** to ***moderate*** and limited to the duration of construction. The presence of the cleared ROW and access roads would have a ***low*** impact to recreational users on non-federal lands. Long Valley Road and North Highland Options—Impacts to recreation from the Long Valley Road and North Highland options would be similar to those under the North Alternative	Similar to the North Alternative, the South Alternative would have short-term ***low*** to ***moderate*** impacts on recreational facilities and long-term ***low*** impacts on dispersed recreational use on federal lands. There are no state or private developed recreational facilities within proximity to the South Alternative corridor. Similar to the North Alternative, the South Alternative would have ***low*** to ***moderate*** short-term impacts and ***low*** long-term impacts on recreation on non-federal lands. Options 1 through 4—Impacts from Options 1 through 4 would be the same as those described for the South Alternative. The impacts on recreational use from the presence of construction equipment and activities would be ***low*** to ***moderate*** and limited to the duration of construction. The presence of the cleared ROW and access roads would have ***low*** impacts on recreational users. Option 3A—On the Blackfoot River WMA, long-term impacts would be ***low*** to ***moderate*** depending on the proximity of recreational uses to Option 3A's corridor. Similar to the South and North alternatives, ROW tree clearing would reduce	Under the No Action Alternative, recreation in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
	(***low*** to ***moderate*** during construction and ***low*** during operation and maintenance).	security cover for game animals during hunting season, potentially causing a ***low*** to ***moderate*** impact to hunting, depending on location. Increased access on the Blackfoot River WMA would be possible in line miles 23 to 24 from an existing WMA access road along Diamond Creek Road. There also may be short-term ***moderate*** impacts during construction within the Blackfoot River WMA.	
Visual Resources	Impacts to visual resources from the North Alternative would be long term and would vary between ***low*** and ***moderate*** depending on the location and proximity of the proposed transmission line to viewers. On federal lands specifically managed for their visual resources (USFS and BLM), the North Alternative would also have long-term, ***low*** to ***high*** impacts to the overall aesthetics of the project area and short-term, ***moderate*** impacts during construction. Long Valley Road Option—The Long Valley Road Option would have short-term ***low*** to ***moderate*** impacts to those residents along or users of Long Valley Road during construction. Given the nature of the landscape and presence of other similar transmission lines, the long-term visual impacts of the Long Valley Road Option would be ***low***. North Highland Option—Under the North Highland Option, both the short- and long-term impacts would be similar to the North Alternative; however, the transmission line would not be visible from Highway 34 between line miles 30 and 32. The North Highland Option would have long-term, ***low*** to ***moderate*** impacts to the visual resources of the area and short-term, ***moderate*** impacts during construction.	Similar to the North Alternative, impacts to visual resources from the South Alternative would be long term and would vary between low and moderate depending on the location and proximity of the proposed transmission line to viewers. Impacts to the overall aesthetics of the project area during construction would be short term and moderate. Options 1 through 4—Impacts from Options 1 through 4 would be similar to those described for the South Alternative. Option 3A—Long-term impacts to visual resources on Blackfoot River WMA would be ***moderate*** because the transmission line would be readily visible within the WMA. Recreational visitors to this state-owned land would experience views of the transmission line and associated structures that would create a visual contrast to the surrounding natural landscape.	Under the No Action Alternative, visual resources in the project area would not be impacted.
Vegetation	Impacts to forested vegetation communities from the North Alternative would be ***moderate***, due to tree clearing and fragmentation that could result in long-term changes in the vegetation community. There would be ***no*** impact to old-growth forest. Impacts to non-forested vegetation communities would be ***low*** because these habitat types are not particularly rare or limited, and most of the temporarily impacted vegetation would be expected to regrow within two growing seasons. Construction would result in long-term, ***low*** impacts to special status plant species because no special status plants were found, none of the special status species' suitable habitat is particularly rare or unique, and sufficient habitat would remain functional at local and regional scales. Long-term, ***low*** impacts from noxious weed populations would occur because there is little potential for increased spread of any "statewide control" or "early detection/rapid response" species. Long Valley Road and North Highland Options—Impacts under the Long Valley Road Option and the North Highland Option would be similar to those described above.	Similar to the North Alternative, impacts to forested vegetation communities from the South Alternative would be ***moderate,*** due to tree clearing and fragmentation that could result in long-term changes in the vegetation community. However, the area affected would be smaller because the South Alternative is shorter. Additional surveys would be conducted to determine that there would be ***no*** impacts to old-growth forest. Impacts on non-forested vegetation communities would be ***low*** because these habitat types are not particularly rare or limited, and most of the temporarily impacted vegetation would be expected to regrow within two growing seasons. Construction would result in long-term, ***low*** impacts on special status plant species as well as long-term ***low*** impacts from noxious weeds. Options 1 through 4—Impacts from Options 1 through 4 would be similar to those described for the South Alternative.	Under the No Action Alternative, vegetation in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
Geology and Soils	Soil productivity impacts from the North Alternative would be ***low*** due to compaction and erosion during and immediately following construction. Prime farmland soils would be permanently lost in access road beds and structures, but this loss would occur at a ***low*** level. There would be a ***low*** risk of liquefaction impacts to the transmission line. Shallow bedrock may require blasting, but geotechnical investigations, including exploratory borings, would be conducted prior to construction of the transmission line to ensure that excavation and blasting would not be deep enough to come into contact with phosphate deposits. Long Valley Road and North Highland Options—The Long Valley Road Option and the North Highland Option would have similar impacts to soils and soil productivity as the North Alternative.	Similar to the North Alternative, soil productivity impacts from the South Alternative would be ***low*** due to compaction and erosion during and immediately following construction. Prime farmland soils would be permanently lost in access road beds and structures, but this loss would occur at a ***low*** level. There would be a ***low*** risk of liquefaction from construction. Shallow bedrock may require blasting, but geotechnical investigations, including exploratory borings, would be conducted prior to construction of the transmission line to ensure that excavation and blasting would not be deep enough to come into contact with phosphate deposits. Options 1, 2, and 4—Impacts from Options 1, 2 and 4 would be similar to those described for the South Alternative. Options 3 and 3A—Impacts to soils from Options 3 and 3A would be similar to those described for the South Alternative. However, both Options 3 and 3A would cross more acres of prime farmland than the South Alternative. Impacts to prime farmland would be ***moderate***.	Under the No Action Alternative, soils in the project area would not be impacted.
Water Resources, Floodplains, and Wetlands	The North Alternative would have ***low*** to ***moderate*** impacts to surface waterbodies, including water quality, because of temporary sediment impacts associated with bridge replacement work in Meadow Creek and access road crossings of intermittent waterbodies. Further, some tree removal and ground disturbance would occur in wetland and intermittent waterbody aquatic influence zones (AIZs); however, impacts to individual AIZs would be ***low***. The North Alternative would not foreclose options to classify any portion of the National Rivers Inventory (NRI) segment of the Blackfoot River as a wild, scenic, or recreation river area. ***Low*** impacts to groundwater resources would occur if an oil or fuel spill were to seep into the groundwater. Mitigation measures would be implemented to manage spill risks to groundwater quality. The North Alternative would have ***low*** to ***moderate*** impacts to wetlands because there would be approximately 0.05 acre of short-term impacts and approximately 1.1 acres of long-term direct impacts to wetland resources. The impacts would not functionally reduce the size, integrity, or connectivity of wetlands within the project corridor. The Project would have *no* to ***low*** impacts to floodplains as any detectable change to natural floodplain functions would be expected to be small and localized. Long Valley Road Option—Impacts associated with the Long Valley Road Option would be similar to the floodplain and indirect surface and groundwater impacts described above for the primary route. North Highland Option—The North Highland Option would reduce impacts to wetlands and perennial streams because the option would move the corridor to non-wetland areas. Impacts to water resources from the North Highland Option would be ***low***.	Similar to the North Alternative, the South Alternative would have ***low*** to ***moderate*** impacts to surface waterbodies, including water quality. Construction of the South Alternative would require fewer acres of riparian and wetland vegetation clearing than the North Alternative, but overall impacts would be similar to those described for the North Alternative. The South Alternative would create approximately 2.8 acres of short-term impacts and no long-term direct impacts on wetland resources, and therefore would have ***low*** to ***moderate*** impacts to wetlands. Tree removal and ground disturbance would occur in wetland and intermittent waterbody AIZs; however, impacts to individual AIZs would be ***low***. The South Alternative would not foreclose options to classify any portion of the NRI segment of the Blackfoot River as a wild, scenic, or recreation river area. ***Low*** to ***no*** impacts to groundwater resources would occur if an oil or fuel spill were to seep into the groundwater. Mitigation measures would be implemented to manage spill risks to groundwater quality Options 1, 2, 3, and 3A—Options 1, 2, 3, and 3A would have similar impacts to wetlands similar to those described for the South Alternative; long-term impacts for each of these options would nonetheless be ***low***. Overall, Options 1, 2, 3, and 3A would have the same impacts as those described for South Alternative where new and improved access roads crossings require culverts or temporary work in wetlands (***low*** to ***moderate***) and ***low*** where vegetation clearing or soil disturbance occurs. Option 4—Option 4 would cross a large wetland complex and open water associated with Woodall Springs. Access road construction requiring wetland fill	Under the No Action Alternative, water resources, floodplains, and wetlands in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
		could result in ***moderate*** to ***high*** impacts if roads are permanent.	
Wildlife	The North Alternative would result in short- and long-term, *low* disturbance to individuals and habitat for certain sensitive species and big game habitat. The North Alternative would result in long-term, ***moderate*** impacts to forested wildlife habitats because the forested ROW areas would be cleared and maintained in non-forested conditions. Within non-forested wildlife habitats, ***low*** impacts would occur because temporarily affected vegetation would be expected to grow back within two growing seasons and some wildlife species would temporarily leave the area during construction into plentiful nearby habitat. These wildlife species would be expected to return. Incidental wildlife mortality due to construction would be short term and *low*, and limited to those species that are less mobile. Further, the North Alternative would have long-term, ***low*** to ***moderate*** impacts to avian species due to the potential of collision with the transmission line. Long Valley Road Option—The Long Valley Road Option would result in the removal of less sagebrush habitat and more cultivated habitat. Because cultivated land does not provide native habitat to wildlife, the route option would have slightly less impact to wildlife than the route summarized above (impact would be ***low*** to ***none***). North Highland Option—The North Highland Option would result in the removal of less sagebrush and grass-dominated habitat and more conifer and aspen-dominated habitat. Therefore, impacts would be less from this option for wildlife species that use sagebrush and grass-dominated habitat, such as the Columbian sharp-tailed and greater sage-grouse, and greater for wildlife species that use conifer and aspen-dominated habitat, such as the northern goshawk and boreal owl. Nonetheless, overall impacts of this option would be similar to the North Alternative.	Similar to the North Alternative, the greatest source of impacts to wildlife from the South Alternative would be short- and long-term habitat modification associated with habitat clearing for project construction. The South Alternative would result in short-term moderate to high impacts and long-term, moderate impacts to forested wildlife habitats and low impacts to non-forested wildlife habitats. Impacts to avian species due to the potential of collision with the transmission line would be long term and low to moderate. Options 1, 2, and 4—Impacts to wildlife from Options 1 through 4 would be similar to those described for the South Alternative. Options 3 and 3A—Options 3 and 3A are approximately 1 mile longer than the South Alternative; therefore, it is expected that impacts from the potential of avian collisions with the transmission line under Options 3 and 3A could be long term and moderate. Option 3A also would include approximately 11 acres of aspen forest within the Blackfoot River WMA. Although the amount of habitat lost as a result of the construction of Option 3A would be relatively low compared to overall available habitat acreage in the project area. The impact to wildlife habitat within the corridor would be ***moderate*** to ***high*** especially on the WMA.	Under the No Action Alternative, wildlife in the project area would not be impacted.
Fish	No impact to fish or their habitat in the Blackfoot River or the Little Blackfoot River would occur as a result of the North Alternative because no road work, structure construction, or vegetation clearing would occur in the AIZs associated with these waterbodies, and there would be no new access road stream crossings. The North Alternative would cross Gravel Creek in one location. Because vegetation clearing is not required, there would be ***no*** impact to fish or fish habitat in Gravel Creek. Operation and maintenance of the transmission line has the potential to have a ***low*** impact to fish or their habitat if activities occur near streams. Long Valley Road Option—Under the Long Valley Road Option, there would be ***no*** impact to fish or their habitat in the Little Blackfoot River. North Highland Option—The North Highland Option would not cross aquatic resources or fish habitat. Therefore, the North Highland Option would have ***no*** impact to fish or fish habitat.	The South Alternative would span the Blackfoot River in two locations and span 14 minor tributaries of the Blackfoot River. No work needed to construct, operate, or maintain the proposed transmission line would occur within actively flowing channels. Construction of access roads and structures has the potential to temporarily increase sediment loading and temperature in the Blackfoot River and its tributaries. Due to the short duration of construction activities and the implementation of BMPs, impacts to fish and fish habitat are expected to be short term and ***low***. Options 1, 2, 3, and 3A—Options 1, 2, 3, and 3A would result in the same impacts to fish and fish habitat as those described for the South Alternative's crossing of the Blackfoot River and its tributaries (short term and ***low***). Option 4—Option 4 would impact a wetland complex and open waterbodies associated with Woodall Springs, causing unavoidable impacts on fish and fish habitat. Access roads, structures, and construction vehicle use would increase sediment loading, turbidity, and temperature in fish-bearing streams and waterbodies. Short-term impacts during construction of Option 4 would be ***moderate*** to ***high*** with the implementation of BMPs. Long-term impacts from Option 4 would be ***moderate***.	Under the No Action Alternative, fish in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
Cultural Resources	Construction of structures and access roads and installation of counterpoise and pulling and tensioning sites under the North Alternative could disturb cultural resources. The North Alternative would have ***no*** to ***moderate*** impacts to cultural resources because it would avoid culturally sensitive areas and BPA would conduct pre-construction surveys and construction monitoring. The North Alternative could impact cultural resources during operation and maintenance of the proposed transmission line. Once maintenance activities are identified, site-specific surveys would be conducted when necessary and described in subsequent documentation. Based on the typical type of maintenance activities, it is unlikely that impacts to cultural resources would exceed a ***low*** level. Long Valley Road and North Highland Options—The Long Valley Road Option and the North Highland Option would have impacts to cultural resources similar to those described for the North Alternative.	Similar to the North Alternative, construction of structures and access roads and installation of counterpoise and pulling and tensioning sites under the South Alternative could disturb cultural resources. BPA construction practices would include surveys and monitoring; therefore, it is expected that construction of the South Alternative would have ***no*** to ***low*** impacts to cultural resources. Impacts during operation and maintenance of the South Alternative would be the same as those described for the North Alternative (***low***). Options 1 through 4—Under Options 1 through 4, the potential to cultural resources would be similar to those described for the South Alternative.	Under the No Action Alternative, cultural resources in the project area would not be impacted.
Socioeconomics	The North Alternative would have short-term, ***low*** impacts on public services and utilities because there would be very little increase in the local population as a result of construction. The potential impact on the agricultural industry along the route would be temporary and ***low*** to ***moderate*** due to construction-related activities disrupting agricultural activities. ***Low***, temporary positive impacts on the local economy and tax base would occur due to increased spending during construction. The North Alternative would not cross any past, present, or potential future mining areas or leases and therefore would have *no* impact on the mining industry. Long Valley Road and North Highland Options—The Long Valley Road Option and the North Highland Option would have similar ***low*** impacts on socioeconomic resources.	Similar to the North Alternative, the South Alternative would have short-term, *low* impacts to public services and utilities and temporary, ***low*** to ***moderate*** impacts to agricultural industries due to construction-related activities disrupting agricultural activities. ***Low***, temporary positive impacts to the local economy and tax base would occur due to increased spending during construction. The reduction in mining areas under the South Alternative could result in long-term, local ***low*** to ***moderate*** impacts, depending on the value of the resource that would be no longer accessible to the mining industry. Options 1 through 4 would have similar ***low*** overall impacts to socioeconomic resources.	Under the No Action Alternative, socioeconomics in the project area would not be impacted.
Transportation	The North Alternative would have a short-term, ***low*** impact to transportation resources due to construction-related traffic conditions that would be expected; however, these delays would be limited because a traffic control plan would be developed. The North Alternative would have short-term, ***low*** impacts to roadway conditions because heavy loads transported on state and county roads would be within legal size and load limits or they would otherwise be required to obtain and follow permits conditions. Operation and maintenance of the North Alternative would not be expected to disrupt traffic or impact transportation infrastructure in any way and would be expected to be ***low***. Long Valley Road and North Highland Options—The Long Valley Road Option and the North Highland Option would have similar ***low*** impacts on traffic and road conditions.	During the construction period, the South Alternative would have impacts to traffic and roadway conditions similar to those from the North Alternative. The South Alternative would impact traffic on Highway 34 to a lesser extent than the North Alternative, but would create greater traffic impacts on Blackfoot River Road. Overall, short-term impacts of the South Alternative to transportation would be ***low***. Long-term impacts from operation and maintenance would likewise be ***low***. Options 1 through 4 would have similar ***low*** impacts on traffic and road conditions.	Under the No Action Alternative, transportation resources in the project area would not be impacted.
Noise	The North Alternative would have varying noise impacts depending on construction activities and proximity of work to noise sensitive areas. Helicopter stringing would result in temporary ***moderate*** to ***high*** impacts because occupants of homes within approximately 1 mile of the helicopters would be exposed to temporary noise levels above 65 decibels on the A-weighted scale (dBA). Blasting also would result in short-term, ***moderate*** to ***high*** impacts because it could produce a temporary noise impact on a few residents or visitors. Operation and maintenance-related noise such as audible noise from corona activity during	Similar to the North Alternative, construction-phase noise impacts from the South Alternative would be ***moderate*** to ***high***, although intermittent and short term. Potential noise impacts associated with operation and maintenance activities would be ***low***. Options 1 through 4 would have the same noise impacts as the South Alternative.	Under the No Action Alternative, noise in the project area would not be increased.

Resource	North Alternative	South Alternative	No Action Alternative
	wet weather or occasional maintenance crew presence would be temporary and ***low***. Long Valley Road and North Highland Options—The Long Valley Road Option and the North Highland Option would have the same noise impacts.		
Public Health and Safety	The North Alternative would have ***low*** impacts related to contamination associated with mining areas because the transmission line would span waterbodies downgradient of mining areas and construction would not result in excavation in areas of known mine footprints or contamination. Impacts associated with construction-related hazardous materials would be ***low*** because mitigation would be implemented to manage unanticipated contaminants and spills. Electric and magnetic field (EMF) impacts would be ***low***. Construction standards and grounding requirements would minimize potential nuisance shocks from electric fields near the ROW. Magnetic fields would remain comparable to ambient levels within a couple hundred feet of the ROW. Long Valley Road and North Highland Options—Similar to the North Alternative, both the Long Valley Road Option and the North Highland Option would span waterbodies downgradient of mining areas and would have ***low*** impacts related to contamination associated with mining areas. EMF impacts would also be ***low***.	The South Alternative passes through several mining areas, including four that are currently being investigated under CERCLA. Construction activities could come into direct contact with waste dumps, seeps, or mine pits. If contaminants are disturbed, impacts on workers, the general public, and environmental features from the South Alternative could be ***moderate*** to ***high***. Likewise, if ground-disturbing maintenance activities result in disturbance and release of contaminants during the operating phase of the South Alternative, the resulting impacts would be ***moderate*** to ***high***. Similar to the North Alternative, EMF impacts from the South Alternative would be ***low***. Construction standards and grounding requirements would minimize potential nuisance shocks from electric fields near the ROW. Magnetic fields would remain comparable to ambient levels within a couple hundred feet of the ROW. Options 1 through 4 would have the same impacts on public health and safety as the South Alternative.	Under the No Action Alternative, public health and safety in the project area would not be impacted.
Air Quality	Construction would have short-term, ***low*** impacts to air quality because the emissions and dust from construction vehicles and equipment would not exceed the selected general conformity de minimis thresholds. The operation and maintenance of the North Alternative corridor would be long term in nature but air quality impacts would be non-existent or ***low***. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be very small, temporary, and localized. Long Valley Road and North Highland Options—Under the Long Valley Road Option and the North Highland Option, air emissions and dust generation would be ***low*** and similar to those described above.	Similar to the North Alternative, construction of the South Alternative would have short-term, ***low*** impacts to air quality related to construction vehicle emissions and dust. Air quality impacts from the operation and maintenance of the South Alternative corridor would be long-term in nature but ***none*** to ***low***. Potential emissions from maintenance vehicles on access roads would be very small, temporary, and localized. Options 1 through 4 would have ***low*** impacts similar to those described above for the South Alternative.	Under the No Action Alternative, air quality in the project area would not be impacted.
GHG Emissions	Both short- and long-term, ***low*** impacts to GHG emissions would occur because of the estimated level of construction, operation, and maintenance emissions (<25,000 metric tons/year). Long Valley Road Option—Under the Long Valley Road Option, GHG emissions would be slightly larger, but would still result in ***low*** impacts to GHG emissions. North Highland Option—Under the North Highland Option, GHG emissions would be slightly reduced and would still result in a ***low*** impact to GHG emissions.	Due to its shorter length, the South Alternative would have somewhat less severe impacts than the North Alternative. Both short- and long-term impacts of the South Alternative to GHG emissions would be ***low***. The estimated level of construction, operation, and maintenance emissions would be less than 25,000 metric tons/year. Under Options 1 through 4, GHG emissions would be slightly larger, but would still result in ***low*** impacts to GHG emissions.	Under the No Action Alternative, GHG emissions in the project area would not be increased.

Table 2-6. Proposed Mitigation Measures for the North Alternative and South Alternative

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ Provide a schedule of construction activities, including blasting, to all landowners who could be affected by construction.	X	X										X			
▪ Plan and conduct construction activities to minimize temporary disturbance, displacement of crops, and interference with agricultural activities.	X	X								X					
▪ Ensure that all equipment has standard sound-control devices.							X					X			
▪ Consult with the Farm Service Agency to avoid and mitigate impacts to lands enrolled in the USDA CRP. Avoid access road construction over CRP lands to the extent practical.	X	X													
▪ Coordinate with mine owners along the South Alternative for the placement of towers and roads within proposed mining areas.	X	X													
▪ Use BMPs to limit erosion and the spread of invasive and noxious weeds.	X	X		X	X	X	X	X							
▪ Restore compacted cropland soils as close as possible to pre-construction conditions using tillage. Break up compacted soils where necessary by ripping, tilling, or scarifying before seeding.	X	X		X	X										
▪ Remove topsoil from cropland soils in a manner that will allow it to be reused after	X	X			X										

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
construction.															
▪ Follow all applicable soil and water conservation measures listed in Forest Service Handbook 2509.22 - Soil and Water Conservation Practices Handbook (R-1/R-4 Amendment No. 1, effective 05/88), on C-TNF managed lands, as determined through coordination with the C-TNF.					X										
▪ Compensate landowners for any damage to crops or property during construction or operation and maintenance activities, as appropriate.	X	X								X					
▪ Install barriers, gates, and postings at appropriate access points and, at the landowner's request, to minimize or eliminate unauthorized use of access roads.	X	X									X		X		
▪ Develop the Project in compliance with state and federal resource management standards set forth in the appropriate management plans.	X	X													
▪ Leave plants shorter than 4 feet undisturbed within the 100-foot-wide ROW where they would not interfere with the safe operation of the transmission line to help reduce the effect of the cleared ROW on visual and aesthetic resources.			X	X			X								
▪ Develop irregular ROW edges (feathering) on C-TNF lands to break up the visual pattern, as practicable. Feathering would occur outside of			X												

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
the 100-foot ROW but within the 250-foot cleared area on C-TNF lands only.															
▪ Utilize non-specular (non-reflective) finish on transmission lines, insulators, and other hardware to reduce reflection.			X												
▪ Use appropriate seed mixes, application rates, and seeding dates to revegetate disturbed areas following completion of construction activities.				X	X		X							X	X
▪ Monitor reseeded areas for adequate growth and implement contingency measures as necessary.				X	X										
▪ Identify and treat invasive and noxious weeds on ROW, access roads, and other disturbed areas during routine post-construction ROW vegetation management.				X	X										
▪ Consult with the appropriate state or federal land management agency (USFS, BLM, or IDFG) concerning any special status species, if any are identified during construction.				X			X	X							
▪ Consult with USFWS concerning any ESA-listed plant species identified in the project corridor during follow-up surveys, and implement any mitigation measures (such as feasible and appropriate avoidance measures) identified as a result of these consultations.				X											

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ If other special status plant species are identified during follow-up surveys, develop appropriate avoidance measures to the extent possible.				X											
▪ Identify invasive and noxious weed populations for construction crews so these populations can be avoided when possible. Cooperate with private, county, state, and federal landowners to reduce the introduction and spread of invasive and noxious weeds, including a pre-construction weed survey and locating vehicle wash or blow stations as appropriate.				X											
▪ Follow the guidelines in the noxious weed strategies used by land managers on state and federally managed land. Seed all disturbed areas as soon as possible with noxious weed-free seed (as certified by the state) to stabilize the sites. On C-TNF, use a native seed mixture approved by the forest officer. On BLM lands, use a native seed mixture approved by the BLM botanist. On state-owned lands, use a native seed mixture approved by the district biologist.				X											
▪ Cooperate with private, county, state, and federal landowners to treat noxious weeds along access roads that would be used to bring construction equipment into the project corridor to reduce the introduction and spread of noxious weeds.				X											

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ Follow all applicable soil and water conservation measures listed in the relevant Forest Service Handbook on C-TNF managed land.					X										
▪ Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site. As needed, stake or flag water resources, wetlands or other sensitive areas prior to construction to avoid impacts.		X		X		X	X		X						
▪ Limit road improvements to the minimum amount necessary to safely move equipment, materials, and personnel in and out of the construction area.				X	X	X	X	X			X				
▪ Minimize ground-disturbing activities, particularly in sensitive habitats.				X	X		X								
▪ Minimize construction on steep or unstable slopes, if possible.					X										
▪ Locate structures or access roads outside of previously unidentified active slides, bedrock hollows, or other geologic hazard areas, where possible.					X										
▪ Clean equipment using wash or blow stations before entering project areas, as needed.				X											
▪ Develop and implement a SWPPP.					X	X		X							

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ Monitor erosion control BMPs during construction to ensure proper function.					X										
▪ Limit grubbing to the area around structure sites to reduce the impact on the roots of low-lying vegetation so that they can resprout.					X										
▪ Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities to promote regrowth from the native seed bank in the topsoil, where possible.				X	X		X								
▪ Use weed-free straw for erosion control during construction and restoration activities.				X											
▪ Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS -0285) and label recommendations to ensure protection of surface water, ecological integrity, and public health and safety.				X		X	X	X					X		
▪ Retain existing low-growing vegetation where possible to prevent sediment movement off site.				X	X	X		X							
▪ Avoid excavation in areas of identified contaminants.					X								X		
▪ Conduct soil sampling in areas likely to be contaminated by mining waste containing selenium and other hazardous substances													X		

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
where necessary, to ensure proper management and handling of excavated soils and for worker health and safety. Consult the mining companies and USFS before any sampling.															
▪ Construct and operate the new transmission line according to the NESC.													X		
▪ Restore reception quality if radio or television interference occurs as a result of constructing the transmission line so that reception is as good as or better than before the interference.													X		
▪ Obtain all required permits with approved wetland delineations and compensatory mitigation plans prior to construction, and implement required wetland compensation in accordance with these plans and permits.						X									
▪ Prepare and implement Spill Prevention and Response Procedures to avoid and contain accidental spills, including notification assessment, security, clean-up, and reporting requirements. The contractor would be required to follow the Spill Prevention and Response Procedures and immediately notify the proper authorities in the event of a hazardous material or petroleum spill.				X	X	X		X					X		
▪ Provide spill prevention kits at designated locations on the project site and where						X							X		

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
hazardous materials are stored.															
▪ Inspect equipment daily for leaks.						X							X		
▪ Design temporary and permanent access roads to control runoff and prevent erosion, and surface permanent roads with rock.				X	X	X		X					X		
▪ Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize off-site sediment movement where the potential exists for construction activities to impact surface water or wetlands.					X	X		X							
▪ Implement construction site maintenance and clean-up. Keep construction areas free of debris.			X												
▪ Use erosion control BMPs and leave erosion and sediment control devices in place until disturbed sites are stabilized and erosion potential has returned to pre-project conditions.				X	X	X		X							
▪ Minimize the amount of permanent access roads necessary for the Project to minimize the potential for wildlife collisions.							X								
▪ Avoid snag and large tree removal to the extent possible.				X			X								

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ Limit the amount of time soils are left exposed. Use BMPs on exposed piles of soil to reduce erosion potential from rain or wind.					X	X								X	X
▪ Encourage workers to cut or crush vegetation, rather than blade, in temporary disturbance areas in order to maximize the ability of plant roots to keep soil intact and prevent sediment movement off-site.				X	X										
▪ Install visibility enhancement devices on the overhead ground wires to reduce the risk of collision in areas that have been determined by the avian risk model to bear a high risk of increased avian collisions.							X								
▪ Conduct nesting bird pre-construction surveys prior to tree removal.							X								
▪ Conduct pre-construction surveys for sage- and Columbian sharp-tailed grouse leks in sagebrush habitats. When possible, prohibit construction activity within 10 miles of an active greater sage-grouse lek and within 2 miles of active Columbian sharp-tailed grouse leks between the end of March and mid-May.							X								
▪ Use blasting mats to reduce noise levels.												X			
▪ Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner.		X		X	X	X	X	X							

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ Avoid manipulating or altering sagebrush stands with tall, relatively thick sagebrush that are suitable as grouse nesting habitat during the nesting period (May to June).				X			X								
▪ Consult with the C-TNF, BLM, and IDFG regarding construction and access within big game winter range habitat between November 15 and April 15. Within big game winter ranges, seed disturbed areas with preferred big game forage species, as recommended by the C-TNF, BLM, and IDFG.				X			X								
▪ Limit construction between Dry Ridge and Upper Valley within the Blackfoot River WMA during the elk and mule deer calving and fawning period and avian breeding and nesting from April 15 to July 1.							X								
▪ Restrict public access to permanent access roads to reduce increased human impacts and to maximize big game use of the project corridor.		X					X								
▪ Maintain erosion controls near waterbodies.					X	X		X							
▪ Minimize the number of access road stream crossings during project planning.						X		X							
▪ Minimize the ground-disturbance footprint of the Project, particularly in sensitive areas such as stream crossings and wetlands, and stream and wetland buffers and AIZs.				X	X	X		X							

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ Cease construction near stream courses under high flow conditions, except for efforts to avoid or minimize resource damage.						X		X					X		
▪ Identify wetlands and other sensitive areas prior to initiating construction so that construction workers avoid unintentional impacts to wildlife habitat.				X		X	X								
▪ Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles.						X		X					X		
▪ Site transmission structures and access roads to avoid known cultural resource sites and limit ground disturbance.									X						
▪ Complete cultural resource surveys for portions of the alternatives or route options if BPA decides to construct a route where cultural resource surveys have not been conducted along the entire route. Consult with Idaho SHPO concerning appropriate actions prior to any ground-disturbing activities.									X						
▪ Prepare an Inadvertent Discovery Plan that details crew member responsibilities for reporting if cultural resources are encountered during construction. This plan should include directives to stop work immediately and notify interested parties including appropriate BPA									X						

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
personnel; affected tribes; C-TNF, BIA, BLM, and USFS staff (if appropriate); the Idaho SHPO; and local law enforcement officials (if appropriate).															
▪ Prepare a mitigation plan to protect sites if final placement of project facilities results in unavoidable adverse impacts to a significant cultural resource.									X						
▪ Provide cultural resource monitors, as necessary, to observe ground-disturbing activities in areas of previously documented cultural sites.									X						
▪ Compensate landowners for reconfiguration of irrigation systems due to placement project facilities.		X								X					
▪ Compensate landowners at fair market value for any new land rights acquired for ROW or access road easements.		X								X					
▪ Initiate discussions with local fire districts prior to construction and work with the districts and other appropriate emergency response entities to develop fire and emergency response plans.				X			X						X		
▪ Improve existing roads on BLM, BIA, and C-TNF lands according to applicable agency standards.								X			X				
▪ Develop a traffic control plan (for circulation, safety, management, signage, and detours if necessary). Consider road conditions, wear and											X				

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
tear on roads, bridges, stream crossings, traffic control, post-construction repair, reclamation, and access control.															
▪ Comply with all county, state, and federal traffic management and road design requirements.											X				
▪ Ensure construction vehicles travel at low speeds on access roads and at construction sites to minimize dust.					X									X	X
▪ Limit the use of local, county, USFS, BIA, and BLM roads for construction traffic to roads necessary for access to staging areas and work sites.											X				
▪ Schedule heavy and over-sized truck trips outside of peak morning and evening commute hours.											X	X			
▪ To the extent possible, conduct noise-generating construction activities only during normal daytime hours, i.e., between 7:00 a.m. and 7:00 p.m.							X					X			
▪ Store construction materials only in designated staging areas.											X				
▪ Restore public roadways to preconstruction conditions upon completion of construction activities.											X				

Proposed Mitigation Measures	Land Use	Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources, Floodplains, and Wetlands	Wildlife	Fish	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality	GHG Emissions
▪ Prepare a Fugitive Dust Control Plan to control windblown dust, include measures to develop and implement a dust control plan.					X									X	X
▪ Do not burn during construction activities.														X	X
▪ Shut down idling construction equipment, if feasible.														X	X
▪ Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.															X
▪ Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.				X	X										X
▪ Recycle or salvage non-hazardous construction and demolition debris where practicable.															X
▪ Use local rock sources for road construction where practicable.					X					X					X
▪ Encourage the use of the proper size of equipment for the job to maximize energy efficiency.															X
▪ Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.															X

3 Affected Environment, Environmental Consequences, and Mitigation Measures

This chapter describes the existing environmental resources that could be affected by the North and South alternatives, and the potential impacts the alternatives and their applicable route options would have to those resources. The following resources could be affected by the Project:

- Land Use
- Recreation
- Visual Resources
- Vegetation
- Geology and Soils
- Water Resources, Floodplains, and Wetlands
- Wildlife
- Fish
- Cultural Resources
- Socioeconomics
- Transportation
- Noise
- Public Health and Safety
- Air Quality
- Greenhouse Gas Emissions

For each resource, the area potentially affected by the Project and existing information about the resource in the area is first described. This affected environment information serves as the baseline from which to evaluate the potential impacts of the alternatives. Where appropriate, the specific line mile is provided to describe the specific location of resources. In general, this chapter uses the terms "project corridor," "North Alternative corridor," and "South Alternative corridor" to identify resources within the proposed transmission line ROWs, access road ROWs, and substation or connection facilities for the alternatives, and the term "project area" to identify resources within the general vicinity of these corridors. Use of "ROW" is used identify resources within a transmission line or access road ROW.

Information about resources in the project area was obtained through research and field observations conducted by environmental specialists and from information provided in agency and public scoping comments, as well as through comments received on the draft EIS. Field surveys of the North Alternative corridor were conducted during spring and summer 2011 and summer 2012. Additional follow-up surveys of the North Alternative corridor were completed in the summer of 2013. Field surveys of the South Alternative corridor and route options were conducted during the summer of 2006, 2007, and 2008; winter/spring of 2012/2013; summer/fall of 2013; and spring 2014.

Next, the potential environmental consequences—i.e., the potential adverse and beneficial impacts to the resource—of the North and South alternatives and route options are identified. The significance of potential impacts is evaluated in terms of context (the area, timing, and duration of the impact) and intensity (the severity of the impact). Potential mitigation measures to reduce or avoid impacts to the resource also are identified, as are those impacts to the resource that are unavoidable even after implementation of mitigation. Each resource discussion concludes with a discussion of the potential impacts to the resource from the No Action Alternative.

Following the resource discussions in this chapter, this chapter also evaluates the potential cumulative impacts associated with the alternatives when combined with other past, present, and reasonably foreseeable future actions. This chapter concludes with additional EIS sections required by applicable NEPA regulations and guidance, including intentional destructive acts, irreversible or irretrievable commitment of resources, and the relationship between short-term uses of the environment and long-term productivity.

3.1 Land Use

3.1.1 Affected Environment

The project area is located in Caribou County, Idaho, a largely rural county with a density of about four people per square mile (City-Data.com 2011). Agriculture is the primary land use in the county, with cultivated crops and grazing being the dominant types of agricultural uses. In total, farmland occupies about 427,000 acres in Caribou County. Large portions of the county are forested and under federal and state ownership, and there are substantial mining operations scattered throughout the county and the project area. The city of Soda Springs is located approximately 4 miles south of the proposed Hooper Springs Substation site, and includes residential, commercial, industrial, and public facility development at a level typical of a smaller, more rural community.

The North Alternative corridor crosses predominantly agricultural and forested lands (see Map 3-1). The western portion of the corridor tends to be primarily used for agriculture (mainly cultivated crops), with the eastern portion of the corridor primarily consisting of grassland, grazing, and forested areas with scattered rural residences. The North Alternative corridor does not cross any mining areas. Approximately 21 miles of the roughly 33-mile-long North Alternative corridor are located on private lands, 4 miles on State of Idaho Endowment lands, 5 miles on USFS lands, 0.7 mile on BLM lands, and 1.7 miles on lands managed by BIA (see Map 3-2).

Like the North Alternative corridor, the South Alternative corridor crosses predominantly agricultural and forested lands but with a higher proportion of forested lands in comparison to agricultural lands (see Map 3-1). Agricultural land along the South Alternative corridor includes cultivated fields and seeded grasslands that could be used for grazing or hay production. In addition, the South Alternative corridor crosses several existing and planned mining areas. Of the 22-mile-long South Alternative corridor, approximately 15 miles are on private lands; 1 mile is on state lands; 3.4 miles are on USFS lands; and 2.7 miles are on BLM lands (see Map 3-2).

Land use in the project area and within the alternative corridors is further described in the following sections.

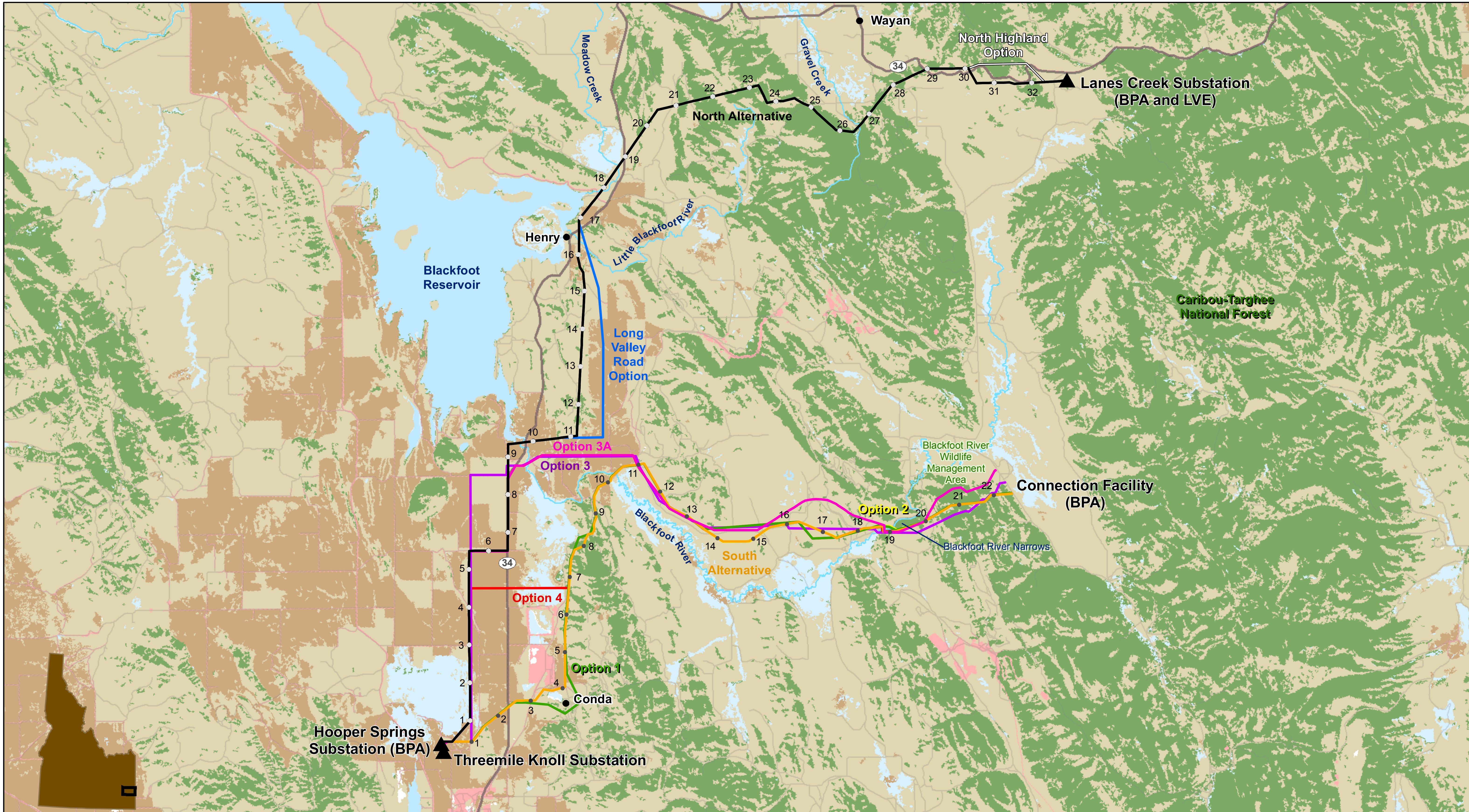
Private Lands

There are approximately 252.4 acres of private lands within the North Alternative corridor and approximately 186.7 acres within the South Alternative corridor. The majority of these lands currently are in agricultural use (grazing and crop cultivation). Barley is the most prevalent dry land crop, followed by grass, pastureland, and spring wheat. Almost one-third of the area is fallow or uncultivated. Map 3-1 provides information on land cover types within the project area.

Areas of prime farmland are located within and near the North and South alternative corridors (Kukachka 2012, personal communication) (see Section 3.5, Geology and Soils, for further discussion of prime farmland).

North and east of the town of Henry, the North Alternative corridor crosses private agricultural parcels that are enrolled in the U.S. Department of Agriculture's (USDA) CRP. The CRP is a voluntary conservation easement program administered by the Farm Service Agency. Participants enrolled in the program are required to limit development and agricultural uses and implement resource conservation and habitat protection measures in exchange for annual rental payments and cost-share assistance. CRP acres are lands where the landowner has agreed, through contractual arrangements, to plant long-term, resource-conserving covers such as introduced or native grasses or trees to improve the quality of water, control soil erosion, and enhance wildlife habitat (Mickelsen 2012, personal communication). Neither the South Alternative nor any of its route options cross CRP lands (Bybee 2012, personal communication).

The South Alternative corridor crosses several existing and planned industrial mining areas on privately owned lands, primarily along the western portion of the project corridor. These mining-related land uses are described under "Mining Areas" below.



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Hooper Springs Transmission Project

Map 3-1
Land Uses in the Project Area

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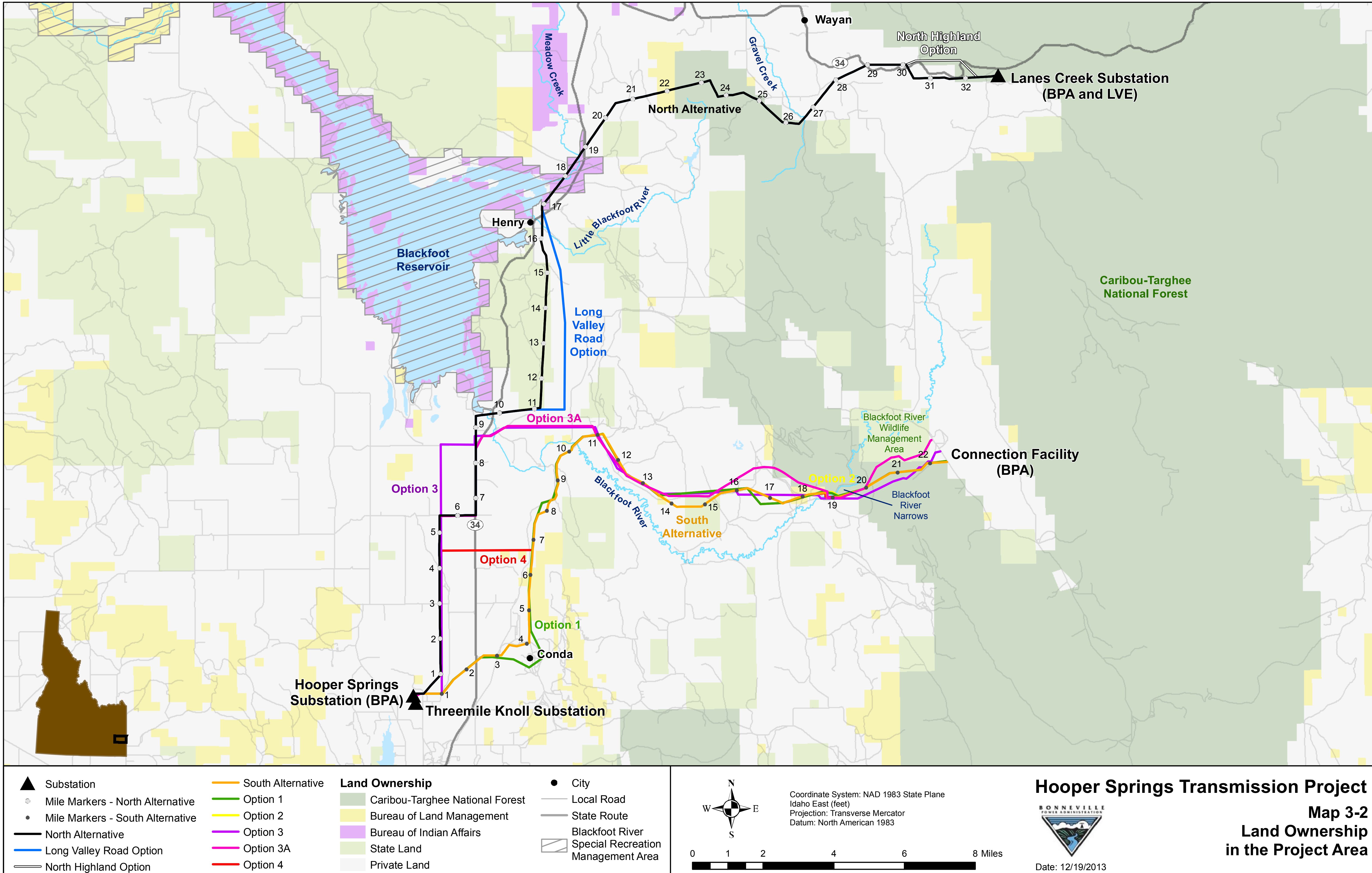

Hooper Springs Transmission Project

Map 3-2
Land Ownership in the Project Area

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State Lands

State of Idaho Endowment Lands

The North Alternative corridor crosses a 4,624-acre parcel owned by the state of Idaho between line miles 11 and 15 and the South Alternative corridor crosses a 645-acre parcel between line miles 14 and 16 (see Table 3-1). State of Idaho Endowment Lands must, per the state constitution, be managed “in such manner as will secure the maximum long-term financial return” to the trust beneficiaries. The state accommodates public use of Endowment Lands, to the extent feasible, provided such use does not impair financial returns. Most of the state-owned land on the North Alternative—about 4,135 acres, or about 89 percent of total acreage—is undeveloped shrubland or grassland. Nearly 100 percent of the land on the state-owned parcel located within the South Alternative corridor is undeveloped shrubland or grassland. Both the North and South alternative corridors cross land leasing programs operated on state lands. Existing industrial mining areas partially located on state of Idaho lands also are near the South Alternative corridor (see “Mining Areas” below).

Table 3-1. State Land Use within the North and South Alternative ROWs[1]

Land Use	North Alternative (acres)[1]	South Alternative (acres)[1]
Developed/open space	0.0	0.0
Forest	7.0	0.0
Grazing	46.7	12.5
Cultivated crops	0.0	0.0
Total	**53.7**	**12.5**

Source: National Land Cover Database; USGS 2006a

[1] This includes lands within the 100-foot wide ROW.

Grazing Lease Program

The state of Idaho’s Department of Lands manages more than 1,200 grazing leases over approximately 300,000 acres of timberland and 1.5 million acres of rangeland located primarily across the southern two-thirds of Idaho (Idaho Department of Lands 2011). Approximately 46.7 acres of state grazing lands are located within the North Alternative corridor. Approximately 12.5 acres leased for grazing are located within the South Alternative corridor.

Pioneer Historic Byway

The Pioneer Historic Byway is designated as an Idaho State Scenic Byway and a National Scenic Byway (U.S. Department of Transportation 2012). The entire length of Highway 34 within Caribou County is contiguous with the Pioneer Historic Byway. The North Alternative corridor crosses Highway 34 in seven locations. The Long Valley Road and North Highland option each cross Highway 34 in one location. The South Alternative and route options all cross Highway 34 once, although in three different locations.

The Corridor Management Plan for the Pioneer Historic Byway provides management prescriptions for preserving the visual and scenic qualities of the highway corridor (Pioneer Historic Byway Committee 2000). The Corridor Management Plan states that road building and infrastructure development within the byway corridor should minimize visual impacts, and that future installation of overhead power lines along the byway corridor should be minimized. In the case of unavoidable disturbances, the Corridor Management Plan states that materials should blend in with their backgrounds.

Blackfoot River Wildlife Management Area

The Blackfoot River WMA, managed by IDFG, is located approximately 16 miles northeast of Soda Springs and is accessed from Blackfoot River Road. The Blackfoot River WMA includes 1,720 acres of the upper Blackfoot River drainage bisected by approximately 7 miles of the Blackfoot River. It was established to provide public access, to improve cutthroat trout habitat and to provide diverse upland and riparian communities for game and non-game wildlife species (IDFG 2013). The Blackfoot River WMA provides year-round habitat for moose; elk and mule deer use the Blackfoot River WMA frequently in spring, summer, and fall. Several species of waterfowl, including mallards (*Anas platyrhynchos*), teal, gadwall (*Anas strepera*), pintail, widgeon, and Canada geese (*Branta canadensis*) nest on the Blackfoot River WMA, and forested areas provide foraging habitat and shelter for blue grouse and ruffed grouse (IDFG 2003). The Blackfoot River WMA is managed in accordance with the Blackfoot River WMA Management Plan (IDFG 1999).

The North and South alternative corridors do not cross any lands within the Blackfoot River WMA; however, approximately 1.3 miles of Option 3A crosses the southern edge of the WMA along its boundary with the C-TNF.

U.S. Forest Service Lands

The North Alternative crosses approximately 5.5 miles of forest and shrub-scrub within the Soda Springs Ranger District of the C-TNF (between line miles 22 and 28 and between line miles 31 and the Lanes Creek Substation). The South Alternative crosses about 3.4 miles of forest and shrub-scrub within the Soda Springs Ranger District of the C-TNF between line miles 19 and 22.

In spring 2000, the Caribou National Forest (CNF) and the Targhee National Forest (TNF) were officially combined to create C-TNF; however, the CNF is managed pursuant to the 2003 Revised Forest Plan (RFP), and the TNF is managed pursuant to the 1997 RFP (USFS 2003a and USFS 1997). The C-TNF grants special use permits for a variety of short- and long-term uses. Common land uses on the Soda Springs Ranger District include phosphate mining, logging, road building, grazing, wildlife habitat, and recreational activities such as hunting, camping, and off-highway vehicle (OHV) use.

Because the North and South alternative corridors cross the CNF portion of the C-TNF, the CNF's 2003 RFP Management Prescriptions are described below. The North Alternative corridor crosses seven Management Prescriptions as defined by the 2003 CNF RFP: 2.1.2, Visual Quality Maintenance; 2.7.2, Elk and Deer Winter Range; 5.2, Forest Vegetation Management; 3.2b, Semi-Primitive Recreation; 2.1.6b, Gravel Creek Special Emphasis Area; and 2.8.3, Aquatic Influence Zone (AIZ). The South Alternative corridor crosses three Management Prescriptions: 2.7.2, Elk and Deer Winter Range; 5.2, Forest Vegetation Management; and 2.8.3, AIZ. Each management prescription includes management goals related to allowable uses (USFS 2003a). Management goals within each prescription related to land use are described in Table 3-2 and the management prescriptions in the North and South alternative corridors are depicted in Maps 3-3 and 3-4.

On C-TNF lands, the South Alternative corridor also crosses several existing industrial mining areas (see "Mining Areas" below).

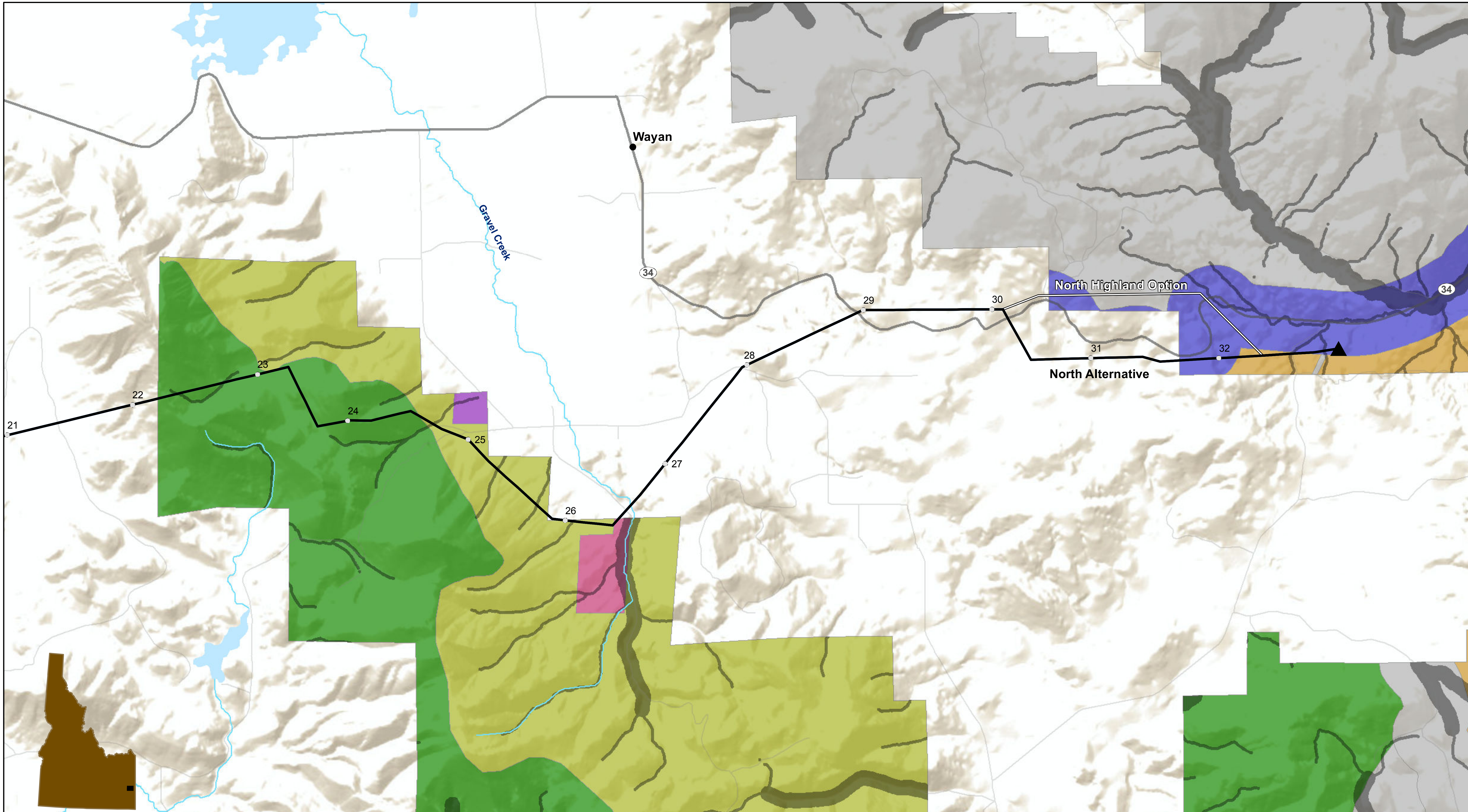
Table 3-2. CNF Land Use Management Goals by Management Prescription

Management Prescription	Land Uses and/or Goals
2.1.2: Visual Quality Maintenance	This prescription emphasizes maintaining existing scenery within major travel corridors containing high quality natural vistas. Livestock production, timber harvest and other commodity outputs are permitted. Year-round motorized access is permitted within the Visual Quality Maintenance management prescription. Goals: 1. Manage travel corridors to protect natural visual quality. 2. Manage in an environmentally sensitive manner to promote the production of non-commodity resources at varying levels, and limited commodity production. 3. Manage to provide various dispersed recreational opportunities. 4. Provide interpretive opportunities to enhance visitors' experience.
2.7.2: Elk and Deer Winter Range	This management prescription manages for multiple land use benefits, including timber harvest and grazing, to the extent these land uses are compatible with maintaining or improving quality elk and deer winter range. Access is managed or restricted to provide security for wintering elk and deer. Summer and winter motorized travel is restricted to designated roads and trails. Goals: 1. Provide quality elk and deer winter range. 2. Livestock grazing is managed to insure forage conditions are compatible with big game winter range goals. 3. Vegetation is managed to maintain or improve cover or forage conditions needed for wintering deer and elk. 4. Human disturbance to wintering big game animals is minimized.
5.2: Forest Vegetation Management	This management prescription emphasizes wood-fiber production, timber growth, and yield. Motorized use is prevalent, both for timber management activities and recreation. Goals: 1. Lands are managed to emphasize the cost-effective production of timber its land capability and capacity. 2. Timber values are protected through fire suppression and insect and disease management. 3. Where aspen exists on suitable timber land, it will be maintained at the current level on the landscape.
3.2b: Semi-Primitive Recreation	This management prescription identifies areas with a semi-primitive, backcountry recreation experience, associated with some motorized vehicle use. Roads and trails are designed and maintained to allow easy passage. Goal: 1. Maintain or enhance semi-primitive, motorized, and dispersed recreation opportunities.

Management Prescription	Land Uses and/or Goals
2.1.6b: Gravel Creek Special Emphasis Area (North Alternative only)	This management prescription applies to 160-acre parcel of land donated to USFS as mitigation for wetland impacts from highway reconstruction on U.S. 89. Management is focused on maintaining the wetland characteristics of the area. No motorized access is allowed during summer months. Goals: 1. Management protects, conserves, and retains the floodplain and wetland values of the area according to the standards of Executive Orders 11998 and 11990. 2. The area is managed according to the Memorandum of Understanding with Idaho Transportation Department (ITD), the Federal Highway Administration, and USACE. 3. Natural disturbances and processes are allowed to play their natural role in ecological succession, except where resource values will be adversely affected.
6.2: Rangeland Vegetation Management (North Highland Option Only)	The purpose of this management prescription is to achieve and maintain healthy rangelands for livestock forage production and watershed conditions. This prescription focuses on maintaining and restoring rangeland ecosystem processes and functions to achieve sustainable resource conditions. Goals: 1. Maintain and restore ecological processes and functions of rangeland ecosystems. 2. Provide forage on a sustained-yield basis that meets rangeland values and wildlife habitat. 3. While designing management activities to meet restoration objectives, make forage and other commodity products available for purchase, to the extent possible to (1) support economic activity important to rural and tribal communities and local governments and (2) to achieve restoration objectives in an efficient and cost effective way. 4. Increase the geographic extent and connectivity of rangeland cover types and structural stages that have declined from the historic to the current period on sites where they can be sustained.
2.8.3: Aquatic Influence Zone (AIZ)	This management prescription applies to the AIZ associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands such as wet meadows, springs, seeps, bogs and other areas. These areas control the hydrologic, geomorphic, and ecological processes that directly affect water quality and aquatic life. They also provide unique habitat characteristics important to plant and animal species that rely on aquatic, wetland, or riparian ecosystems for all or a portion of their life cycle. The AIZ management prescription provides an extensive set of goals, standards, and guidelines regarding ecological processes and patterns, land use, fish and wildlife management, and access within the AIZ. Goals, standards and guidelines for this management prescription that are applicable to the North and South alternatives are discussed in Section 4.16.6.

Management Prescription	Land Uses and/or Goals
8.2.2: Phosphate Mining Areas (Option 3A only)	This prescription applies to Federal phosphate lease areas where mining, post mining reclamation, or exploration is taking place and allows for the exploration/development of existing leases. Management goals include the following: 1. Provide for phosphate resource development with consideration given to biological, physical, social, and economic resources. 2. Mining and reclamation plans are designed to prevent the release of hazardous substances into the environment in excess of regulatory standards. Monitor mine sites for compliance with State and Federal regulatory standards. 3. Reclaim mined lands to maintain or re-establish hydrologic function, integrity, and other surface resource values within the capability of affected lands. 4. Emphasize topsoil management and the use of suitable, available topsoil and select subsoils for reclamation of mined lands. 5. Emphasize the use of native plant species in reclamation but allow the use of nonnatives when natives will not achieve reclamation goals. 6. Emphasize reclaiming mined lands to a stable topographic relief that conforms visually to natural surroundings. 7. Design final reclamation that promotes long-term diversity in vegetation, wildlife habitat and topography when not in conflict with mitigation measures designed to prevent the release of hazardous substances. 8. Develop, refine, and implement management practices to prevent the release of hazardous substances into the environment that exceed state and/or federal standards and ensure adequate reclamation to meet post-mining land uses.

Source: USFS 2003a



- Substation
- City
- Mile Markers - North Alternative
- North Alternative
- North Highland Option
- Local Road
- State Route

Caribou National Forest Management Prescription

- Visual Quality Maintenance
- Elk and Deer Winter Range (Non-Critical)
- Forest Vegetation Management
- Semi-Primitive Recreation
- Gravel Creek Special Emphasis Area
- Private Land
- Rangeland Vegetation Management/ Other Management Prescriptions
- Aquatic Influence Zone (AIZ)

N E S W

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

0 0.25 0.5 1 1.5 2 Miles

BONNEVILLE POWER ADMINISTRATION

Date: 1/7/2014

Hooper Springs Transmission Project
Map 3-3
CNF Management Prescriptions for the North Alternative and North Highland Route Option

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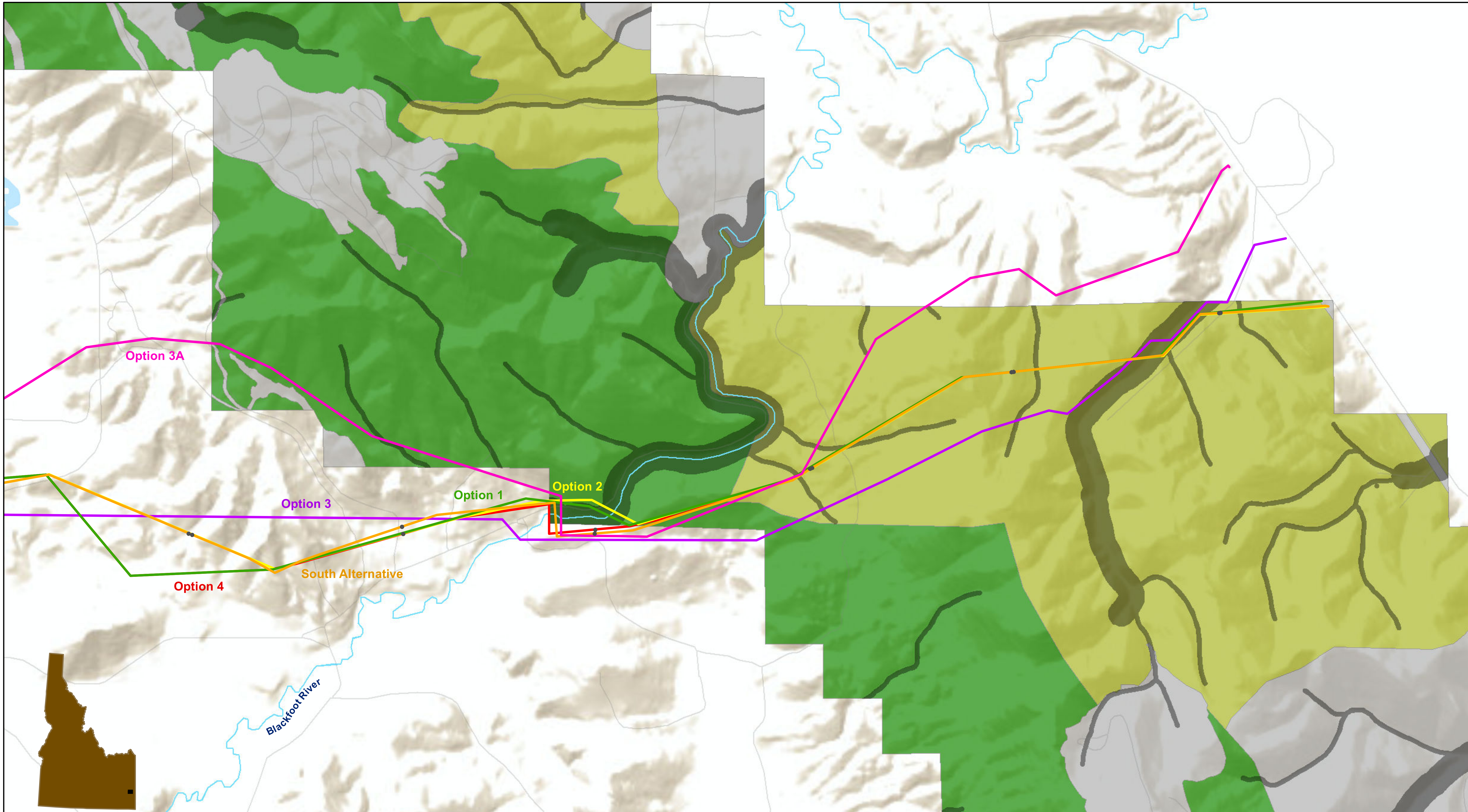

Substation	South Alternative	**Caribou National Forest Management Prescription**
Mile Markers - South Alternative	Option 1	Elk and Deer Winter Range
City	Option 2	Forest Vegetation Management
Local Road	Option 3	Other Management Prescriptions
State Route	Option 3A	Aquatic Influence Zone (AIZ)
	Option 4	

N W E S

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

0 0.25 0.5 1 Miles

BONNEVILLE POWER ADMINISTRATION

Date: 1/7/2014

Hooper Springs Transmission Project
Map 3-4
CNF Management Prescriptions for the South Alternative and Route Options

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Bureau of Land Management Lands

The North Alternative corridor traverses one BLM-owned parcel, located adjacent to C-TNF lands, for a total distance of 0.5 mile (at line mile 22). The South Alternative corridor crosses three BLM-owned parcels for a total distance of about 2.7 miles (between line miles 4 and 6, at line mile 14, and at line mile 18). Uses on BLM lands include phosphate mining, livestock grazing, wildlife habitat, and recreational uses such as OHV use, camping, hunting, and fishing access to the Blackfoot Reservoir. BLM issues land use authorizations and easements for a variety of short- and long-term purposes. Short-term uses include agricultural leases, military training areas, and other uses involving minimal land improvements or disturbances. Long-term uses include ROWs for power lines, highways, roads, pipelines, fiber optics, communication sites, electric power generation sites, and irrigation.

BLM lands crossed by the project alternatives are managed pursuant to the 2012 Pocatello RMP. There are approximately 391 authorized ROWs within the Pocatello Field Office management area for such uses as roads, water pipelines, natural gas pipelines, power lines, telephone lines, fiber optic cables, railroads, canals, ditches, and communications sites. However, the project alternatives' corridors do not align with any of the identified corridors in the Pocatello RMP. The Pocatello RMP sets a maximum ROW width of 1 mile (Miller 2012, personal communication), and sets forth a series of goals, objectives, and management actions governing the establishment of utility ROWs (BLM 2012).

Existing industrial mining areas located on BLM lands also are crossed by, or are near to, the South Alternative corridor (see "Mining Areas" below).

Bureau of Indian Affairs Lands

The North Alternative corridor crosses approximately 1.7 miles of lands managed by BIA for the Fort Hall Irrigation Project near the northeastern edge of Blackfoot Reservoir (between line miles 17 and 19). There is no comprehensive land management plan or RMP in place for BIA lands in the project corridor. BIA manages these lands for multiple uses including grazing leases. The South Alternative corridor and route options do not cross BIA-managed lands.

Mining Areas

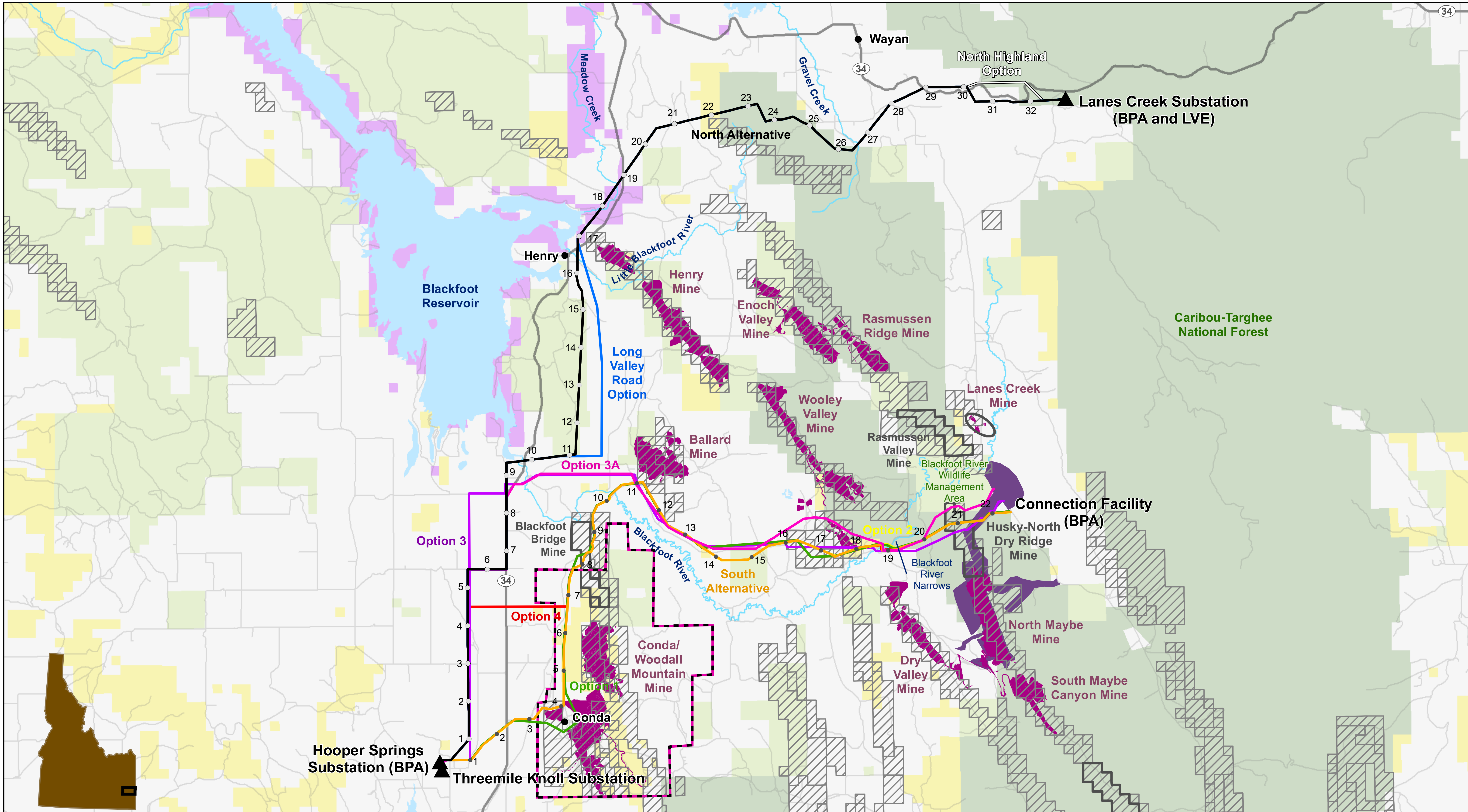
Southeast Idaho is a major phosphate-producing region. Phosphate mining has been an important industry in this region since the mid-20th century (Petrun 1999). Map 3-5 shows existing industrial mining leases in the project area, as well as existing and proposed mine footprints. Some of these mines are currently under investigation under CERCLA of 1980, as amended, 42 U.S.C. Section 9601 et seq. or have been designated for cleanup under CERCLA. The North Alternative corridor does not cross any identified mining areas, although it does pass in close proximity to several. The South Alternative corridor cross several areas, as described in this section.

The Conda/Woodall Mountain Mine is located near the southwestern end of the South Alternative corridor (see Map 3-5). The South Alternative skirts the western boundary of past mining disturbance areas but crosses some areas of future potential mining. The land affected by mining at this mine site has had heavy and repeated ground disturbance and earthworks such as slag and tailings piles, and has been scoured and contoured for construction and mining purposes. The Ballard Mine also is located along the western portion of the South Alternative corridor less than 0.25 mile from the South Alternative corridor.

The South Alternative corridor also crosses the existing mines or investigation areas of the Wooley Valley Mine and North Maybe Mine Investigation Area (see Map 3-5). These two mine areas are under a USFS special use permit or a BLM lease to Nu-West Mining, Inc. Predecessors of Nu-West Mining have conducted extensive mine-related operations at the North Maybe Mine on private lands, on C-TNF lands covered by the special use permits or leases, and on USFS land not included in the leases (USDA, EPA, and IDEQ 2004).

Full-scale production at the North Maybe Mine began in 1965 using an open pit method of extraction. Active mining activities ceased in 1993. Open pit mining operations included removing overburden, which was either placed in piles or in a previously mined portion of the pit. The shale portion of the overburden contains selenium, as well as other contaminants that are designated hazardous substances. Selenium and other hazardous and deleterious substances are being leached from waste rock at the site into the environment, and may be impacting vegetation and surface water (USDA, EPA, and IDEQ 2004). The North Maybe Mine entered the CERCLA program in 2004 with the signing of an Administrative Order of Consent by the affected agencies and the mine owner. Nu-West is gathering data for the Site Investigation pursuant to CERCLA under USFS oversight. Background and pollution data is being collected for surface water, groundwater, plants, and animals.

In addition, the South Alternative corridor crosses newly active and proposed phosphate mines, including the Blackfoot Bridge Mine that is partially located on BLM and private lands and the proposed Husky-North Dry Ridge Mine located primarily on C-TNF with some private lands. Section 3.13, Public Health and Safety, of this EIS provides more information on the CERCLA-related aspects of the existing mining areas in the project area.



Substation
Mile Markers - North Alternative
North Alternative
Long Valley Road Option
North Highland Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 3A
Option 4
City
Past Mining Disturbance
North Maybe Investigation Area
Potential Future Mining Disturbance
Proposed Mining Disturbance
Conda Mine Study Area

Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land

N
W E
S

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

0 1 2 4 6 8 Miles

Hooper Springs Transmission Project

BONNEVILLE POWER ADMINISTRATION

Map 3-5
Mining Disturbance and Investigation Areas

Date: 3/11/2014

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Alternative Route Options

North Alternative Route Options

Long Valley Road Option—The Long Valley Road Option runs adjacent to lands owned and managed by the state of Idaho and generally parallels Long Valley Road along a 7-mile stretch between line miles 11 and 18. This option removes a portion of the North Alternative corridor that crosses approximately 4.2 miles of state lands leased for grazing and approximately 2.8 miles of private land used for grazing and crop cultivation. Instead, the Long Valley Road Option crosses approximately 7 miles of private agricultural lands that are currently in active crop cultivation and grazing use and does not cross state lands.

North Highland Option—The North Highland Option crosses private lands for the first 0.4 mile with the remainder of the option on C-TNF lands. This option removes about 1.5 miles of private land along the North Alternative corridor used for grazing and adds about 1.2 miles of C-TNF land. The North Highland Option corridor crosses 0.4 mile of forested private land along with 1.8 miles of C-TNF land, including approximately 1.2 miles governed by Management Prescriptions 2.1.2, Visual Quality Maintenance, and 0.6 mile managed under Prescription 6.2, Rangeland Vegetation Management. Grazing is one of the primary resource management emphases on lands in Management Prescription 6.2.

South Alternative Route Options

Options 1 and 2—The corridors for Options 1 and 2 cross generally the same miles of private, state, and federal lands as the South Alternative, including a portion of the Soda Springs Ranger District in the C-TNF. As stated above, BLM and C-TNF land uses include phosphate mining, logging, road building, grazing, wildlife habitat, and recreational activities. CNF Management Prescriptions crossed by Options 1 and 2 are the same as the South Alternative: 2.7.2, Elk and Deer Winter Range; 5.2, Forest Vegetation Management; and 2.8.3, AIZ. Also similar to the South Alternative, land uses on state and private lands along these options include mining and grazing. Options 1 and 2 cross the same existing and proposed mines and investigation areas as the South Alternative.

Option 3—Option 3 crosses the same private agricultural lands west of Highway 34 as the North Alternative west of the Blackfoot River. The eastern portions of Option 3 cross land uses that are the same as those described for Options 1 and 2 and the South Alternative including BLM land uses and CNF Management Prescriptions. Option 3 crosses the same existing and proposed mines and investigation areas as the South Alternative except for the Conda/Woodall Mountain Mine and Blackfoot Bridge Mine.

Option 3A—Option 3A crosses private agricultural lands west of Highway 34 and along Blackfoot River Road. As the Option 3A corridor moves east, land ownership and land uses are generally the same as those described for the South Alternative (phosphate mining, grazing, wildlife habitat, and recreational activities) until approximately 1 mile east of the Blackfoot River Narrows. At this point, the Option 3A corridor shifts to the northeast and crosses the Blackfoot River WMA near its southern boundary with the C-TNF. About 1.3 miles of Option 3A are located within the Blackfoot River WMA where land uses include recreation and wildlife management. Most of the Blackfoot River WMA land within the Option 3A ROW—about 7.9 of

15.7 total acres, or 50 percent—is undeveloped shrubland or grassland. The remaining acreage is forested.

Of the 24-mile-long Option 3A corridor, approximately 18.6 miles are on private lands, 2.3 miles are on state lands, 2.8 miles are on C-TNF lands, and 0.5 mile is on BLM lands (see Map 3-2). Relative to the South Alternative, Option 3A removes approximately 0.6 mile of ROW from C-TNF lands, 2.2 miles from BLM lands, and adds approximately 1.3 miles to state lands and 3.6 miles to private lands.

In addition to the four Management Prescriptions described for the South Alternative, Option 3A crosses a small portion of 8.2.2, Phosphate Mining Areas, (in line mile 19) on C-TNF lands. This prescription applies to federal phosphate lease areas where mining, post-mining reclamation, or exploration is taking place and allows for the exploration/development of existing leases. This management prescription is intended to provide for phosphate resource development with consideration given to biological, physical, social, and economic resources. Option 3A largely avoids existing and proposed mines and investigations areas; however, it does cross a small portion of mining leases for the Wooley Valley Mine.

Option 4—Option 4 crosses a portion of the same private agricultural lands west of Highway 34 as Options 3 and 3A west of the Blackfoot River. Where Option 4 joins the South Alternative corridor to the eastern end of the option, land uses are the same as those described for Options 1 and 2 and the South Alternative including BLM land uses and CNF Management Prescriptions. Option 4 crosses the same existing and proposed mines and investigation areas as the South Alternative except for the Conda/Woodall Mountain Mine.

3.1.2 Environmental Consequences of the North Alternative

Construction of the North Alternative would convert existing land use within the transmission line ROW from primarily agricultural and forested lands to a utility corridor. No existing, newly active or proposed phosphate mines are located within the North Alternative corridor. BPA would acquire easements for the ROW and associated access roads from private landowners for the North Alternative. Additionally, BPA would obtain permits or easements for ROW and access roads from the state of Idaho, C-TNF BLM, and BIA. BPA would obtain a special use permit from the C-TNF and enter into a cooperating agreement with LVE for the use of a portion of its existing substation land. BPA would purchase the land proposed for the Hooper Springs Substation from the private landowner. Table 3-3 displays the acres of ROW required on private, state, C-TNF, BLM, and BIA lands for the North Alternative and route options. Also shown are miles of new permanent and improved or reconstructed access roads required. Table 3-4 identifies the acres of each land use that would be permanently and temporarily impacted by new and improved roads, ROW, structures, and substations for the North Alternative and route options.

Land uses incompatible with the North Alternative, such as logging, would not be allowed within the ROW. Given the small quantity of land that the North Alternative would occupy relative to the lands available for these uses, the overall impact associated with the prohibition of incompatible uses in the ROW would be long term, but ***low***.

Table 3-3. Landownership Crossed by the North Alternative and Route Options

Landowner	North Alternative ROW (acres)	North Alternative with Long Valley Road Option[1] ROW (acres)	North Alternative with North Highland Option[1] ROW (acres)
Private	252.4	315.3	237.4
Federal	95.8	95.8	110.6
C-TNF	66.6	66.6	81.4
BLM	6.3	6.3	6.3
BIA	22.9	22.9	22.9
State	53.7	0.0	53.7
Total	401.9	411.1	401.7

[1] Acres based on 100-foot ROW width.

Table 3-4. Permanent and Temporary Impacts to Land Uses from the North Alternative and Route Options

Land Use	North Alternative		North Alternative with Long Valley Road Option[1]		North Alternative with North Highland Option[1]	
	Permanent Impacts (acres)[2]	Temporary Impacts (acres)[3]	Permanent Impacts (acres)	Temporary Impacts (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)
Developed/ Open	12.9	42.8	-	38.6	-	39.2
Forest	247.3	-	144.3	-	173.1	-
Grazing	38.2	241.2	-	221.4	-	248.3
Cultivated Crops	10.9	51.7	5.8	128.8	5.8	85.3
Total	**309.3**	**335.7**	**149.7**	**377.8**	**178.5**	**372.8**

Source: USGS 2006a

[1] Acreage is ROW, clearing width, and substation only.

[2] Forested land uses include only access roads located off-ROW, since on-ROW access roads are considered to be part of the permanent ROW impacts.

[3] Includes temporary construction-related disturbance from structures and pulling sites. Temporary disturbance from structures for the North Alternative is assumed to be 0.2 acre for all types of structures.

The following describes the potential impacts of the North Alternative on land uses by land ownership.

Private Lands

Construction of the transmission line and access roads, along with the use of staging areas and conductor pulling sites, would result in the temporary disruption of existing agricultural and grazing uses on private lands within the ROW. These short-term disruptions would result from ground disturbance and the presence of equipment during installation of structures, stringing of conductors, and construction of access roads. Disruption of agricultural and grazing uses would be restricted to areas of active construction operations; therefore, a large portion of vegetation within the ROW would remain unaffected during the construction period. Due to the temporary nature of these impacts and the abundance of agricultural use in the county, the impact to agricultural use on private lands from construction of the transmission line would be short term and ***low***. Implementation of best management practices (BMPs) described in Section 3.1.4, Mitigation, also would lessen impacts to land uses.

Construction of the proposed Hooper Springs Substation would fence 8.3 acres of agricultural lands, removing them from production, and would permanently remove 5.8 acres of farmland from agricultural use and change it to a utility use. Removing this small amount of acreage from production would have a long-term, ***low***, impact to agricultural productivity because there are more than 400,000 acres of farmland in the county. Impacts to prime farmlands are discussed in Section 3.5, Geology and Soils.

Long-term impacts during the operational phase of the North Alternative would include use limitations within the ROW, such as keeping the ROW clear of all structures, fire hazards, tall growing vegetation (such as trees) and any other use that may interfere with the safe operation or maintenance of the transmission line. The request to have vegetation growing within the North Alternative ROW is a use that BPA would review to determine whether the use is safe, if there is adequate clearance under the conductor, and whether the use creates interference with the operation and maintenance of the transmission facilities. If BPA determines that the use is compatible, BPA would enter into a written agreement with the landowner. Most non-woody, low growing crops shorter than 4 feet could be grown safely under the transmission line. However, any shrubs, brush or other vegetation (such as orchards, Christmas trees, tall-growing landscape, or natural vegetation) would require a BPA review of special consideration, but would likely not be allowed within the ROW. Agricultural operations would not be restricted, but certain precautions would be necessary. For example, no object should be raised higher than 14 feet above the ground within the ROW (i.e., when irrigation pipes are moved, they should be kept low and parallel to the ground); ground elevation should not be altered (such as piling of dirt within the ROW); irrigation spray should not create a continuous stream onto the conductors or structures; and fences should be grounded. The installation of underground pipes or cables through the ROW would require coordination with BPA to avoid interference with transmission line grounding systems. Vehicles and large equipment that are not taller than 14 feet, such as harvesting combines, cranes, derricks and booms could be operated safely under the transmission line where it passes over roads, driveways, parking lots, cultivated fields or grazing lands.

Grassland and shrub-scrub vegetation tends to be compatible with transmission lines, because animals would be able to graze within the ROW. Although structure footprints and road beds would occupy land, thus removing areas of vegetation from grazing, livestock could still maneuver around the structures and roads; the long-term impact from the North Alternative to agricultural lands would be ***low***.

The North Alternative corridor would cross one private agricultural parcel enrolled in the USDA's CRP, though additional parcels enrolled in the CRP program may be identified during the landowner easement negotiation process. Transmission lines may be permitted on lands enrolled in the CRP, provided that vegetative cover damaged or cleared during construction is restored; erosion is kept to a minimum; impacts to habitat, water, and air quality are avoided; and consultation is undertaken with the Farm Service Agency (Bybee 2012, personal communication). BPA would avoid permanent access road development on CRP lands, to the extent practicable. During construction, activities associated with the placement of transmission line structures would result in ground disturbance and crushing or clearing of vegetation. With implementation of the BMPs described in Section 3.1.4, Mitigation, disturbed areas would be revegetated after construction; therefore, short-term impacts to CRP lands would be ***low.*** The amount of vegetative cover permanently destroyed would be limited to the area occupied by structure footings; therefore, the North Alternative also would have ***low*** to ***no*** long-term impacts to CRP lands.

During operation and maintenance of the North Alternative, impacts to private land uses also could occur from the occasional presence of work vehicles and equipment for routine patrols, line repairs, and vegetation management. While operation and maintenance activities could result in noise, visual, and other impacts to private land uses, they would not be expected to result in actual changes or substantial limitations in uses of adjacent land. Accordingly, any disruption of private land use activities associated with operation and maintenance of the North Alternative would be short term and ***low***.

State and Federal Lands

While state and federal land users would likely notice the presence of the proposed ROW, structures, and access roads, it is unlikely that the North Alternative would result in an adverse impact to state or federal land uses or overall land use patterns. All proposed improvements at the Lanes Creek Substation would take place within the boundaries of the existing substation; therefore, ***no*** impacts to land use are expected. Areas without structures within the North Alternative corridor would continue to be used for existing purposes that are compatible with the transmission line corridor, such as grazing, recreation, and public access. In areas used for agriculture and grazing, construction of the proposed transmission line would result in both short- and long-term, ***low*** impacts similar to those described for private lands.

Construction of the transmission line ROW and access roads on forested lands would remove all trees within the ROW and access roads, as well as danger trees adjacent to the ROW, and would permanently convert the land to non-forested areas throughout the life of the Project. About 3.7 miles of transmission line ROW and 2.3 miles of off-ROW access roads would traverse federal lands (BLM and C-TNF) that support forest vegetation. These areas are described in the 2003 CNF RFP as significantly modified by roads, grazing, and timber harvest. Approximately 1.7 miles or 20.6 acres of the transmission line ROW would extend across areas of the C-TNF that are specifically managed for timber harvest. The North Alternative would result in the permanent removal of approximately 8.5 acres of forest vegetation for access road construction and placement of structures, and the conversion of approximately 105.8 acres of ROW and adjacent cleared area to non-forested vegetation on federal lands (see Section 3.4, Vegetation). Given the relatively small amount of forested acreage compared to the quantity of forested areas on nearby BLM and USFS lands, the short- and long-term impacts to forested public lands would be ***low*** to ***moderate*****.**

Because C-TNF forested lands would be converted to a utility use, the North Alternative would not be consistent with the seven management prescriptions identified in Table 3-2. An amendment to the 2003 CNF RFP would be necessary to establish the transmission line ROW as a utility corridor under management prescription 8.1, Concentrated Development Areas. The North Alternative also would be required to comply with associated standards and guidelines for Concentrated Development Areas, in addition to all applicable forest-wide standards and guidelines. See Appendix A, CNF RFP Amendment, for analysis of the Project's consistency with applicable forest-wide standards and guidelines as well as those for Concentrated Development Areas.

Approximately 0.06 mile of the transmission line ROW under the North Alternative would cross the USFS Gravel Creek Special Emphasis Area. No structures or access roads are proposed to be located within this area. Because most of the ROW crossing is forested, placement of the ROW across the Gravel Creek Special Emphasis Area would result in the clearing of up to 1.9 acres of forest vegetation for construction of the transmission line. ROW and danger tree clearing would result in the conversion of land cover on the property, which would not be consistent with the existing management of this parcel for wetland mitigation purposes; therefore, the establishment of a new ROW across this area would result in short- and long-term, ***high*** impacts. BPA worked with the C-TNF to avoid and minimize potential impacts to this area in the design of the North Alternative. Because the Gravel Creek Special Emphasis Area is managed according to a Memorandum of Understanding with the Idaho Department of Transportation, Federal Highway Administration, and USACE, further consultation with the C-TNF and these other agencies would be required, potentially including the development of mitigation options.

The North Alternative would be visible from Highway 34, which is contiguous with the Pioneer Historic Byway. Construction of the transmission line and access roads would not be consistent with the Corridor Management Plan resulting in a ***moderate*** impact to the scenic qualities of the byway and recreational use by travelers. In an effort to reduce visual impacts, the transmission line would be sited to blend in with the background to the extent possible. Where the transmission line would parallel or cross Highway 34, the transmission line would be in the foreground and obvious to motorists; however, for large portions of the North Alternative corridor, the transmission line would be partially or completely obscured by topography. This would especially be true for the portion of ROW crossing state lands east of Highway 34, and the portion crossing BLM and C-TNF lands in the northeastern part of the North Alternative corridor. Section 3.3, Visual Resources, describes the impacts to visual quality along the Pioneer Historic Byway from the North Alternative.

During operation and maintenance of the North Alternative, impacts to state and federal land uses would be similar to those described for private land uses (short term and ***low***).

Mining Areas

The North Alternative would not cross any past, present, or potential future mining areas or leases.

North Alternative Route Options

Long Valley Road Option

As discussed above, the Long Valley Road Option would avoid siting a portion of the proposed transmission line ROW and associated access roads for the North Alternative on undeveloped shrub-scrub state lands currently used for grazing. Instead, this ROW and associated access roads would be located on private agricultural lands. These lands are currently in active grazing and crop cultivation; therefore, with the Long Valley Road Option, the North Alternative would result in up to 78 additional acres of impacts to private agricultural use. Furthermore, the Long Valley Road Option would cross approximately 9.3 additional acres of prime farmland. Table 3-4 identifies the total acreages of each type of land cover that would be impacted by the North Alternative if the Long Valley Road Option was incorporated. Under the Long Valley Road Option, short-term impacts resulting from construction activities as described above would be slightly higher, since the increased acreage of agricultural lands within the alternative corridor would increase the potential for disruption of agricultural use; short-term impacts would be ***low*** to ***moderate***.

It is unlikely that the presence of the transmission line ROW would result in a long-term change to overall land use under the Long Valley Road Option. As detailed above, existing crop cultivation and grazing activities are generally compatible with the presence of a transmission line ROW, and would be expected to continue following completion of construction. Long-term impacts to private agricultural land use along the Long Valley Road Option would be ***low***.

This option would not cross any past, present, or potential future mining area or lease.

North Highland Option

As noted above, the North Highland Option would move ROW and access road impacts from undeveloped shrub-scrub and grasslands currently used for grazing to C-TNF lands and a small area of forested private lands. The impacts to private lands would be less than the impacts to private lands by the North Alternative corridor in this area. More C-TNF forested land would be cleared with this option (about 121.7 acres compared to 102.2 acres along the North Alternative).

Under the North Highland Option, short-term impacts from construction of the transmission line would be similar to those for the North Alternative above, and would be ***moderate***. Long-term impacts to shrub-scrub lands would be ***low,*** as grazing would continue following completion of construction. Long-term impacts to forested lands resulting from clearing of the ROW would be slightly higher under the North Highland Option than under the North Alternative, since additional forest would be converted to non-forested land, resulting in a long-term change to overall land use where the ROW crosses the C-TNF. Because only low growing vegetation would be allowed on the ROW, long-term impacts to forested land uses would be ***moderate.***

This option would not cross any past, present, or potential future mining area or lease.

3.1.3 Environmental Consequences of the South Alternative

Similar to the North Alternative, construction of the South Alternative would convert existing land use with the transmission line ROW from primarily agricultural and forested lands to a utility corridor. The South Alternative also would cross existing, newly active, and proposed phosphate mines and mine leases.

Land uses such as logging are incompatible with a transmission line, although some agricultural uses are allowed (see Private Lands below for agricultural use restrictions). Given the small quantity of land that the South Alternative would occupy relative to the lands available for logging and the small amount of land removed from agricultural uses, the overall impact associated with the prohibition of incompatible uses in the ROW would be long term, but ***low***. As noted above, impacts to prime farmlands are discussed in Section 3.5, Geology and Soils.

For mining uses, BPA recognizes that surface uses such as the proposed transmission line could not unreasonably interfere with the full extraction of the phosphate. The mining leases do allow for other authorizations or surface uses as long as they do not unreasonably interfere with the rights of the mine lessee. Short-term, ***low*** impacts to mining activities could occur from temporary roadway closures or minor travel delays from construction-related vehicle use of local roads (see Section 3.11.3, Environmental Consequences of the South Alternative).

Similar to the North Alternative, BPA would acquire easements or permits for ROW and access roads from private and state landowners for the South Alternative. BPA would purchase the same land for the proposed Hooper Springs Substation from the private landowner. Table 3-5 displays the acres of ROW required on private, state, C-TNF, and BLM lands; miles of new permanent, improved, and temporary access roads for the South Alternative, and its route options; and Table 3-6 displays the acres of each land use that would be permanently and temporarily impacted.

Table 3-5. Landownership Crossed by the South Alternative and Route Options

Landowner	South Alternative ROW (acres)	Option 1 ROW (acres)[1]	Option 2 ROW (acres)[1]	Option 3 ROW (acres)[1]	Option 3A ROW (acres)[1]	Option 4 ROW (acres)[1]
Private	186.7	205.8	181.5	252.5	222.7	223.7
Federal	73.7	73.5	77.1	38.2	41.0	58.0
C-TNF	40.8	43.7	44.8	28.6	36.4	40.3
BLM	32.9	29.8	32.3	9.6	4.6	17.7
State	12.5	0.0	12.5	0.0	2.8	0.0
Total	272.9	279.3	271.1	290.7	266.5	281.7

[1] Acres based on 100-foot ROW width.

Table 3-6. Permanent and Temporary Impacts to Land Uses from the South Alternative Route Options

Land Use	South Alternative		Option 1[1]		Option 2[1]		Option 3[1]		Option 3A		Option 4[1]	
	Perm (acres)[2]	Temp (acres)[3]	Perm (acres)[2]	Temp (acres)[3]	Perm (acres)[2]	Temp (acres)[3]	Perm (acres)[2]	Temp (acres)[3]	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)
Developed/ Open	1.2	19.1	-	4.8	-	5.5	-	10.5	0.4	23.3		4.9
Forest	184.7	-	81.9	-	83.1	-	37.4	-	131.2	-	77.03	-
Grazing	33.6	175.6	-	233.3	-	223.2	-	196.2	23	207.2		203.5
Cultivated Crops	9.3	37.9	5.8	24.8	5.8	38.3	5.8	101.23	7.9	41.7	5.8	67.2
Total	**228.8**	**232.6**	**87.3**	**262.9**	**88.5**	**267.0**	**42.8**	**307.93**	**162.5**	**272.2**	**82.43**	**275.6**

Source: USGS 2006a

[1] Acreage is ROW, clearing width, substation, and connection facility only.

[2] For forested land cover types, includes only access roads located off-ROW, since on-ROW access roads are considered to be part of the permanent ROW impacts.

[3] Includes temporary construction-related disturbance from structures and pulling sites. Temporary disturbance from structures for the North Alternative is assumed to be 0.2 acre for all types of structures.

The following describes the potential impacts of the South Alternative on land uses by land ownership.

Private Lands

Impacts under the South Alternative from construction of the transmission line, access roads, staging areas, and conductor pulling sites would result in the same type of temporary disruption of grazing and agricultural use on private lands as described for the North Alternative. Short-term disruptions from ground disturbance and the presence of construction equipment would be localized to areas of active construction; therefore, rangeland vegetation and cultivated cropland outside of these areas would remain unaffected during the construction period. Additionally, grassland and shrub-scrub vegetation tends to be compatible with transmission lines because animals are still able to graze within the ROW. Although structure footprints and road beds would occupy land, removing areas of vegetation from grazing livestock could still maneuver around the structures and roads. Impacts to grazing and most agricultural use would be temporary, short term, and ***low***. Implementation of BMPs described in Section 3.1.4, Mitigation, also would lessen impacts to private land uses.

Long-term impacts from land use limitations would be the same as those under the North Alternative. The ROW would need to be kept clear of all structures, fire hazards, tall growing vegetation (such as trees) and any other use that may interfere with the safe operation or maintenance of the transmission line. BPA would review requests to use the ROW for low growing crops shorter than 4 feet to determine whether the use is safe, if there is adequate clearance under the conductor, and whether the use creates interference with the operation and maintenance of the transmission facilities. If the use is compatible, BPA would enter into a written agreement with the landowner. Agricultural operations such as the use of irrigation pipes would not be restricted if the pipes are not raised higher than 14 feet above the ground within the ROW. Other land use restrictions discussed above for the North Alternative would also apply to the South Alternative.

BPA would acquire and fence off the same 8.3 acres of agricultural land for the proposed Hooper Springs Substation and 5.8 acres of farmland would be changed to a utility use. Removing this small amount of acreage from production would have a long-term, ***low*** impact similar to the North Alternative.

During operation and maintenance of the South Alternative, impacts to private land uses would be the same as those described for the North Alternative (short term and ***low***).

State and Federal Lands

Similar to the North Alternative, the South Alternative would not be likely to result in an adverse impact to state or federal land uses or overall land use patterns. Areas without structures would continue to be used for existing uses that are compatible with the transmission line corridor, such as grazing, recreation, and public access. In areas used for agriculture and grazing construction of the proposed transmission line would result in both short- and long-term, ***low*** impacts similar to those described for private lands.

In forested areas, construction of the South Alternative also would require removal of all trees within the ROW and access roads as well as danger trees adjacent to the ROW, permanently converting the land to non-forested areas. Approximately 3.2 miles of transmission line ROW and 4 miles of access roads cross C-TNF lands managed for deer and elk winter range and timber harvest near the east end of the corridor. As discussed under the North Alternative, the 2003 CNF RFP described these areas as substantially modified by roads, grazing and timber harvest. The South Alternative also would result in the permanent removal of approximately 4 acres of forest vegetation for access road construction and pulling sites, and the clearing of approximately 57.5 acres of forested vegetation for construction of the transmission line (see Section 3.4, Vegetation). Similar to the North Alternative, because of the relatively small amount of forested acreage impacted compared to the quantity of forested areas on adjacent C-TNF lands, long-term impacts to land uses would be ***low*** to ***moderate.*** Similar to the North Alternative, because C-TNF forested lands would be converted to a utility use, the South Alternative would not be consistent with the three management prescriptions crossed, described above. An amendment to the 2003 CNF RFP and compliance with associated standards and guidelines for Concentrated Development Areas described above for the North Alternative would be necessary (see Appendix A: CNF RFP Amendment).

The South Alternative would cross Highway 34 in one location just west of Conda. Construction activities in this area could affect recreational use by travelers although the impact would be short term and ***low*** because views would be short in duration (see Section 3.3, Visual Resources). Similar to the North Alternative, placement of the line across Highway 34 would not be consistent with the Pioneer Historic Byway Corridor Management Plan although the transmission line would be sited to blend in with the background to the extent possible. Where the transmission line would cross Highway 34, structures would be in the foreground and obvious to motorists. However, as the line moves away from the highway, it would be partially or completely obscured by topography similar to the North Alternative resulting in a ***low***, long-term impact to byway and recreational use by travelers.

Mining Areas

The South Alternative corridor and associated access roads would cross mining areas associated with the Conda/Woodall Mountain Mine, Wooley Valley Mine, and North Maybe Mine. In areas of past mining disturbance that are currently engaged in reclamation activities, construction of the transmission line could temporarily disrupt activities during active road construction and tower installation. However, impacts would be ***low*** and short term during construction.

The South Alternative would cross portions of the Blackfoot Bridge Mine, which was approved in 2011 and has begun operation, and the proposed Husky-North Dry Ridge Mine. The Blackfoot Bridge Mine is a phased, open-pit phosphate mine that is expected to be in operation for 17 years and create surface disturbance totaling approximately 738.9 acres. The Husky-North Dry Ridge Mine would impact an area of approximately 1,051 acres and is proposed to operate for approximately 13 years.

As described above, siting and operation of the South Alternative could not unreasonably interfere with the full extraction of the phosphate or the rights of the mine lessee.

South Alternative Route Options

Options 1 and 2

Impacts to land uses under Options 1 and 2 would be the same as those discussed for the South Alternative because these options would cross generally the same private, state, and federal lands (short term and ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed). Construction of a portion of both options on C-TNF lands would require tree removal for transmission line construction, ROW, and access roads, as well as danger trees adjacent to the ROW, converting forest to non-forested areas.

Long-term impacts from land use limitations would be the same as those described for the South Alternative (***low***). Similar to the South Alternative, siting and operation of Options 1 and 2 could not unreasonably interfere with the full extraction of the phosphate or the rights of the mine lessee.

Option 3

Construction of the western portion of Option 3 would occur in private agricultural lands along Highway 34. As with the North Alternative, construction of the transmission line and access roads, staging areas, and conductor pulling sites, would result in temporary disruption of existing agricultural and grazing uses. These short-term disruptions resulting from ground disturbance and the presence of equipment would be localized to areas of active construction. Additionally, a large portion of vegetation within the ROW would remain unaffected during and after the construction period; impacts to land use in this area would be ***low*** and short term.

Once Option 3 joins the same general corridor as the South Alternative along Blackfoot River Road, impacts to land uses would be the same as the South Alternative because Option 3 crosses the same private, state and federal lands (impacts would be short term and ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed). Similar to Options 1 and 2, tree removal on the C-TNF for transmission line ROW, access roads, and danger tree areas would permanently convert forest to non-forest.

Long-term impacts from land use limitations would be the same as those described for the South Alternative (***low***). Like the South Alternative, Option 3's siting and operation could not unreasonably interfere with the full extraction of the phosphate or the rights of the mine lessee.

Option 3A

Impacts to grazing and agricultural land uses on private lands during construction of the western portion of Option 3A would be the same as those described for Option 3 and the North Alternative (***low*** and short term).

Impacts to land uses on federal lands under Option 3A would generally be the same as those described for the South Alternative and other options although Option 3A would cross fewer acres of federal land (impacts would be short term and ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed). Approximately 2 miles of transmission line ROW and 4 miles of access roads cross C-TNF lands managed for timber harvest near the east end of the corridor. As discussed above for the North and South alternatives, the 2003 CNF RFP describes these areas as substantially modified by roads, grazing, and timber harvest. Similar to the North and South alternatives, because the forested acreage impacted would be relatively small compared to the quantity of forested areas on adjacent C-TNF lands, long-term impacts to land uses from Option 3A would be ***low*** to ***moderate***. ***No*** impact to C-TNF management prescription 8.2.2 would result because Option 3A would cross only a small portion of the phosphate mining area.

Option 3A would impact an additional 15.1 acres of state land compared to the South Alternative, because it crosses the Blackfoot River WMA. The Blackfoot River WMA Management Plan states that any habitat manipulation taking place on the Blackfoot River WMA must be consistent with its mission to: maintain or improve vegetation type diversity for the benefit of wildlife and fish species; enhance cutthroat trout habitat; and provide opportunities for nonconsumptive and consumptive public use that is compatible with maintaining high quality and fish habitat. To the extent that disruption to fish and wildlife, fish and wildlife habitat quality, and related recreational use occurs, it is expected that land use impacts to state land for Option 3A would be ***moderate*** during construction (although short term) and ***low*** to ***moderate*** during operation of the line. While the line would have no direct impact on fish or fish habitat, use of the Blackfoot River WMA for fishing or other recreational uses would be impacted by placement of the line within the WMA. Fish and wildlife recreational users typically seek a remote or secluded outdoor experience, which could be diminished by placement of the line within the southern edge of the WMA in the viewshed of the Blackfoot River (see Section 3.2, Recreation). Additionally, tree removal for the construction of access roads and transmission line ROW within the Blackfoot WMA would decrease the amount of forested area used for wildlife habitat (see Section 3.7, Wildlife).

Long-term impacts from land use limitations on logging and agricultural uses along Option 3A would be the same as those described for the South Alternative (***low***). Possible temporary impacts to mining activities from Option 3A would be less intense than the South Alternative and its other options because Option 3A avoids all mining areas except the Wooley Valley Mine, which is not an active mine.

Option 4

Impacts to land uses under Option 4 would be the same as those described for Options 3 and 3A along Highway 34 (***low*** and short-term). Similar to those options, construction of the transmission line and access roads, staging areas, and conductor pulling sites would result in temporary disruption of existing agricultural and grazing uses. Once Option 4 joins the South Alternative corridor just south of the Blackfoot Bridge Mine, impacts to land uses would be the same as those described for the South Alternative because Option 4 would cross the same private, state, and federal lands (impacts would be short term and ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed

As described above for Options 1 through 3A, land use limitations along Option 4 would be the same as those described for the South Alternative (***low***). Like the South Alternative, siting and operation of Option 4 could not unreasonably interfere with full phosphate extraction or the rights of the mine lessee.

3.1.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate land use impacts from the Project.

- Plan and conduct construction activities to minimize temporary disturbance, displacement of crops, and interference with agricultural activities.
- Install barriers, gates, and postings at appropriate access points and, at the landowner's request, to minimize or eliminate unauthorized use of access roads (see Sections 3.2.4, Recreation, and 3.11.4, Transportation).
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site. As needed, stake or flag water resources, wetlands, or other sensitive areas prior to construction to avoid impacts.
- Restrict public access to permanent access roads to reduce increased human impacts and to maximize big game use of the project corridor.
- Develop the Project consistent with applicable state and federal resource management standards set forth in the appropriate management plans.
- Consult with the Farm Service Agency to avoid and mitigate impacts to lands enrolled in the USDA CRP. Avoid access road construction over CRP lands to the extent practical.
- Coordinate with mine owners along the South Alternative for the placement of towers and roads within proposed mining areas.
- Use BMPs to limit erosion and the spread of invasive and noxious weeds (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner (see Section 3.4.4, Vegetation).
- Restore compacted cropland soils as close as possible to pre-construction conditions using tillage. Break up compacted soils where necessary by ripping, tilling, or scarifying before seeding (see Section 3.5.4, Geology and Soils).
- Remove topsoil from cropland in a manner that will allow it to be reused after construction (see Section 3.5.4, Geology and Soils).
- Compensate landowners for damage to property or crops, as appropriate (see Section 3.10.4, Socioeconomics).
- Compensate landowners for reconfiguration of irrigation systems due to placement of project facilities (see Section 3.10.4, Socioeconomics).
- Compensate landowners at fair market value for any new land rights acquired for ROW or access road easements (see Section 3.10.4, Socioeconomics).
- Provide a schedule of construction activities, including blasting, to all landowners who could be affected by construction (see Section 3.12.4, Noise).

3.1.5 Unavoidable Impacts Remaining After Mitigation

Unavoidable short-term impacts to land use under the North and South alternatives and all route options would include disruption of existing farming and grazing activities along the ROW, access roads, conductor pulling sites, and staging areas during construction. Unavoidable long-term impacts to land use would include the permanent removal of agricultural lands from production as a result of transmission structure and the Hooper Springs Substation construction and the restriction of incompatible land uses within the transmission line ROW.

All alternatives and route options also would unavoidably convert forested lands to non-forested vegetation, although in differing amounts. Under the North Alternative, approximately 247.3 acres of forest would be converted to non-forested vegetation for establishment of ROW, access roads, and pulling sites (see Table 3-4). Under the South Alternative, approximately 184.7 acres would be converted from forest to non-forested vegetation (see Table 3-6). As described above, an amendment to the 2003 CNF RFP would be necessary regardless of alternative or option to establish the transmission line ROW as a utility corridor rather than its current management designations, which are focused on elk and deer winter range; forest vegetation management; semi-primitive recreation; and visual quality maintenance. Option 3A would impact an additional 15.1 acres of state land where is crosses the Blackfoot River WMA. Similar to the North and South alternatives, land that is managed for wildlife and recreation would be permanently converted to a utility corridor.

3.1.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to land use from construction, operation, and maintenance of the transmission lines would not occur.

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3.2 Recreation

3.2.1 Affected Environment

Private and State Lands

Recreational opportunities in the project area on private and state lands along the North and South alternatives, and their route options include hunting, fishing, boating, hiking, sightseeing, bird watching, camping, and OHV use.

Hunting with the appropriate hunting license is permitted within the project area on public lands or where allowed by private landowners. Units 72 and 76 of the Idaho Fish and Game Hunt Areas are located in the project area. Within these units, mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), black bear (*Ursus americanus*), mountain lion (*Puma concolor*), antlered and antlerless moose (*Alces alces*), gray wolf (*Canis lupus*), American badger (*Taxidea taxus*), and red fox (*Vulpes vulpes*) may be hunted within their respective seasons (IDFG 2011d).

Recreational fishing occurs within the project area along the Blackfoot River and 18,000-acre Blackfoot Reservoir. The Blackfoot River supports a popular cutthroat trout fishery open to fishing from July 1 to November 30. Rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarkii*), and yellow perch (*Perca flavescens*) are all found in the Blackfoot Reservoir. Boat ramps, docks, restrooms, camping, and areas that are accessible for persons with limited mobility are all found at the reservoir (IDFG 2011e).

As described in Section 3.1, the Blackfoot River WMA was established to provide public access to the various natural resources contained within, and improve habitat for fisheries (cutthroat trout) and riparian and upland communities of wildlife species. Activities on the Blackfoot River WMA include fishing, hunting, trapping, hiking, wildlife viewing, bird watching, sightseeing, cross-country skiing, and photography. The Blackfoot River WMA Management Plan's primary goal for public use includes managing access to provide quality opportunities for fishing, hunting, trapping, and wildlife appreciation (IDFG 1999). Access for big game, upland game, and waterfowl hunting, as well as opportunities for wildlife viewing and other nonconsumptive uses, is identified in the plan. Strategies to provide these activities include maintaining security cover for game animals during the hunting season by limiting motorized vehicles to open and maintained roads; providing equestrian access with parking facilities; posting access maps at parking areas; and allowing primitive camping and cross-country skiing.

Unrestricted walk-on fishing is available on the Blackfoot River WMA. Four parking areas along County Road 95 and Forest Road 102 are maintained to provide access to the Blackfoot River and adjacent uplands. IDFG works closely with other state and federal agencies to manage motorized vehicular traffic on Blackfoot River WMA. Future recreational opportunities may include the development of walking trails 20 feet to 30 feet away from the Blackfoot River in high-use areas to prevent damage to river banks; access for persons with limited mobility to the Blackfoot River; and a primitive boat launch for float boats and canoes. Option 3A is the only route option that crosses the Blackfoot River WMA.

Hiking and OHV trail opportunities are spread throughout the project area. There is one established non-federal camping area located near the North Alternative—Cedar Bay Marina and RV Park. There is an entrance fee that includes the amenities of a dump station, full recreational vehicle (RV) hookups, access for persons with limited mobility, liquefied petroleum gas, and showers (Pioneer County Travel Council 2011).

Forest Service Lands

The North Alternative corridor crosses approximately 5 miles of the Soda Springs Ranger District of the C-TNF, while the South Alternative corridor crosses approximately 3.6 of the C-TNF. Recreational activities on the C-TNF include dispersed camping, fishing, hunting, hiking, wildlife viewing, cross-country skiing, and OHV use—including ATVs (USFS 2010). The headwaters and approximately 5 river miles of the Blackfoot River, which provide a world class fishery, are located on the C-TNF. Two ATV trails, two campsites, and one USFS campground (Gravel Creek Campground) are located within the North Alternative corridor. ATV Trail No. 332 is a dead-end trail that passes north of Gravel Creek Campground and south of the North Alternative corridor. ATV Trail No. 333 is a dead-end trail that begins at Henry Cutoff Road and travels northwest. Gravel Creek Campground, located approximately 0.6 mile south-southeast of the North Alternative corridor, has 12 single units open for use from May through September and has no potable water on-site (USFS 2011b).

One USFS road is located within the South Alternative corridor. USFS Road 878 is a dead-end road approximately 1.8 miles long that is open to all motorized vehicle traffic, and travels northwest from USFS Road 309 toward the South Alternative corridor. The South Alternative crosses USFS Road 878 near its eastern terminus at the existing LVE transmission line. USFS Road 309 is a dead-end road open to all motorized traffic, roughly 0.75 mile long, beginning at Diamond Creek Road. Three ATV trails (Trails 140, 141, and 142) form a roughly 2-mile network of dead-end trails extending westward and southward from the end of USFS Road 309. USFS Road 309 and ATV Trails 140, 141, and 142 are located approximately 1 mile south-southeast of the South Alternative corridor. Mill Canyon Campground is located approximately 1 mile north of the South Alternative corridor. Mill Canyon Campground has 10 single units open from May through September and has no potable water on site (USFS 2011b).

C-TNF lands crossed by portions of the North and South alternative corridors within the Soda Springs Ranger District are managed pursuant to the 2003 CNF RFP. The 2003 CNF RFP includes forest-wide goals, objectives, standards, and guidelines for recreation. The goals relate to providing developed and dispersed recreational facilities, access, and programs; meeting federal, state, and local standards for health and safety; providing barrier-free facilities and services; providing recreational information in a variety of media and locations; and providing environmental education and interpretation (USFS 2003a).

The corridor for the North Alternative crosses six Management Prescriptions within the C-TNF (see Section 3.1, Land Use): 2.1.2, Visual Quality Maintenance; 2.7.2, Elk and Deer Winter Range; 5.2, Forest Vegetation Management; 3.2b, Semi-Primitive Recreation; 2.1.6b, Gravel Creek Special Emphasis Area, and 2.8.3, AIZ. The South Alternative corridor crosses three management prescriptions: 2.7.2, Elk and Deer Winter Range; 5.2, Forest Vegetation Management; and 2.8.3, AIZ. There are stated management goals related to recreation for each management prescription (USFS 2003a). Recreational uses and management goals within each prescription are described in Table 3-7. Category 4 Management Prescriptions guide the management of ecological values to provide for recreational uses, such as developed and dispersed recreational areas. None of the C-TNF lands in the North or South alternative corridors are managed under Category 4 Management Prescriptions.

Since the 1980s, USFS has used the Recreation Opportunity Spectrum (ROS) as a management tool to describe and allocate outdoor recreational settings. ROS is a tool used to support definition and management of diverse outdoor recreational opportunities. It is based on the assumption that because there are diverse public interests, quality outdoor recreation is best assured through the provision of a broad set of recreational opportunities. The North and South alternative corridors cross C-TNF lands identified as Roaded Modified ROS class (USFS 2003a). The Roaded Modified ROS class can generally be described as areas that have been heavily modified by roads or recreational facilities, motor vehicle use is permitted, and facilities for this use are provided, but resource conditions still offer opportunities for a high degree of interaction with the natural environment. The South Alternative also crosses C-TNF lands identified as a Semi-Primitive Motorized ROS class, which can generally characterized as a predominantly natural or natural-appearing environment with a moderate probability of experiencing isolation from the sights and sounds of man yet permits motorized uses.

Table 3-7. Recreational Uses and Goals by Management Prescription

Management Prescription	Recreational Uses and/or Goals
2.1.2: Visual Quality Maintenance	Non-motorized activities, such as hiking, biking, or horseback riding, may originate from trail or road points along the main road. Some roads and nearby areas are available for year-round snowmobile, motorcycle, and 4-wheel drive vehicle use.
2.7.2: Elk and Deer Winter Range	Access is managed or restricted to provide security for wintering elk and deer. Winter and summer motorized travel is restricted to designated roads and trails. Livestock grazing, timber management, recreation, and other resource management activities can occur as long as desired vegetation range conditions are being maintained.
5.2: Forest Vegetation Management	Recreation site development may be limited to the degree it is compatible with achieving desired conditions. Overall, visitors will notice many signs of people. A road system and logging activity occur in these areas. The main road system is gravel surfaced and maintained with gentle grade. Visitors may see logging equipment on roadsides and meet logging traffic along the roadway. Road densities and design are compatible with multiple resource values, including watershed, fish, wildlife, and recreation. Motorized use is prevalent, both for timber management activities and recreation.

Management Prescription	Recreational Uses and/or Goals
3.2b: Semi-Primitive Recreation	This management prescription identifies areas with a semi-primitive, backcountry recreational experience, associated with some motorized vehicle use. These areas are accessible by roads and trails, designed and maintained to allow easy passage. Visitors will find occasional to frequent encounters with trail users. Visitors may also meet large groups occasionally. Domestic livestock grazing may be present in some areas, and visitors may see range improvements, such as fencing and stock tanks. These areas are removed from the suitable timber base, but salvage harvest and commercial post and pole sales are allowed provided any new road construction is limited to temporary roads.
2.1.6b: Gravel Creek Special Emphasis Area	This management prescription applies to a 160-acre parcel of land that was donated to the USFS as mitigation for wetland impacts from highway reconstruction on U.S. 89. Management is focused on maintaining the wetland characteristics of the area. Mineral development and livestock grazing are prohibited. Timber harvest can occur for such things as public safety, visual quality, fuel reduction, long-term sustainability of ecosystem components. There are no specific recreation goals or objectives for this prescription, although motorized travel is prohibited except in winter months.
2.8.3: Aquatic Influence Zone (AIZ)	This management prescription applies to areas associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands, which control hydrologic, geomorphic, and ecological processes and directly affect water quality and aquatic life. Management emphasis is to restore and maintain the health of these areas. Standards and guidelines for recreation stipulate that design, construction, and operation of facilities, including trails and campsites, take place in a manner that minimizes adverse impacts and maintains progress toward desired AIZ attributes.

Source: USFS 2003a

Bureau of Land Management Lands

The northern portion of the North Alternative corridor crosses a portion of one BLM-owned parcel totaling 0.5 mile and is adjacent to the C-TNF. Recreational opportunities on BLM lands surrounding the North Alternative include camping, hiking, picnicking, boating, hunting, fishing, and caving. The South Alternative corridor crosses three BLM parcels totaling approximately 2.7 miles. One parcel is located near Conda adjacent to mining areas. The second BLM parcel is located along Blackfoot River Road approximately 3.5 miles northeast of the Conda/Woodall Mountain Mine, between line miles 13 and 14. The third BLM parcel is located near the Blackfoot River Narrows, adjacent to C-TNF lands. Recreational opportunities on BLM lands surrounding the South Alternative are similar to those found on BLM land along the North Alternative, and include opportunities for dispersed recreation such as hunting, camping, and ATV use (Patterson 2012, personal communication).

BLM lands west of the middle portion of the North Alternative corridor are part of the Blackfoot River Special Recreation Management Area (SRMA), which includes 14,720 acres of public lands along the Blackfoot River and Blackfoot Reservoir. However, BLM parcels crossed by the North and South alternatives are not part of the SRMA. The main recreational and visitor use areas in the Blackfoot River SRMA are the Blackfoot River and Blackfoot Reservoir. Popular activities in this area include camping, fishing, boating, and bird watching. The Blackfoot Reservoir is 18,000 surface acres when full and is the second largest reservoir in southeastern Idaho. The Blackfoot Reservoir Campground at the Blackfoot Reservoir, which is managed by BLM, is outside of the North and South alternative corridors but less than 3 miles from the North Alternative corridor. Access to the campground requires users to traverse the project corridor. During a BLM visitor use study conducted between October 1, 2002 and September 30, 2003, the Blackfoot Reservoir Campground had 7,000 visits which totaled 11,734 visitor days. This represents approximately 3 percent of the total visitor days to all SRMAs within the Pocatello Field Office area during this time (BLM 2004).

BLM parcels crossed by the alternative corridors are managed pursuant to the 2012 Pocatello RMP. The Pocatello RMP contains management goals and objectives for recreation related to managing lands for a variety of non-motorized and motorized opportunities. BLM’s management goals include continuing to provide for recreational opportunities on and access to public lands while considering the result of management actions on the economic conditions of communities within the region. Management goals also include ensuring that recreational facility development and activities are consistent with the other resource goals for the area and recognizing that recreation is the principal use on public land within SRMAs (BLM 2012).

The ROS is also used by BLM to characterize land in terms of the types of recreational experiences, activities, and settings that are provided. No formal ROS classifications have been recorded in previous planning documents (BLM 2012), and no ROS maps indicating land classification are included in the Pocatello RMP.

Bureau of Indian Affairs Lands

BIA operates the Blackfoot Reservoir to irrigate lands on the Fort Hall Indian Reservation and surrounding vicinity, but does not manage recreational access or activities on the reservoir. The North Alternative corridor crosses 1.7 miles of lands managed by BIA for the Fort Hall Irrigation Project east of the Blackfoot Reservoir. BIA does not have recreation management goals or objectives for its lands within the area. Because most of these lands are leased for cattle grazing, recreational opportunities on BIA lands in the North Alternative corridor are limited. The South Alternative and its five options do not cross BIA-managed lands.

Alternative Route Options

North Alternative Route Options

Long Valley Road Option—The Long Valley Road Option crosses land primarily in agricultural use. As discussed above, other recreational opportunities on private lands surrounding the project corridor include hunting, fishing, boating, hiking, camping, and OHV use.

North Highland Option—The North Highland Option crosses forested private land as well as C-TNF lands managed under the six management prescriptions identified under the North Alternative. However, this option would also include management prescription 6.2, Rangeland Vegetation Management, in the northeastern part of the project corridor. The purpose of this management prescription is to achieve and maintain healthy rangelands for livestock forage production and watershed conditions. This management prescription is designed to maintain rangeland ecosystem processes and functions and does not state any specific recreational goals or objectives. Roads, trails, and stock facilities exist; herders, range riders, camps, and transport vehicles may be seen at various times and places; and dispersed recreation activity occurs throughout these areas.

South Alternative Route Options

Options 1 and 2—Because the corridors for Options 1 and 2 generally cross the same private, state, and federal lands as the South Alternative, recreational activities are the same.

Option 3—Approximately 9.7 miles of Option 3 crosses private agricultural lands west of Highway 34 where recreational activities are likely to include hunting. East of the Blackfoot River, recreational activities along Option 3 are the same as those described for the South Alternative and Options 1 and 2.

Option 3A—Option 3A crosses the same private agricultural lands west of Highway 34 as Option 3, where recreational activities may include hunting. From line miles 10 to 17, recreational activities are the same as those described for Option 3.

Like the South Alternative, Option 3A crosses C-TNF lands identified as a Semi-Primitive Motorized ROS class, which is generally characterized as a predominantly natural or natural-appearing environment with a moderate probability of experiencing isolation from the sights and sounds of man yet permits motorized uses. Option 3A crosses only one BLM parcel—the same parcel adjacent to the Blackfoot River Narrows that the South Alternative crosses.

Option 3A is the only route option that crosses the Blackfoot River WMA. As described above, the Blackfoot River WMA was established to provide public access to wildlife areas and improve fish, riparian, and upland habitat. Activities on the Blackfoot River WMA include fishing, hunting, trapping, hiking, wildlife viewing, bird watching, sightseeing, cross-country skiing, and photography.

Option 4—Option 4 crosses approximately 5.5 miles of the same private agricultural lands west of Highway 34 before turning east to rejoin the South Alternative. Recreational activities on the remaining portions of Option 4 are the same as those described for the South Alternative.

3.2.2 Environmental Consequences of the North Alternative

Private and State Lands

The majority of land crossed by the North Alternative is privately owned, with one state of Idaho parcel east of Blackfoot Reservoir. Possible impacts to recreational users on private or state lands would include noise generated by construction activities, including the movement of construction-related vehicles; increase in fugitive dust; wildlife disruption; and temporary closure of areas within the ROW to ensure visitor safety when such activities are ongoing.

The only privately owned developed recreational facility within 1 mile of the proposed North Alternative route is the Cedar Bay Marina and RV Park, located on Blackfoot Reservoir. This parcel is approximately a quarter mile from the proposed ROW/Highway 34 crossing in Henry, Idaho. In addition to potential construction impacts described for recreational use above, short-term impacts to Highway 34 may include traffic delays and intermittent road closures associated with placement of structures and stringing of the transmission line across the roadway. This has the potential to affect some recreationalists who use this roadway to access the various opportunities in the project area. Overall, short-term impacts of the North Alternative to recreational opportunities and facilities on non-federal lands would be ***low*** to ***moderate***.

The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational access or use on private and state lands in the long term; impacts of the North Alternative on these recreational opportunities are expected to be ***low***.

Impacts to recreation from the operation and maintenance of the North Alternative are expected to be short term and intermittent. Twice each year, helicopter flyovers would generate noise that could disturb recreational users within proximity to flight patterns. Noise associated with maintenance vehicle trips, as necessary, would also be temporary. Long-term impacts from the operation and maintenance of the North Alternative would be ***low***.

Forest Service Lands

Noise, fugitive dust, and traffic associated with construction of the North Alternative could indirectly affect two recreational trails, two campsites, and one USFS campground (Gravel Creek Campground), which are located within approximately 0.5 mile of the North Alternative corridor. No developed recreational facilities would be directly affected.

The proposed transmission line ROW would cross ATV Trail No. 333 in two locations. In addition, a proposed bypass, Road 23031, would be constructed to bypass the lower portion of ATV Trail No. 333. This bypass was suggested by USFS to eliminate frequent erosion issues resulting from the confinement of the lower portion of the ATV trail within a narrow ravine. Based on field meetings between BPA and USFS, the intent is to close the lower section of ATV Trail No. 333 and use the new bypass road to access the remainder of the existing ATV trail system. A gate restricting access to smaller motorized vehicles would be placed near the beginning of the bypass. Recreational use of ATV Trail No. 333 would likely be directly affected during construction of the transmission line and bypass road because the trail would be closed due to safety and security concerns.

Direct impacts to recreational use would include noise from construction activities and the movement of construction-related vehicles; fugitive dust from construction activities; and wildlife disruption. Impacts on recreational use on USFS land would be minimized because the majority of the proposed transmission line would be near the boundaries of the C-TNF or close to existing roads so that recreational use deeper within the C-TNF would remain unaffected. It is expected that recreational users in areas near the boundaries of the C-TNF or near roads would be less likely to be seeking a remote, undisturbed experience during their visits compared to those who are recreating in more remote areas within C-TNF boundaries. The ROS crossed by the North Alternative is Roaded Modified, which indicates these areas are known to have a higher level of human activity than a less developed ROS, such as Primitive. In addition, five of six Management Prescriptions crossed by the North Alternative allow for motorized activities and road development. As a result, construction-related impacts of the North Alternative on recreational use in the C-TNF would be ***low***.

Vegetation clearing to support construction of the North Alternative would disturb land that was in some cases previously undeveloped and forested. As discussed above, areas of the C-TNF that the North Alternative crosses are not managed for primitive or remote recreation. Although the cleared ROW and access roads would be detectable to users in the area, recreational uses would remain unchanged and capacity would remain the same. In addition, only a small portion of the C-TNF would be impacted and subsequently affect users in close proximity to the proposed ROW. The presence of the cleared ROW, transmission line, and access roads would therefore have a long-term, ***low*** impact to dispersed recreation. Clearing of tall vegetation for the transmission line ROW would reduce security cover for game animals during hunting season, potentially causing a ***low*** to ***moderate*** impact to hunting, depending on location.

During construction activities, lands, roads, and facilities in close proximity to the proposed transmission line may be temporarily closed to users for safety and security reasons. Indirect impacts to recreational facilities would include the use of USFS roads by construction-related vehicles and workers during construction. Construction of the proposed transmission line could result in temporary traffic delays, road closures, and a minimal decrease in access to nearby recreational areas. Following any construction-related closures, access to recreational facilities and roads would return to previously existing conditions. Impacts associated with construction activities would be expected to occur during the approximately 16-month construction period, which would be spread over 2 years. Overall, short-term impacts to recreational facilities on C-TNF lands from construction of the North Alternative would be ***low*** to ***moderate***.

New access roads could potentially result in an increase in unauthorized OHV use because they would create new access points. Potential for unauthorized OHV access would be minimized with the installation of gates at all project-related roads, which would be adequately sited and designed to prevent OHV access. As a result, occurrences of unauthorized public access and OHV uses would be infrequent and respective impacts are expected to be ***low***.

Impacts from the operation and maintenance of the North Alternative would result from the periodic presence of helicopters and maintenance equipment and associated noise. About twice annually, a helicopter would fly the project corridor to look for problems or repair needs. When and if maintenance needs arise, field vehicles would access trouble spots along the ROW. Operation of the proposed transmission line would result in minimal foul weather-generated corona noise at the edge of the ROW that would be audible to recreational users in immediate proximity to the transmission line (see Section 3.12, Noise). Impacts to recreation from the operation and maintenance of the North Alternative are expected to be intermittent and ***low***.

Bureau of Land Management Lands

The North Alternative corridor crosses one BLM parcel not located within the Blackfoot River SRMA. Additionally, there are no developed BLM recreational facilities in close proximity to the North Alternative. Direct and indirect impacts from construction of the North Alternative on recreational use on BLM lands would be similar to those described for USFS lands above, including construction noise, fugitive dust, traffic, and temporary area closures. Overall, short-term impacts to recreation from construction of the North Alternative would be ***low***

The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational use on BLM lands, and would not limit user access to BLM recreational facilities. Within the SRMA, users of Blackfoot Reservoir Campground would be able to see the proposed transmission line in the distance; however, as discussed in Section 3.3, Visual Resources, it is unlikely that the transmission line would be a dominant feature in the landscape, because it would be almost 4-miles away from the campground. Long-term impacts of the North Alternative on recreational use of BLM lands and facilities would therefore be ***low.*** Impacts from the operation and maintenance of the proposed transmission line would be attributable to the periodic presence of helicopters and maintenance equipment and associated noise. Similar to the impacts described for USFS lands above, the impacts to recreation from the operation and maintenance of the transmission line are expected to be intermittent and ***low***.

Bureau of Indian Affairs Lands

Recreational users of the Blackfoot Reservoir would be able to see the proposed transmission line in the distance from certain areas of the reservoir; however, visual impacts to these users would be similar to those described in Section 3.3, Visual Resources, and the Blackfoot Reservoir Campground, as described above. Additionally, the North Alternative would not limit existing user access to the reservoir. The 1.7 miles of BIA lands crossed by the Project are not governed by any recreation management goals or objectives, and are predominantly leased for cattle grazing. Because there is no known recreational use of these lands, the North Alternative would have ***no*** impact to recreation on lands managed by BIA.

North Alternative Route Options

Long Valley Road Option

The areas of private land impacted under the Long Valley Road Option are currently used for active grazing and crop cultivation and are not known to support high levels of recreational use. Although the Long Valley Road Option would increase the area of private land potentially impacted by transmission line ROW and access roads by up to 78 acres, this option would not result in a substantial change to the overall recreational impacts of the North Alternative on private lands as described above. The overall short-term impacts of the Long Valley Road Option on recreational use and facilities during construction activities would be similar to those described above. In the long term, impacts associated with the operation and maintenance of the transmission lines would also be ***low.***

North Highland Option

The areas of private land under the North Highland Option are currently forested where hunting or hiking may occur. This option would require clearing for ROW and roads that could impact these recreational activities. However, a relatively small amount of private land (about 4.8 acres) would be cleared, resulting in a ***low*** impact to hunting and hiking. During construction activities, short-term impacts of the North Highland Option on recreational use would the same as those described for the North Alternative.

The majority of the North Highland Option would be on C-TNF land managed as 3.2, Semi-primitive Recreation, 2.1.2, Visual Quality Maintenance, and 6.2, Rangeland Vegetation Management, and included in the Roaded Modified ROS class, similar to the North Alternative as described above. Short- and long-term impacts to recreational use on the C-TNF under this route option would be similar to those described for the North Alternative (***low***).

3.2.3 Environmental Consequences of the South Alternative

Private and State Lands

Similar to the North Alternative, the majority of lands crossed by the South Alternative are privately owned. There is one state of Idaho parcel in the middle portion of the South Alternative. Possible impacts to recreational users on private or state lands would be the same as those described for the North Alternative. This may include noise generated by the movement of construction-related vehicles; fugitive dust from construction of the transmission line and Hooper Springs Substation; and/or closure of areas within the ROW for safety reasons during construction activities. Overall, short-term impacts of the South Alternative would be the same as those described for the North Alternative; ***low*** to ***moderate***.

The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational access or use on private or state lands in the long term; therefore, impacts would be ***low***.

Impacts from the operation and maintenance of the South Alternative are expected to be short term and intermittent, similar to those described for the North Alternative. Twice a year, helicopter flyovers and the movement of maintenance vehicles would introduce temporary noise that could disturb recreational users within proximity to where such activities are ongoing. Long-term impacts from the operation and maintenance of the South Alternative would be ***low***.

Forest Service Lands

Noise associated with the construction of the Project could impact one USFS campground, Mill Canyon Campground, which is located 1 mile north of the South Alternative corridor. The proposed transmission line ROW also would cross USFS Road 878. Due to safety and security concerns, recreational use of this road could be affected during specified periods by roadway closures when construction activities are ongoing.

Potential direct impacts to recreational facilities would be similar in nature to those described for the North Alternative on C-TNF lands; no direct impacts are expected to developed recreation. Indirect impacts may include noise generated by the movement of construction-related vehicles; fugitive dust from construction activities; and wildlife disruption. Additionally, lands, roadways, and facilities within proximity to the South Alternative corridor, including those near the Blackfoot River Narrows, may be temporarily closed to users for safety and security reasons or experience temporary traffic delays and decreased access to nearby recreational areas. However, recreational users along the Blackfoot River would be less likely to be seeking a remote, undisturbed experience because this area is bordered by Blackfoot River Road and offers fewer opportunities to get away from more developed areas. Following any construction-related closures during the 2-year construction period, access to recreational facilities and roads would return to under existing conditions. Overall, short-term impacts to recreation on C-TNF lands from construction activities associated with the South Alternative would be ***low*** to ***moderate***.

The two ROS classes crossed by the South Alternative are Roaded Modified and Semi-Primitive Motorized, which indicates these areas are known to have a higher level of human activity than a less developed ROS, such as Primitive. In addition, all of the Management Prescriptions crossed by the South Alternative contain provisions allowing for motorized activities and road development. As a result, it is anticipated that short-term construction-related impacts of the South Alternative on recreational use in the C-TNF would be ***low***.

Similar to the North Alternative, vegetation clearing necessary to support the construction of the South Alternative would disturb land that was in some cases previously undeveloped and forested. As discussed above, the areas of the C-TNF that the South Alternative crosses are not managed for primitive or remote recreation. In addition, only a small portion of the C-TNF would be impacted for users in close proximity to the proposed ROW. However, the presence of the cleared ROW, transmission line, and access roads would potentially impact non-motorized users and would therefore have a long-term, ***low*** impact to dispersed recreation. Like the North Alternative, clearing of tall vegetation for the South Alternative transmission line ROW would reduce security cover for game animals during hunting season, potentially causing a ***low*** to ***moderate*** impact to hunting, depending on location.

Similar to the North Alternative, new access roads could result in an increase in unauthorized OHV use. Gate installation would minimize potential for unauthorized OHV access, resulting in a ***low*** impact from unauthorized public access and OHV use.

Impacts from operation and maintenance of the South Alternative would be the same as those described for the North Alternative (intermittent and ***low***).

Bureau of Land Management Lands

There would be no impact to the BLM parcel crossed by the South Alternative corridor near Conda because there are no developed BLM recreational facilities on this parcel. Impacts to the BLM parcel located along Blackfoot River Road between line miles 13 and 14, the BLM parcel adjacent to the Blackfoot River Narrows, and C-TNF lands would be the same as those described for recreational use impacts from the North Alternative (short term and ***low***).

The presence of the cleared ROW and access roads under the South Alternative would result in the same impact described for the North Alternative (***low*****).** Impacts to BLM lands from the operation and maintenance of the South Alternative would be the same as described for the North Alternative (intermittent and ***low***).

Bureau of Indian Affairs Lands

There would be ***no*** impact to BIA lands because the South Alternative corridor does not cross any of these lands.

South Alternative Route Options

Options 1 and 2

Options 1 and 2 would have the same impacts to recreational uses as those described for the South Alternative (short term and ***low*** to ***moderate*** on private, state, and federal lands; ***low*** to ***moderate*** for hunting, depending on location; and ***low*** in the long term).

Option 3

Option 3 would have the same impact to recreational uses during construction as the North Alternative west of the Blackfoot River along Highway 34 where lands crossed are private (***low*** to ***moderate*** during construction and ***low*** during operation and maintenance). East of the Blackfoot River where Option 3 joins the same general South Alternative corridor, impacts to recreational uses would the same as those described for the South Alternative and Options 1 and 2 (short term and ***low*** to ***moderate***; ***low*** to ***moderate*** for hunting, depending on location; and ***low*** in the long-term).

Option 3A

Option 3A would have the same impacts to recreational uses on private lands as the South Alternative and Option 3 (***low*** to ***moderate***). On the Blackfoot River WMA, impacts would be ***low*** to ***moderate*** depending on the proximity of recreational uses to Option 3A's corridor. Like the South and North alternatives, ROW tree clearing would reduce security cover for game animals during hunting season, potentially causing a ***low*** to ***moderate*** impact to hunting, depending on location.

While an increase in access to cleared areas on the Blackfoot River WMA is possible, access to the ROW in line miles 23 to 24 would be from an existing WMA access road that is gated where it originates at Diamond Creek Road. BPA would only use the road for transmission line maintenance activities in line miles 23 and 24. The gate would remain locked at all other times.

There may be short-term ***moderate*** impacts during construction to other recreational activities, although long-term impacts would be ***low to moderate***. The ROW would be along the southern edge of the Blackfoot River WMA and would not be near fishing areas. However, photography, wildlife viewing, bird watching, sightseeing, camping, and cross-country skiing on the Blackfoot River WMA could occur in areas near the proposed ROW and access roads. Access to five structures located on the Blackfoot River WMA in the western portion of line mile 23 would be from the south of the ROW, off Dry Valley Road. This road is on private land and would also be gated. BPA would work with IDFG and other state and federal agencies to minimize motorized vehicular traffic on the Blackfoot River WMA.

The two ROS classes crossed by Option 3A are Roaded Modified and Semi-Primitive Motorized, which indicates these areas are known to have a higher level of human activity than a less developed ROS, such as Primitive. In addition, all of the Management Prescriptions crossed by Option 3A contain provisions allowing for motorized activities and road development. There would be no expect direct impacts to developed recreation; indirect impacts would be those related to short-term construction impacts. In addition, indirect impacts to dispersed non-motorized recreation would occur as a result of the creation and presence of the transmission corridor. Overall impacts to recreational use on the C-TNF from Option 3A would be ***low***.

Recreational use impacts where Option 3A crosses BLM lands adjacent to the Blackfoot River Narrows would be the same as those described for the North and South alternatives (short term and ***low***).

Option 4

Option 4 would have the same impacts to recreational uses during construction as those described for Option 3 and 3A west of the Blackfoot River along Highway 34 where lands crossed are private (***low*** to ***moderate*** during construction and ***low*** during operation and maintenance). East of the Blackfoot River where Option 4 joins the same general corridor as the South Alternative corridor, impacts to recreational uses would the same (short-term and ***low*** to ***moderate***; ***low*** to ***moderate*** for hunting, depending on location; and in the long-term, ***low***).

3.2.4 Mitigation

The following mitigation measures have been identified to reduce or avoid recreation impacts from the Project.

- Install barriers, gates, and postings at appropriate access points, and at the landowner's request, to minimize or eliminate unauthorized use of access roads.
- Provide a schedule of construction activities to all landowners who could be affected by construction (see Section 3.12.4, Noise).

3.2.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable short-term impacts on recreation include disruption from noise and fugitive dust associated with the movement of construction-related vehicles.

Long-term impacts to recreational use would result from the presence of the proposed transmission lines and permanent access roads, particularly on the Blackfoot River WMA along Option 3A. Construction of the transmission lines, including access roads and pulling sites and the associated clearing of vegetation would disturb some lands that were previously forested and undeveloped. The operation and maintenance of the ROW and permanent access roads would maintain these lands in a developed condition. Users seeking a remote and secluded outdoor recreational experience on the Blackfoot River WMA under Option 3A and other areas would experience a decrease in the availability of certain recreational uses in and within the transmission line ROW or within audible distance of maintenance activities.

3.2.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to recreation from the construction, operation, and maintenance of the transmission lines would not occur.

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3.3 Visual Resources

3.3.1 Affected Environment

The project area is characterized by north to south trending valleys bordered by rolling hills and steep mountain ranges. Sagebrush or grass-covered foothills parallel broad valleys south and east of the Blackfoot Reservoir in the southern and middle portions of the Project. Steep mountain ridges with forested slopes flank the rolling hills and small valleys in the northern and eastern portions of the project area.

The project area is sparsely populated with low density residential development limited to rural homes, ranches, and farms scattered along the North Alternative corridor and the western portion of the South Alternative corridor. Mine development also is present along the middle portion of the North Alternative corridor, as well as along much of the South Alternative corridor. The Pioneer Historic Byway (Highway 34) runs along the majority of the North Alternative corridor and for a shorter length along the South Alternative corridor (see Map 3-6). This Historic Byway is an Idaho state and nationally recognized scenic byway with several important points of interest including Hooper Springs, the China Hat and China Cap Geological formations, the Henry-Chester Country Store, and Gray’s Lake National Wildlife Refuge. Map 3-6 contains the viewpoint locations of photos selected for presentation throughout the following discussion.

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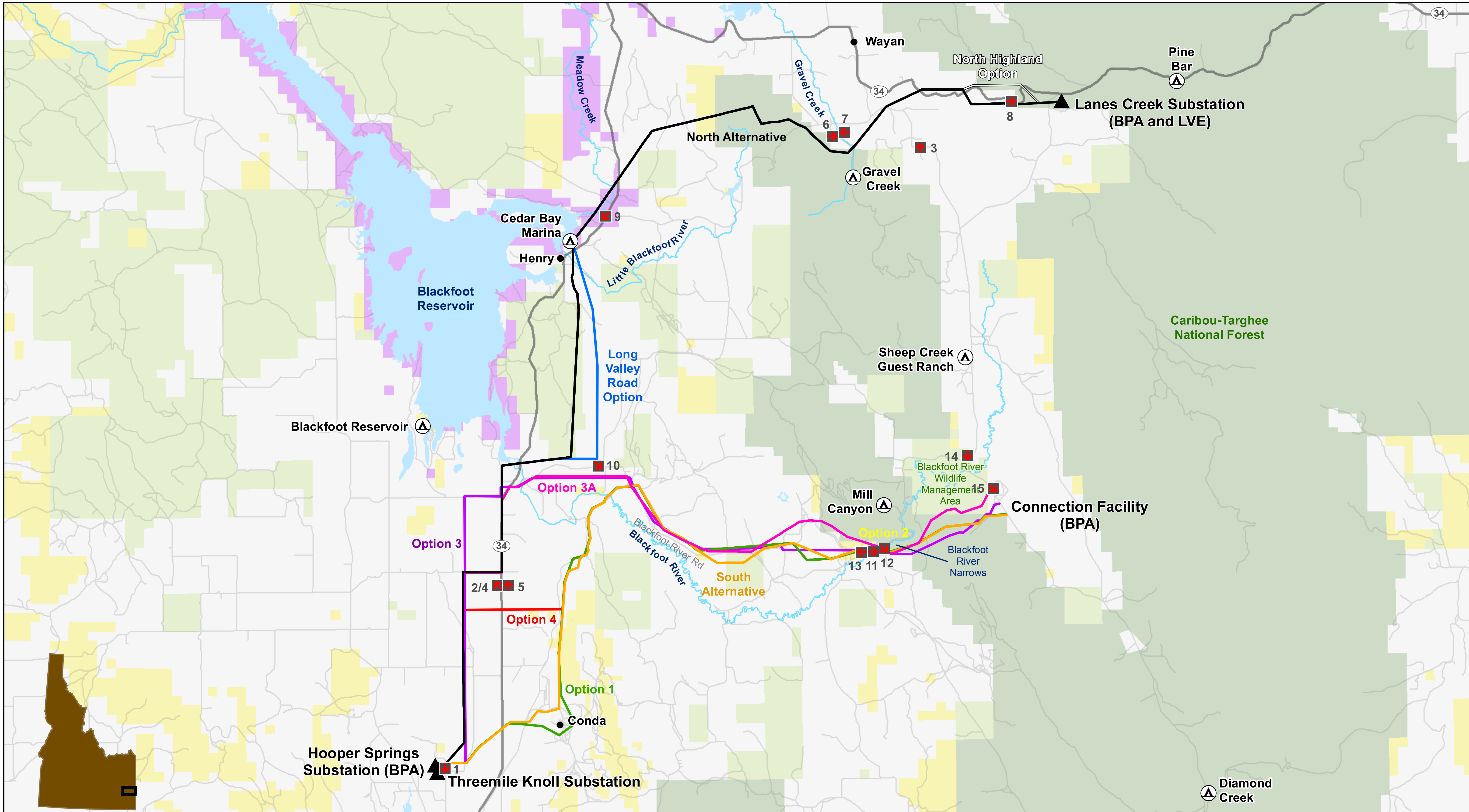

Substation
City
Mile Markers - North Alternative
North Alternative
Long Valley Road Option
North Highland Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 3A
Option 4

Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land

Campground
Photo Locations and Directions
Local Road
State Route

N S E W

Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983

0 1 2 4 6 8 Miles

Hooper Springs Transmission Project

BONNEVILLE POWER ADMINISTRATION

Map 3-6 Viewpoints

Date: 1/8/2014

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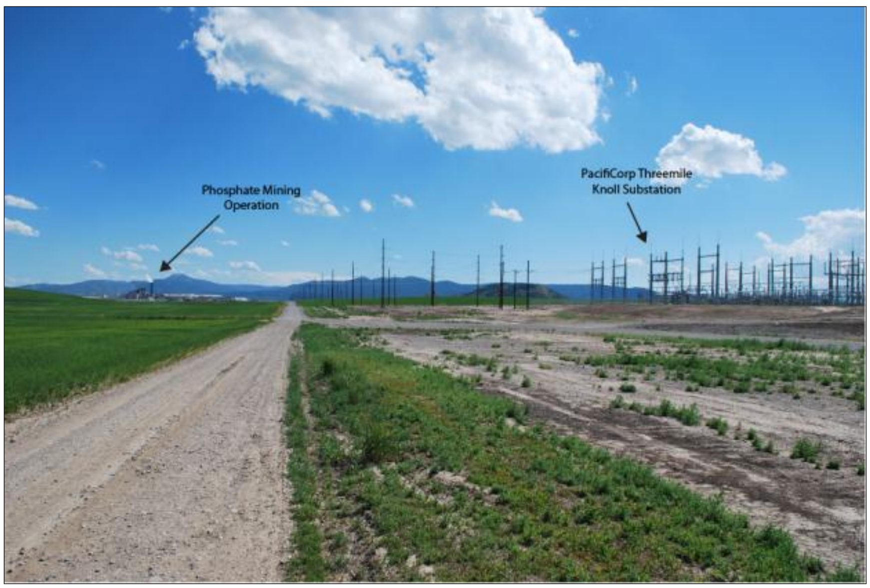
Private and State Lands

North Alternative

Privately owned land is primarily located at the western and eastern ends of the North Alternative corridor, with one state-owned parcel located between line miles 11 and 15 (see Map 3-6). Beginning at the western end of the North Alternative corridor, the Hooper Springs Substation site is in a flat, privately owned agricultural area adjacent to the existing PacifiCorp Threemile Knoll Substation. The area has industrial components within an agricultural landscape, including the existing substation and the phosphate mining operation south of the substation (see Figure 3-1). In cultivated areas near the Hooper Springs Substation site, the landscape consists of gently rolling hills in the foreground (up to 0.5 mile from the viewpoint) and middle ground (up to 4 miles from the foreground), with ridges dominating the background (4 miles and beyond to the horizon) and in the distance.

Figure 3-1. Photo 1—Vicinity of the Proposed Hooper Springs Substation



From the Hooper Springs Substation site, the North Alternative corridor (between line miles 1 and 10) crosses private agricultural and grazing lands and passes near the China Hat and China Cap geological sites, which appear in the background of the landscape (see Figure 3-2). The corridor also travels parallel to and west of Highway 34 between line miles 1 to about 6 and then adjacent to the highway from line miles 6 to 9. A relatively large number of local and non-local motorists travel on Highway 34 in this area (see Section 3.11, Transportation).

Figure 3-2. Photo 2—China Hat and China Cap from Highway 34

On state of Idaho lands between line miles 11 and 15, the North Alternative corridor crosses over ridges of the western foothills of Long Valley. State land in this area is primarily grazing lease lands with grass and sagebrush-dominated slopes. The rolling hills landscape continues as the North Alternative corridor crosses back on to private lands near line mile 15 with mountain ridges appearing in the landscape background. Private lands are then intermixed with BIA and BLM lands between line miles 16 and 22. The publicly-accessible Grays Lake National Wildlife Refuge, managed by USFWS, is located approximately 3 miles north of line mile 23 amid surrounding private lands. These private agricultural and/or grazing lands also occupy the northeast portion of the North Alternative corridor (line miles 27 to 31). There are few buildings on the landscape, including scattered houses and farm outbuildings. The North Alternative corridor near the intersection of Highway 34 and Lanes Creek Road crosses rolling hills with sagebrush and grasslands in the fore- and middle ground, giving way to steeper ridges in the background. Evidence of human presence along this portion of Lanes Creek Road includes low fencing, wood utility lines, and residential homes (see Figure 3-3).

Figure 3-3. Photo 3—Private Lands in the Northeast Portion of the North Alternative off Lanes Creek Road

South Alternative

From the Hooper Springs Substation site north and then east to the Blackfoot River Narrows, the South Alternative corridor crosses almost entirely private land, with one BLM parcel between line miles 5 and 6 and one state-owned parcel crossed between line miles 14 and 15 (see Map 3-6). The Hooper Springs Substation site is on the same private agricultural land as the North Alternative (see Figure 3-1). This western portion of the South Alternative corridor crosses mostly level agricultural land with views of the mountains and foothills. East of Highway 34 in line miles 3 to 8, other human-made features in the fore- to middle ground include the embankments of the Agrium Phosphate Mine settling ponds; slag and tailing piles, equipment associated with the Agrium Plant; steel and wood structures for transmission and distribution lines; Highway 34; and miscellaneous buildings. The area is highly disturbed with level to steep terrain and areas that have been scoured and contoured for construction and mining purposes. Although the public can drive along part of Conda Road, this portion of the South Alternative corridor is not viewed in the foreground by many people other than employees of the Agrium Plant. Most views by the public are from Highway 34, along Conda Road over a mile to the west, or on other unpaved roads. There are no residences along this part of the South Alternative corridor.

As the South Alternative corridor begins to curve northeastward in line mile 10, it crosses through private industrial and agricultural land and then over the Blackfoot River. Vegetation varies from forested and riparian areas, to grass and sage with areas of rangeland. The South Alternative corridor then travels east and southeast along Blackfoot River Road through private range and mining lands and a state of Idaho parcel in line miles 14 to 15 until it reaches BLM and C-TNF lands in line miles 18 and 19. There are a few residences along this portion of the corridor. Terrain varies from flat to hilly with north-facing forested slopes and south and west facing slopes with sage and grasses. Aspen generally cover sloped areas (particularly east-facing slopes). Views along this portion of the South Alternative corridor vary from open valley views to more constricted views in areas adjacent to hills. Some mining activity on hillsides north of Blackfoot River Road can be seen along this portion of the South Alternative. Local residents, travelers and fisherman use Blackfoot River Road to access the Blackfoot River, as well as C-TNF and private lands farther to the east.

Forest Service Lands

USFS uses the Visual Management System to establish Visual Quality Objectives (VQOs) for its lands (USFS 2003b). The following summarizes the relevant VQOs for portions of the project corridors located on C-TNF lands:

- **Retention**—Retention lands allow for management activities that are not visually evident. Activities may only repeat form, line, color, and texture that are frequently found in the character landscape.
- **Partial Retention**—Partial Retention allows for management activities that remain visually subordinate to the characteristic landscape. Activities may repeat form, line, color, and texture common to the characteristic landscape, but changes in their qualities of size, amount intensity, direction, pattern, etc., remain visually subordinate to the characteristic landscape.
- **Modification**—Modification refers to landscapes where the valued landscape character appears moderately altered and differences begin to dominate the valued landscape character being viewed.

This section identifies the C-TNF lands crossed by each project corridor and describes their VQO classification and existing visual conditions.

North Alternative

The North Alternative corridor crosses approximately 5 miles of C-TNF lands between line miles 22 and 27 and 31 to 32 (see Map 3-6). C-TNF lands crossed by the North Alternative corridor are classified as either Retention or Partial Retention. Topography and vegetation on C-TNF lands crossed by the North Alternative corridor consist of heavily forested north-facing slopes with mixed stands of aspen and coniferous forest. South-facing slopes and open areas at lower elevations contain low-growing vegetation such as sagebrush and grasses. The landscape where the North Alternative corridor crosses C-TNF lands varies from foothills that block extended views to open valleys. Highway 34 is considered part of the scenic landscape where it crosses C-TNF lands (see Figure 3-13).

Approximately the first 4 miles of C-TNF lands crossed by the North Alternative corridor (line miles 22 to 26) are classified as Partial Retention. In this area, the corridor is north of the USFS Gravel Creek Campground, located off Wayan Loop Road. The campground is located off the road among high topography and heavy tree cover.

Adjacent to Highway 34 and within a broad valley, the North Alternative corridor (line mile 31) enters approximately 0.5 mile of C-TNF lands classified as Retention. The foreground is primarily meadows and sagebrush, with a middle ground of moderate hills and a background of mountain ridges. The corridor leaves the Retention portion of C-TNF lands and enters into a Partial Retention parcel for approximately 0.5 mile (line mile 32) before ending at the Lanes Creek Substation. In this area, C-TNF lands have low to moderate hilly topography with groves of low growing trees and shrubs on the hillsides. The topography is generally high and varied enough to block a direct view of the Lanes Creek Substation while driving on Highway 34. However, there are valleys along the highway where the landscape opens to broader views of rolling hills and meadows.

South Alternative

Approximately 3.5 miles of the South Alternative corridor passes through the C-TNF between line miles 19 and 22 (see Map 3-6). C-TNF lands crossed by the South Alternative corridor are classified as either Partial Retention or Modification. Where the corridor enters the C-TNF from the west at the area known as the Narrows (see Figure 3-20), lands are classified as Partial Retention. In this area, the Blackfoot River valley narrows considerably and becomes a twisting narrow canyon that turns sharply to the north for several miles before opening up again in the Rasmussen Valley. Blackfoot River Road winds through the bottom of the canyon next to the Blackfoot River and is surrounded by canyon side-slopes that rise sharply up to several hundred feet above the road and river. Further east near where the corridor exits the C-TNF near Diamond Creek Road, the VQO is Modification.

North-facing slopes on C-TNF lands crossed by the South Alternative corridor are heavily forested with mixed stands of conifers and aspen, as are some of the higher portions of most of the east-and west-facing slopes above the Narrows. South-facing slopes contain vegetation such as sage and grasses. The twisting terrain and vegetation restrict views through the Narrows. Mill Canyon Road turns off of Blackfoot River Road and rises approximately 0.5 mile through hillsides to the Mill Canyon Campground (see Section 3.2, Recreation). The lands adjacent to the Mill Canyon Road become forested towards the upper end.

After crossing the Blackfoot River at the start of the Narrows, the South Alternative corridor travels along the southern ridge of the river valley, east and over Dry Ridge. This portion of the corridor crosses rugged, mostly forested mountains. Views from Dry Ridge include areas several miles south that have been heavily altered through phosphate mining activities.

The eastern end of the South Alternative corridor descends the forested, east-facing slopes and canyons of Dry Ridge into Upper Valley and terminates at the base of the ridge at the existing LVE line located next to Diamond Creek Road. Views throughout Upper Valley include the valley floor and adjacent mountains. Viewers include primarily residents of scattered ranches and people driving on Diamond Creek Road.

Blackfoot River Road and Diamond Creek Road are the major travel ways in the South Alternative and are where the greatest number of viewers may see the transmission line ROW and roads. The distance zones of the viewed landscape from these two roads range from foreground in the Narrows area, to background along the parts of Diamond Creek Road that pass through Upper Valley near the eastern end of the alternative. Viewers include some recreationists (campers and fall hunters), but are composed primarily of local people engaged in mining and ranching/farming who pass through the area.

Mill Canyon Road is a gravel surface that branches off Blackfoot River Road in the Narrows. It is less than 0.5 mile long and provides access to the Mill Canyon Campground. It is in an area that has a VQO of Partial Retention. The side slopes of Mill Creek Canyon and nearby trees restrict views to the south from the campground. Only the upper slopes of the ridges are visible in the middle ground from parts of the campground. Views from the middle and lower part of Mill Canyon Road include middle distance views of forested ridgetops south of the Blackfoot River.

Bureau of Land Management Lands

BLM has developed a visual resource manual to rate and assign Visual Resource Management (VRM) classes to landscapes to identify potential visual impacts to resources and determine the appropriate levels of management (BLM 2007). The visual resource manual also provides a method to analyze potential visual impacts and apply visual design techniques to ensure surface-disturbing activities are in harmony with their surroundings (BLM 2007). The manual also identifies four VRM classes:

- **Class I—**Class I lands are managed to retain a natural landscape and include such areas as national wilderness and wild and scenic rivers. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II—**Class II lands should retain the existing character of the landscape and the level of change to the characteristic landscape should be low.
- **Class III—**Class III lands are those lands that should partially retain the existing character of the landscape and where the level of change to the characteristic landscape should be moderate.
- **Class IV**—Class IV lands are managed to provide for activities which require major modifications to the existing character of the landscape. The level of change to the characteristic landscape can be high; however, attempts should be made to minimize impacts.

This section identifies BLM lands crossed by each project corridor and describes their VRM classification and existing visual conditions.

North Alternative

As described in Section 3.2, Recreation, BIA manages the Blackfoot Reservoir; however, Blackfoot Reservoir Campground is managed by BLM and classified as Class II area. This Class II area is more than 2 miles northwest of the North Alternative corridor at line miles 9 and 10. Facilities within the campground area have natural colors and visually complement the surrounding landscape. BLM land crossed by the North Alternative corridor at line mile 22 is also classified as a Class II area. The crossing at this location is approximately 0.5 mile long as the North Alternative corridor traverses a hillside. Vegetation present at this location consists of patches of conifer, with forest density decreasing as the elevation increases. There are no developed recreational or visitor attractions in this area and views of the parcel are not available from public vantage points along Highway 34 because of the elevated terrain east of the highway.

South Alternative

Approximately 2.7 miles of the South Alternative corridor cross BLM land, consisting of three parcels. Two of the parcels in the western portion of the corridor are classified as Class IV areas and are characterized by steep slopes, undulating hills, rocky terrain, and highly disturbed mining areas. Sage covers most of the undisturbed south-facing slopes, while thick stands of aspen and other vegetation cover the north-facing slopes. Views to the east along much of this section of the South Alternative corridor are constrained by the adjacent hillsides and an area highly altered by mining activities. One BLM parcel is located in the eastern portion of the South Alternative corridor just prior to crossing the Blackfoot River at the Narrows and entering C-TNF lands. This parcel is classified as a Class III VRM area and is characterized by undulating terrain and semi-forested hillsides. East-facing slopes near this portion of the corridor are generally covered in stands of aspens and deadfall with some areas of sage and bunch grasses. Surface mining operations currently occur within this parcel.

Bureau of Indian Affairs Lands

BIA does not have specific guidance for evaluating visual resources, and the agency does not conduct visual resource inventories of BIA lands. Guidance from the BLM visual resource manual was used to evaluate visual resources for BIA lands.

North Alternative

Based on the BLM's method, BIA lands within the North Alternative corridor fall within BLM Class II and III land classifications.

The Blackfoot Reservoir is scenic and offers an undisturbed landscape with a high level of visitor use. West of the North Alternative corridor in line miles 11 to 16, BIA lands along the eastern edge of the Blackfoot Reservoir, near the Cedar Bay Marina could be classified as Class II. However, the Cedar Bay Marina and RV Park has been cleared of native vegetation, replaced with manicured lawns, and scattered with permanent and temporary RVs and campers.

Further north along the Blackfoot Reservoir, the North Alternative corridor (line miles 17 to 19) crosses about 1.7 miles of BIA-managed lands that could be classified as Class III (see Figure 3-15). These lands are located adjacent to the easternmost extent of the reservoir and contain active agricultural uses. Human-related influence on the visual landscape in this area consists of low wood and wire fencing along the highway. The landscape is characterized by low growing sagebrush-dominated vegetation with some areas of agricultural lands in nearby private parcels. Views along Highway 34 are wide, allowing for long vistas across the landscape. The foreground is mostly grasslands, agricultural lands, and grazing areas, transitioning to higher hills and forested ridges in the background.

South Alternative

There are no BIA-managed lands within the South Alternative or its options.

Alternative Route Options

North Alternative Route Options

Long Valley Road Option—The Long Valley Road Option moves a portion of the North Alternative corridor from state-owned lands to private lands approximately 1 mile to the east. The landscape in this area is almost exclusively agricultural land. There are no residences along Long Valley Road and the only human-made features on the landscape include low wooden fences and a barn located at a 90-degree turn in the road. The foreground includes rolling agricultural fields, with forested ridges in the background.

North Highland Option—The North Highland Option moves a portion of the North Alternative corridor from private land to private and C-TNF lands classified as Retention approximately 0.5 mile north. There are a few residences along this portion of Highway 34 and most private land is range with forested slopes on C-TNF lands.

South Alternative Route Options

Options 1 and 2—Options 1 and 2 generally follow the same corridor through private, state, and federal lands as the South Alternative (see Map 3-6). There are views of private agricultural land to the west and mountains and foothills to the east with private industrial land near the Agrium plant in the fore- to middle ground. As the options cross the Blackfoot River and travel east through private, BLM, and C-TNF lands, views are similar to those described for the South Alternative.

Option 3—Option 3 generally follows the North Alternative corridor north from Hooper Springs Substation for about 9 miles (see Map 3-6). Views of private agricultural and grazing lands and the China Hat and China Cap geological sites appear in the background. As described above for the North Alternative, a relatively large number of local and non-local motorists travel on Highway 34 in this area. Option 3 then turns east across Highway 34 crossing over the Blackfoot River and generally following Blackfoot River Road until line mile 18. From this point until Diamond Creek Road, views are similar to those described for the South Alternative.

Option 3A—Option 3A also follows the same general corridor as the North Alternative and Option 3 from the Hooper Springs Substation for about 9 miles (see Map 3-6). Option 3A also turns east across Highway 34 crossing over the Blackfoot River and generally following Blackfoot River Road and Option 3 until line mile 17. Human-made features in the fore- to middle ground along this portion of the corridor include the developed campground and river access at Blackfoot River Park; Blackfoot River Road; the decommissioned Dry Valley Phosphate Mine; and other miscellaneous buildings.

As the corridor continues eastward, vegetation varies from forested and riparian areas to grass and sage with areas of rangeland. There are a few scattered residences along this portion of the corridor. In line mile 17, Option 3A heads northeast and then southeast on private mining lands before reaching C-TNF and BLM lands in line mile 19. The Class III VRM BLM lands in this area are characterized by steeper forested draws and undulating terrain as the corridor travels southeast through line miles 19 and 20 to the Blackfoot River Narrows crossing. Mining activity can be seen from this portion of Option 3A.

C-TNF lands crossed by the Option 3A corridor in line miles 19 through 23 are classified as either Partial Retention or Modification. Where the corridor enters the C-TNF from the west at the Blackfoot River Narrows, lands are classified as Partial Retention (see Figure 3-22). Further east, where the corridor exits the C-TNF and enters the Blackfoot River WMA, the VQO is Modification.

In line mile 23, Option 3A enters a forested portion of the Blackfoot River WMA for approximately 1.5 miles, before exiting onto private land near Diamond Creek Road (see Figure 3-29). The eastern end of Option 3A descends the forested, east-facing slopes and canyons of Dry Ridge into Upper Valley and terminates at the base of the ridge at LVE's existing transmission line located next to Diamond Creek Road. Viewers include primarily residents of scattered ranches and people driving on Diamond Creek Road.

Option 4—Option 4 generally follows the North Alternative corridor north from the Hooper Springs Substation for about 4.5 miles before turning east to rejoin the South Alternative corridor (see Map 3-6). Views are similar to those described for the North and South alternatives.

3.3.2 Environmental Consequences of the North Alternative

General Visual Impacts

Visual impacts from the North Alternative would include temporary visual changes during construction and the permanent presence of the structures, conductors, access roads, and substation work. Visual quality and viewer sensitivity are combined to determine visual impacts. The level of visual intrusion created by the North Alternative is described with respect to the different relative distance zones, types of observers, and observation points. Relative distance zones include the foreground, middle ground, and background. Types of observers include local residents, commuters and travelers, employees, and recreational users.

Construction activities would create temporary changes in scenery by introducing helicopters, trucks, and heavy equipment such as cranes and bulldozers to the area. Construction activities, anticipated to occur during 16 months of construction over a 2 year construction period, would be during daylight hours. Construction crews would be working in localized areas of the transmission line ROW and at the substations, and would be visible primarily to nearby viewers or those with a direct line-of-sight. Stringing of conductors by helicopter would be visible from a greater distance, although it would be short term. The two temporary staging areas needed along or near the line to store materials, equipment, and vehicles would be visible to those in the immediate vicinity. The staging areas would likely be an existing developed site or parking lot of about 10 acres, so no new areas would be developed.

Appendix B contains a viewshed analysis depicting the extent to which the features of the North Alternative would be visible to observers located throughout the project area, including along roadways and other publicly accessible lands. Views of the North Alternative would be most visible along Highway 34 south and northeast of Blackfoot Reservoir and southeast of Wayan as one approached the Lanes Creek Substation (See Appendix B).

Motorists (visitors, residents, and employees) on Highway 34 would likely notice an increased number of large trucks hauling materials to and from construction sites along the North

Alternative corridor. While the number of trucks on roadways would increase, heavy machinery is not necessarily uncommon in the area; especially in the southern portion of the North Alternative corridor where phosphate mining and other industrial activities are already present. Caution signage and potential stops along roadways could distract users from scenery and introduce bright colors not naturally found in the landscape. Short-term visual impacts during construction are expected to be ***low*** to ***moderate*** and would depend on the location of active construction along the North Alternative corridor.

Hooper Springs Substation (and its associated 138-kV transmission line) would be built directly adjacent to an existing substation and near a large phosphate mining operation on private land. Lanes Creek Substation would be built within the boundaries of the existing LVE Lanes Creek Substation. At both substation sites, the visual character of the land has already been altered and the introduction of new substation equipment and components would not substantially change the current visual setting. Short- and long-term visual impacts are expected to be ***low***.

Transmission line structures for the North Alternative would either be single-circuit steel single pole structures (line miles 1 to 11) with an average height of 95 feet or single-circuit wood H-frame structures (line miles 11 to 32) with an average height of 80 feet. The permanent presence of steel and wood pole structures would create an obvious human-made or industrial element to the landscape. Introduction of the new line would degrade the natural visual quality of the area, although transmission lines are typical in rural landscapes. Figure 3-4 shows an existing non-BPA transmission line in the North Alternative corridor, in a similar configuration as the proposed steel single pole structures. The transmission line is visible in the foreground along the road; however, the line quickly disappears into the background.

Figure 3-4. Typical Steel Pole (left) and Wood H-Frame (right) Transmission Structures

Initially, the color of the steel structures would be reflective; however, after 2 to 3 years the structures would begin to dull. In the short term, the structures on private land may be more visually obtrusive compared to the wood H-frame structure farther along the North Alternative because of their unnatural color introduced to the landscape. In the long term, the steel structures would more easily blend into the natural setting, although not to the extent of the wood H-frame structures. The presence of a new transmission line in the North Alternative corridor would initially be a new visual obtrusion on the landscape; however, over time regular motorists and local residents would become familiar with the transmission line and associate it with the existing landscape.

Access roads would also create a visual impact both in the foreground and in the distance, with new roads producing a more evident visual change than improvements to existing roads. Access road improvement (widening, blading, and/or gravel) would brighten the roads, and would make them more visible from a distance than they may be currently. Because temporary roads would be removed from crop lands after construction, they would not create a permanent visual impact. Unlike transmission lines, which form straight lines and angles, access roads can curve and follow terrain. In flat areas, roads are not seen as well from a distance, but on steep slopes, especially where cut and fill is needed, roads would likely appear more obvious unless uneven terrain allows them to be hidden on the hillside.

Visual photo simulations were prepared to help illustrate what the landscape might look like with the addition of the North Alternative. Because transmission lines similar to those included in the North Alternative tend to blend in with the background as the viewer's distance from the line increases, red arrows have been added to the visual simulations to indicate the approximate location of the proposed transmission line.

Impacts Specific to Private and State Lands

The Hooper Substation and North Alternative would be visible to travelers on roadways and most frequently visible to local landowners. There is a low level of traffic on Threemile Knoll Road and China Hat Road; however, the North Alternative is located directly adjacent to these roads (see Figures 3-5 and 3-6). Highway 34 is more highly traveled and would have more viewers traveling along the roadway. Except for approximately 2 miles (between line miles 6 and 9), the transmission line would be in the middle ground when viewed from Highway 34 and may not be as noticeable to motorists passing through the area. Additionally, the visual integrity in this area is already lower as a result of the existing phosphate mine and extraction area to the east of Highway 34 (line miles 1 to 10).

Figure 3-5. Photo 4—Looking Northwest toward China Hat and China Cap on Highway 34 at China Hat Road

Figure 3-6. Photo Simulation of the North Alternative

Photo Location for Figures 3-5 and 3-6

Where the North Alternative parallels Highway 34, it would be in the foreground and may not blend into the background as well as in other places (see Figures 3-7 and 3-8). Since the area is mostly flat and the transmission line would be immediately adjacent to the road, the backdrop of the landscape would likely be the sky, creating a distinct contrast against the transmission structures. Motorists in this area would mostly include commuters to Soda Springs and the phosphate mining areas and those traveling the scenic byway. The transmission line would likely be visible within this designated scenic area. Although motorists would move through the designated scenic area quickly, impacts to travelers within the area are expected to be ***moderate*** over the long term, as a result of the diminished scenic integrity. In addition to travelers, there are also a number of residences along Highway 34 and other secondary roads in this portion of the North Alternative corridor. For people living in this area, the line would be more visible and would present a new human-made element on the landscape. However, other transmission lines and mining operations also contribute to the landscape in this area of the corridor. Thus, depending on the viewer, the North Alternative would likely have both short- and long-term ***low*** to ***moderate*** impacts.

Figure 3-7. Photo 5—Looking North on Highway 34 at China Hat Road

Figure 3-8. Photo Simulation of the North Alternative

Photo Location for Figures 3-7 and 3-8

The North Alternative would cross over the highway and would be highly visible to travelers on Highway 34. After crossing over Highway 34, the North Alternative quickly moves behind steeper topography on state lands. Based on the viewshed analysis (Appendix B), the transmission line would not be visible to travelers on Highway 34 for approximately 3 miles when it would be behind foothills. Long-term visual impacts in this area are expected to be ***moderate*** where the North Alternative corridor crosses over Highway 34, but ***low*** to ***none*** where it crosses state lands.

The North Alternative corridor exits state lands (near line mile 15) and enters private lands where it continues north to the town of Henry. Here it intermittently crosses private lands as it parallels Highway 34 for about 3 miles. In this area, the North Alternative corridor would be visible depending on the viewer's vantage point. Travelers along Highway 34 and local residents near Henry would likely experience short- and long-term, ***low*** to ***moderate*** impacts depending on their vantage point and length of stay in the area. The North Alternative corridor also crosses private lands approximately between line miles 19 and 21. However, except for the area close to Highway 34, this area lacks both residents and well-traveled roads and therefore impacts would likely be ***low***. Distant views of the transmission line from the publicly-accessible Grays Lake National Wildlife Refuge would be available to recreational visitors, who would experience short- and long-term, ***low*** to ***moderate*** impacts depending on their vantage point and length of stay at the wildlife refuge.

After crossing federal lands, the proposed transmission line would cross approximately 5 miles of private lands (line miles 26 and 31) that include a broad valley with a number of local residents along Wayan Loop Road (see Figure 3-9). Travelers along Wayan Loop Road and those living in the area would be expected to experience short- and long-term, ***moderate*** to ***high*** impacts associated with construction and operation of the proposed transmission line because it would create a new element in a natural/pastoral setting (see Figure 3-10).

Figure 3-9. Photo 6—View South on Wayan Loop Road

Figure 3-10. Photo Simulation of the North Alternative

Photo Location for Figures 3-9 and 3-10

Impacts from maintenance activities under the North Alternative, including helicopter patrols, would be ***low*** given their short and infrequent nature.

Impacts Specific to Forest Service Lands

As described above, the North Alternative corridor would initially cross approximately 4 miles of land classified by USFS as Partial Retention, which allows management activities that remain visually subordinate to the characteristic landscape (USFS 2003b). Construction-related activities such as tree clearing, access road development, and structure installation and conducting would increase the level of activity in the area potentially affecting visitor and residents in the short term during the 16 months of construction over the 2 year construction period. New access roads would not likely affect the visual integrity of the area because they would be similar to C-TNF roads in look and size. As a result of construction-related activities, impacts to visual resources on C-TNF lands would be short term and ***low*** to ***moderate***.

Adhering to the USFS utility corridor guidelines, the proposed structures on C-TNF land would be wood and would blend into the background shades of green and brown. While on this portion of the forest, much of the proposed transmission line would be hidden from sight because it would be sited though a narrow valley with steep slopes on both sides. Therefore, presence of the proposed transmission line would have a long-term, ***low*** impact to the visual landscape of the area.

As the North Alternative turns south on C-TNF lands and roughly parallels Wayan Loop Road, it would become more visible to local residents and motorists. As it descend from higher elevations along Gray ridge and traverses Henry Cutoff on USFS lands, it would become more apparent to observers along the roadway as they approach forest lands from the east. Because it would be located in the foreground amid a forested backdrop, the transmission line would not be particularly noticeable because it would blend with adjacent landscape features. Moreover, trees would eventually obscure views of the transmission line as motorists enter the forested areas (see Figures 3-11 and 3-12).

During construction, visual impacts while on C-TNF lands along Wayan Loop Road and Henry Cutoff Road would be short term and ***moderate***, similar to impacts from construction activities in other areas of the C-TNF. However, based on the use of wood poles and associated landscape features, it is expected that the proposed transmission line would have a long-term, ***low*** impact to the visual landscape.

Figure 3-11. Photo 7—C-TNF lands Viewed from Henry Cutoff Road near Wayan Loop Road

Figure 3-12. Photo Simulation of the North Alternative

Photo Location for Figures 3-11 and 3-12

The North Alternative corridor would also cross approximately 0.5 mile of a Retention-classified USFS parcel, as it approaches the Lanes Creek Substation (see Figures 3-13 and 3-14). The transmission line would be visible to viewers in limited areas while crossing the Retention area because of topography and vegetation. There would be increased impacts to the visual character of the area during construction of the proposed transmission line and new access roads, although it would be short term and ***low*** to ***moderate***. The transmission line would use wood structures and be sited in an area crossed by existing transmission lines. Therefore, it would be consistent with the form, line, color, and texture of the surrounding landscape and in the long term would be compliant with the Retention classification. Approximately 1 mile of Highway 34 crosses through USFS Retention lands; therefore, motorist or residents would move through the affected area quickly, resulting in long-term, ***low*** visual impacts.

Continuing east to the Lanes Creek Substation, the USFS classification changes to Partial Retention (USFS 2003b). The landscape consists of low to moderate topography with groves and clumps of low-growing trees and shrubs. The natural character of the landscape is altered by an existing substation and LVE’s transmission lines and would absorb the visual impacts from the North Alternative. There would be impacts to the visual character of the area during construction of the proposed transmission line, access roads development, and installation of new substation equipment with the substation, although it would be short term and ***low*** to ***moderate***. The visual impacts associated with the proposed transmission line and substation in this area are expected to be long term, but ***low***.

As described above, visual impacts during maintenance activities would be short in duration and intermittent over time and would be expected to be long term and ***low***.

Figure 3-13. Photo 8—Entering C-TNF Lands along Highway 34

Figure 3-14. Photo Simulation of the North Alternative

Photo Location for Figures 3-13 and 3-14

Impacts Specific to Bureau of Land Management Lands

The North Alternative would be visible from Class II lands at Blackfoot Reservoir Campground. The steel single pole structures would not be a dominant feature on the landscape because the North Alternative corridor is more than 2 miles away from the campground. Therefore, visual impacts are expected to be long term and ***low***. In addition, it is unlikely that any construction or maintenance-related activities would be visible from this area.

The North Alternative corridor would also cross one Class II BLM parcel. Based on BLM visual resource management prescriptions, Class II lands should retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The BLM parcel (located at line mile 22) lacks accessible roadways into the area, and no human dwellings are visible in close proximity. The area where the North Alternative would cross this BLM parcel is located on a generally forested ridge with cleared patches of land and no recreation or visitor attractions. Views would not be readily accessible from most key observation points along Highway 34 because of elevated terrain and forest cover immediately to the east of the highway. However, the addition of a transmission line would result in long-term changes to the characteristics of the landscape. Although they would be located approximately 3 miles away, views of the structures of the North Alternative as it climbed the ridge may be visible to motorists traveling north on Highway 34 or residents in the area. Moreover, the cleared portions of the North Alternative corridor may be visible to viewers at greater distances than observation points along Highway 34. Given the existing patch-work of non-forested areas over the short distance of the BLM parcel crossed by the line, it would present a high level of visual contrast to the surrounding scenic character of the area and VRM Class II management objectives would not be met. As a result, this portion of the proposed transmission line would represent a visually intrusive element on the landscape. Therefore, visual impacts to this BLM parcel would be expected to be long term and ***high***.

Impacts Specific to Bureau of Indian Affairs Lands

The North Alternative corridor would cross over Highway 34 and be highly visible adjacent to the Cedar Bay Marina and RV Park before entering a BIA parcel, deemed Class III for this analysis, near the Blackfoot Reservoir. The Cedar Bay Marina and RV Park is located within these Class III lands, but is not crossed by the proposed transmission line. As described previously, the landscape in the marina area has been heavily altered and the construction of a transmission line would likely only have long-term, ***low*** impacts to the integrity of the landscape.

After crossing Highway 34, the portion of the North Alternative corridor crossing BIA-managed lands would run approximately 0.2 mile west of Highway 34; thus, placing the transmission line out of the foreground and into the middle ground from Highway 34. The location of the transmission line would allow it to blend into the landscape and be less obvious to residents and motorists. There are low wood and wire fences present in the foreground, with scattered homes and agricultural buildings in the middle ground. The wood transmission structures would mimic the linear wood fence lines, allowing the structures to blend in with current landscape and reducing impacts to visual resources. There are very few residents in the area; however, local residents and motorists passing through the area on Highway 34 would be the most frequent viewers of the transmission line (see Figures 3-15 and 3-16).

Figure 3-15. Photo 9—View South along Highway 34 within BIA Lands

Figure 3-16. Photo Simulation of the North Alternative

Photo Location for Figures 3-15 and 3-16

Visual impacts in the area are expected to be long term and ***moderate*** given the generally undisturbed nature of the landscape. Additionally the proposed North Alternative corridor would be visible from North Reservoir Road, on the northeast side of the Blackfoot Reservoir. BIA lands along North Reservoir Road would be classified as Class II under BLM standards. Due to topography and the distance from the transmission line (approximately 0.75 mile), views from these parcels would be limited and the structures would likely blend into the background. Changes to the landscape and its visual resource would likely be long term and ***low*** to ***moderate***, because the changes would not dominate the view and visitor activities would still occur in this area.

There would be long-term impacts expected from the continued presence of the structures operating under the North Alternative, as described above. Maintenance activities, such as routine patrols, structure repair, or vegetation maintenance would occur on an intermittent basis, but would be of limited duration. The occasional presence of maintenance equipment or vehicles would be temporary and is unlikely to measurably affect the overall visual quality of the North Alternative corridor. These temporary maintenance activities would result in ***low*** visual impacts.

North Alternative Route Options

Long Valley Road Option

Under the Long Valley Road Option, the North Alternative corridor would be located approximately 0.1 mile or more away from any named roadway until it approaches Highway 34 near the town of Henry at its northern terminus. The proposed corridor would be located in a broad valley, potentially increasing the visual impacts on residents located along Long Valley Road. However, there are very few homes along Long Valley Road; most landowners in the area own large (100 acres or more) parcels. The proposed transmission line would be visible to these residences and be an added element to the landscape. There are other transmission lines in the area of this option, and it would be expected that this option would be a minor visual element on the landscape, given the presence of other lines. Construction-related activities, such as ROW and access road development, structure installation, and line conductoring would be expected to have short-term ***low*** to ***moderate*** impacts on those residents along or users of Long Valley Road. Overall, given the nature of the landscape and presence of other similar transmission lines, the long-term impacts of the Long Valley Road Option would be ***low***. Maintenance activities along this portion of the ROW would be infrequent and limited in duration given the cultivated nature of the landscape and therefore any long-term associated impacts would be ***low***.

The Long Valley Road Option would not be visible to viewers on Highway 34. In addition, it is unlikely that the transmission line would be visible from Blackfoot Reservoir Campground because of intervening topography.

North Highland Option

The North Highland Option would move the North Alternative corridor north of Highway 34 where it would not be visible from the highway in line miles 30 to 32. The North Highland Option would be located along the top of a foothill and out of the viewshed of a residence potentially decreasing impacts to those residents. Without this option, the North Alternative structures and access roads would be visible from Highway 34 and the above-mentioned residence. The North Highland Option would cross approximately 2 miles of a Retention-classified USFS parcel, as it approaches the Lanes Creek Substation. This would be 1.2 miles more than the Retention-classified parcel on the North Alternative. Similar to the North Alternative, the transmission line would use wood structures to reduce impacts on the surrounding landscape and in the long term would be compliant with the Retention classification. Construction-related activities, such as ROW and access road development, structure installation, and line conductoring would be expected to have short-term ***low*** to ***moderate*** impacts on residents or travelers along Highway 34. Overall, given that the corridor would partially be hidden from viewers and residences, the long-term impacts of the North Highland Option would be ***low***.

3.3.3 Environmental Consequences of the South Alternative

General Visual Impacts

Visual impacts from the South Alternative would be similar to those described for the North Alternative; temporary visual changes would occur during construction and the permanent visual changes would be caused by the presence of the structures, conductors, access roads, and substation work. The level of visual intrusion created by the South Alternative is described in the same manner as for the North Alternative. Relative distance zones include the foreground, middle ground, and background, and types of observers include local residents, commuters and travelers, employees, and recreational users.

Construction activities described for the North Alternative would be the same for the South Alternative. Temporary changes in scenery would occur with the use helicopters, trucks, and heavy equipment. During the anticipated 16 months of construction, activities would take place during daylight hours in localized areas of the South Alternative corridor at the proposed Hooper Springs Substation site, and the proposed BPA connection facility with LVE. Short-term activities such as stringing of conductor by helicopter and use of temporary staging areas would be visible from a greater distance although they would be short term. Similar to the North Alternative, staging areas would likely be an existing developed site or parking lot, so no new areas would be developed.

Similar to the North Alternative, motorists on Highway 34 would likely notice construction equipment and activities in the western portions of the South Alternative corridor. However, heavy machinery is not uncommon in the area; phosphate mining and other industrial activities are already present. Similar to the North Alternative, caution signage and potential stops along roadways could distract users from scenery and introduce bright colors along the South Alternative corridor. Short-term visual impacts during construction are expected to be ***low*** to ***moderate*** and would depend on the location of active construction along the corridor.

Impacts to the visual setting from the Hooper Springs Substation (and its associated 138-kV transmission line) would be the same as those described for the North Alternative: short and long term and ***low***.

Appendix B contains a viewshed analysis depicting the extent to which the features of the South Alternative would be visible to observers located throughout the project area, including along roadways and other publicly accessible lands. The South Alternative would be most visible along Highway 34 south of Blackfoot Reservoir, along Blackfoot River Road until the Blackfoot River Narrows and then along Diamond Creek Road (see Appendix B). For 22.8 miles, the transmission line structures for the South Alternative would be double-circuit steel single pole structures with an average height of 90 feet. Similar to the North Alternative, the construction of steel structures would create an obvious human-made or industrial element to the landscape. Introduction of the new line would degrade the natural visual quality of the area, although transmission lines are typical in rural landscapes. Figure 3-17 shows an existing non-BPA double-circuit transmission line in a similar configuration as the proposed steel single pole structures.

Figure 3-17. Typical Double-Circuit Steel Pole Transmission Line

Similar to the North Alternative, the color of the steel structures would be reflective initially but would dull after 2 to 3 years. The presence of a new transmission line would initially be a visual obtrusion on the landscape, although over time motorists and residents would become familiar with the transmission line and associate it with the existing landscape.

Access roads would also create a visual impact both in the foreground and in the distance, with new roads producing a more evident visual change than improvement of existing roads. Temporary roads would be removed from crop lands after construction, and would not create a permanent visual impact. Unlike transmission lines, which form straight lines and angles, access roads can curve and follow terrain. In flat areas along the corridor, roads would not be seen as well from a distance similar to the flat areas along the North Alternative. On steep slopes near the eastern end of the South Alternative, roads would likely be more obvious unless hidden by uneven terrain.

Visual photo simulations were prepared to help illustrate what the landscape might look like with the addition of transmission lines under the South Alternative. These simulations are presented throughout the discussion below.

Impacts Specific to Private and State Lands

Similar to the North Alternative, the southeastern portion of the South Alternative would be visible to travelers and residents traveling along Highway 34 through private land. As described under the North Alternative, motorists along Highway 34 would include commuters to Soda Springs and the phosphate mining areas and those traveling the scenic byway. Similar to the North Alternative, the transmission line would be in the foreground (see Figures 3-5 through 3-8) where the South Alternative corridor would cross Highway 34 near Conda (between line miles 2 and 3). However, views of the line would occur for a relatively brief period of time, and the presence of the existing phosphate mine east of Highway 34 has already reduced the visual integrity in this area. As a result, long-term visual impacts to travelers and commuters through private lands in the southeastern portion of the South Alternative would be ***low***. Impacts to private and state lands from maintenance activities under the South Alternative, including helicopter patrols, would also be ***low*** given their short and infrequent nature.

After crossing through the mining area near Conda under the South Alternative, the line would be highly visible to travelers as it runs eastward to the south of Blackfoot River Road (see Figures 3-18 and 3-19). Under the South Alternative, the line and access roads would be visible from this point on until the corridor reaches the Narrows area. Most observers traveling along the road would be residents, mine workers, or recreational users. Long-term visual impacts would be ***moderate*** because construction of steel structures would create an obvious human-made or industrial element to the landscape. Long-term impacts to the state-owned parcel along this portion of the South Alternative would also be ***moderate*** because the line would bisect the parcel, placing structures and roads in the valley bottom along the Blackfoot River.

Figure 3-18. Photo 10—View to the Southeast of Blackfoot River Road

Figure 3-19. Photo Simulation of the South Alternative

Photo Location for Figures 3-18 and 3-19

Impacts Specific to Forest Service Lands

As described above, construction-related activities such as tree clearing, access road development, and structure installation and conductoring would increase the level of activity on C-TNF lands potentially affecting visitors in the short term, creating a ***low*** to ***moderate*** impact during construction. Workers and large equipment would be visible along the South Alternative corridor during construction. Access to structures would occur via adjacent roads and motorists would be exposed to construction activity that could include intermittent lane closures during construction.

The South Alternative corridor would cross lands classified by the C-TNF as Partial Retention at the Blackfoot River Narrows and Modification near the east end of the transmission line corridor. Similar to the North Alternative, the most visible components of the South Alternative would be the 100-foot-wide cleared ROW, the 90-foot tall transmission structures, access roads, and the conductor. Where Blackfoot River Road enters the C-TNF at the Blackfoot River Narrows, the South Alternative would be closer and more visible to viewers, although views this close to the crossing would be brief. East of the entrance sign to the C-TNF, the corridor would make a sharp turn south, cross over Blackfoot River Road and the Blackfoot River, and travel easterly up a forested and open side slope approximately 500 to 600 feet to the top of Dry Ridge (see Figures 3-20 through 3-23). The ROW would be visible as an unvegetated area on the side slope. Additionally, several structures would be seen above adjacent trees silhouetted against the background sky. Based on the limited development in the area and the dominant natural landscape features, the South Alternative would still meet the Partial Retention VQO. Long-term impacts to visual resources are expected to be ***low*** to ***moderate***.

East of the Narrows, the transmission line would not be visible from Mill Canyon Campground or Mill Canyon Road because of screening by topography and trees, but it would be visible to people driving on Blackfoot River Road and by people along the shores of (or in) the Blackfoot River. Although these changes might be visible to most C-TNF visitors, the proposed corridor and structures would be visually subordinate to the landscape character because the presence of a forested landscape would dominate. Based on the limited development in the area of the South Alternative and the dominant natural landscape features, the South Alternative would still meet the Modification VQO in this area. Long-term impacts to visual resources east of the Narrows are expected to be ***low*** to ***moderate***.

Figure 3-20. Photo 11—Approach to Blackfoot River Narrows and Entry to the C-TNF

Figure 3-21. Photo Simulation of the South Alternative

Photo Location for Figures 3-20 and 3-21

Figure 3-22. Photo 12—Blackfoot River Narrows, Current Conditions

Figure 3-23. Photo Simulation of the South Alternative

Photo Location for Figures 3-22 and 3-23

Impacts Specific to Bureau of Land Management Lands

Two of the three BLM parcels crossed by the South Alternative are Class IV, which allow for major modifications to the landscape. Because the Conda area is already heavily disturbed by the presence of the mine and associated facilities, impacts to visual resources on the BLM parcel located near Conda would be ***low***. Visual resource impacts to the other Class IV BLM parcel located along Blackfoot River Road would also be ***low***. While the South Alternative corridor would be visible along the north side of Blackfoot River Road as it travels through rangeland (see Figures 3-24 and 3-25), Class IV areas allow for major modifications to the landscape. Visual resource impacts to the Class III BLM parcel near the Narrows and adjacent to the C-TNF would be the same as the C-TNF lands in this area (long term and ***low*** to ***moderate***). Class III areas are those lands that should partially retain the existing character of the landscape and where the level of change to the characteristic landscape should be moderate. This classification allows for some visible modifications to the landscape. Because active surface mining is present on this parcel, the addition of a transmission line would not represent a major modification of the landscape.

Figure 3-24. Photo 13—Blackfoot River at Boundary of C-TNF and BLM Lands

Figure 3-25. Photo Simulation of the South Alternative

Photo Location for Figures 3-24 and 3-25

South Alternative Route Options

Options 1, 2 and 4

Impacts to visual resources along Options 1, 2, and 4 during construction would be same as those described for the South Alternative: short term and ***low*** to ***moderate*** depending on the location of active construction.

Long-term impacts to visual resources on private, C-TNF, and BLM lands from Options 1 and 2 would be similar to those described for the South Alternative: ***low*** near Conda, ***moderate*** along Blackfoot River Road to the Blackfoot River Narrows, and ***low*** to ***moderate*** within the Narrows and near the east end of the corridors. Options 1, 2, and 4 would all be visible to visitors and motorists at the Blackfoot River Narrows although these options would cross in slightly different alignments than the South Alternative. Impacts to visual resources along the western portion of Option 4 through agricultural lands and mining areas would be the same those described for the North and South alternatives (***low*** to ***moderate***).

Option 3

Impacts to visual resources along Option 3 during construction would be same as those described for the South Alternative: short term and ***low*** to ***moderate*** depending on the location of active construction.

Similar to the southwestern portion of the North Alternative, Option 3 would be visible to travelers and residents traveling along Highway 34 through private land. The transmission line would be in the foreground west of the highway (between line miles 1 and 9) where the corridor would parallel Highway 34 north of Conda (see Figures 3-5 through 3-8 for the North Alternative). However, views of the line would occur for a relatively brief period of time, and the visual integrity in this area is already reduced by the presence of the existing transmission lines and the phosphate mine east of Highway 34. Depending on the viewer, Option 3 would likely have both short- and long-term ***low*** to ***moderate*** impacts in the Highway 34 area north of Conda.

After crossing through the mining area near the Blackfoot River, Option 3 would be highly visible to travelers as it runs eastward along Blackfoot River Road similar to the South Alternative (see Figures 3-18 and 3-19 for the South Alternative). Long-term visual impacts would be ***moderate*** because construction of steel structures would create an obvious human-made or industrial element to the landscape.

The Option 3 corridor would not cross C-TNF lands at the Narrows, although it would cross the same Modification classified lands as the South Alternative near the east end of the transmission line corridor. Based on the limited development in the area and the dominant natural landscape features, Option 3 would still meet the Modification VQO. Long-term impacts to visual resources are expected to be ***low***.

Option 3 would traverse a portion of BLM land located adjacent to the C-TNF as it approaches the Blackfoot River Narrows. This parcel is designated as a Class III VRM area. Following construction of the transmission line for Option 3, new vertical features within a landscape characterized by undulating hillsides would create some degree of visual contrast. Visual resource impacts to this Class III BLM parcel near the Narrows would be long term and ***low*** to ***moderate***. As described above, Class III allows for some visible modifications to the landscape.

Option 3A

Similar to the South Alternative and other options, impacts to visual resources along Option 3A during construction would be short term and ***low*** to ***moderate*** depending on the location of active construction.

Similar to the southwestern portion of the North Alternative and Option 3, Option 3A would be visible to travelers and residents traveling along Highway 34 through private land. The Option 3A corridor also would parallel Highway 34 north of Conda (between line miles 1 and 9) and be visible in the foreground west of the highway (see Figures 3-5 through 3-8 for the North Alternative). Similar to Option 3, Option 3A also would have both short- and long-term ***low*** to ***moderate*** impacts in the Highway 34 area north of Conda depending on the viewer. Long-term visual impacts along Blackfoot River Road from line miles 10 to 17 would be ***moderate*** as described for Option 3 and the South Alternative.

Similar to Option 3, Option 3A would cross lands classified by the C-TNF as Partial Retention at the Narrows and Modification near the east end of the transmission line corridor. The ROW would be visible as an unvegetated area on the side slope and several structures would be seen above adjacent trees silhouetted against the background sky (see Figures 3-22 and 3-23 for the South Alternative). Because there is limited development in the area, Option 3A would still meet the Partial Retention VQO. Similar to the South Alternative, long-term impacts to visual resources are expected to be ***low*** to ***moderate***.

Also similar to Option 3, Option 3A also would traverse a northern portion of the same BLM land classified as a Class III VRM near the Blackfoot River Narrows and adjacent to the C-TNF. The new transmission line would create vertical features within a landscape characterized by undulating hillsides. However, the overall contribution to vertical features in this area would be minimal considering the presence of the existing phosphate mine. As a result, overall impacts to visual resources on this BLM parcel would be long term and ***low***.

Lands in the Blackfoot River WMA at the east end of Option 3A are generally forested until roughly 0.5 mile from Diamond Creek Road. The transmission line would be a dominant feature of the viewshed within this area; however, structural features would be indistinct at a distance of nearly 1.5 miles and visibility would be intermittent when the line drops behind the foreground because of the forest, which would serve to screen portions of the line from view (see Figures 3-26 and 3-27). Long-term impacts to visual resources on Blackfoot River WMA would be ***moderate*** because the line would be readily visible within the WMA. Recreational visitors to this state-owned land would experience views of the transmission line and associated structures that would create a visual contrast to the surrounding natural landscape.

The Option 3A corridor would be visible to the public and Blackfoot River WMA visitors where it traverses the east-facing slopes of the WMA and ties into the existing LVE line next to Diamond Creek Road (see Figures 3-28 and 3-29). People traveling on the part of Diamond Creek Road adjacent to the connection facility would see the corridor.

Figure 3-26. Photo 14—View South from Diamond Creek Road within Blackfoot River WMA

Figure 3-27. Photo Simulation of Option 3A

Photo Location for Figures 3-26 and 3-27

Figure 3-28. Photo 15—View to the Southeast along Diamond Creek Road

Figure 3-29. Photo Simulation of Option 3A

Photo Location for Figures 3-28 and 3-29

3.3.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate visual impacts from the Project.

- Develop irregular ROW edges (feathering) on C-TNF lands to break up the visual pattern, as practicable. Feathering would occur outside of the 100-foot ROW but within the 250-foot cleared area on C-TNF lands only.
- Utilize non-specular (non-reflective) finish on transmission lines, insulators, and other hardware to reduce reflection.
- Implement construction site maintenance and clean-up. Keep construction areas free of debris.
- Leave plants shorter than 4 feet undisturbed within the 100-foot-wide ROW where they would not interfere with the safe operation of the transmission line to help reduce the effect of the cleared ROW on visual resources.

3.3.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts to visual resources would occur from placement of transmission line structures, ROW clearing, and construction of access roads because these elements would be visible on the landscape. However, the alternatives and route options were determined in part by concern for the visual impacts that a new transmission line would have on the project area. The proposed routes would minimize visual impacts by following existing linear features in the landscape, utilizing natural colored structures (wood poles for a portion of the North Alternative), and revegetating the ROW with native, low-growing species. The level of visual impact would vary based on the transmission line's location in the project area given the topography, potential viewers, and the type of materials used. Option 3A would be visible within the Blackfoot River WMA where it traverses the east-facing slopes. In the long term, visitors to the WMA would experience views of the transmission line.

3.3.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to visual resources from the construction, operation, and maintenance of the transmission lines would not occur.

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3.4 Vegetation

3.4.1 Affected Environment

Vegetation Communities

The project area is within two ecoregions: the Northern Basin and Range Ecoregion, and the Middle Rockies Ecoregion (McGrath et al. 2002). The Northern Basin and Range Ecoregion is a high, cool region, characterized by dissected lava plains, rolling hills, alluvial fans, and scattered mountains. This western portion of the project area has been largely converted for agricultural and mining purposes, but some areas of relatively intact sagebrush steppe vegetation communities remain.

The eastern extent of the project area is located within the Middle Rockies Ecoregion. This portion of the project area is characterized by the marshes and bottomland terraces associated with Gray's Lake, the upper Blackfoot River, the Blackfoot River WMA, and also by the steep, dry, partly forested mountains of the Gray's Range. C-TNF manages most of the forested vegetation communities within the project area.

Eight vegetation communities occur within the project area, including native and non-native vegetation communities. The individual communities are defined based on differences in dominant/subdominant plant species, habitat suitability, and level of human activity. The vegetation communities are identified and briefly described in Table 3-8, and are discussed in greater detail below. See Appendix C, Plant Species Inventory.

Table 3-8. Vegetation Communities within North and South Alternative Corridors[1]

Vegetation Communities		North Alternative (acres)	South Alternative (acres)
Native Vegetation Communities	Sagebrush-dominated	208.1	113.2
	Mountain shrub-dominated	38.6	42.4
	Grass-dominated	21.8	74.8
	Aspen-dominated	126.1	48.8
	Conifer-dominated	40.6	39.0
	Wetlands	11.7	4.2
	Basalt outcrops with native vegetation	4.4	0.6
Other Non-native Vegetation Communities	Seeded grasslands and agricultural and non-native vegetation	143.1	63.8

Source: BPA 2009

[1] The alternative corridors include ROW, access roads, staging areas, pulling/tensioning sites, and substations or a connection facility.

Sagebrush-dominated

The sagebrush-dominated community is the most prevalent native vegetation community in the corridors, and on a variety of sites including dry, south-facing slopes and low-elevation public lands that have not been converted to agriculture or other uses. The size and quality of sagebrush-dominated communities within the alternative corridors varies greatly. Many small patches present are less than 1 or 2 acres, but large contiguous patches also occur on state and federal lands.

This vegetation community is characterized by the presence of one or more sub-species of big sagebrush (*Artemisia tridentata*). Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*) and tall three-tip sagebrush (*Artemisia tripartita* var. *tripartita*) are common throughout the range of elevations present within the project corridor. Mountain big sagebrush (*Artemisia tridentata* var. *vaseyana*) is present at cooler, mid-elevation sites, while silver sagebrush (*Artemisia cana*) is present at higher elevations. Other shrub species commonly present in sagebrush-dominated plant communities include bitterbrush (*Purshia tridentata*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), gray rabbitbrush (*Ericameria nauseosa*), and spineless horsebrush (*Tetradymia canescens*). Typical understory grasses include Sandberg's bluegrass (*Poa secunda*), junegrass (*Koeleria macrantha*), Idaho fescue (*Festuca idahoensis*), needle-and-thread grass (*Heterostipa comata*), and bluebunch wheatgrass (*Pseudoroegneria spicata*). Typical herbaceous species include parsnipflower buckwheat (*Eriogonum heracleoides*), arrowleaf balsamroot (*Balsamorhiza sagittata*), salsify (*Tragopogon dubius*), white hawkweed (*Hieracium albiflorum*), larkspur (*Delphinium* spp.), and biscuitroot (*Lomatium* spp.).

Mountain Shrub-dominated

Mountain shrub-dominated communities are typified by medium-sized shrub species, such as chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), and buckthorn (*Rhamnus alnifolia*), and occur along ridgetops and margins of forested and riparian areas on C-TNF. Mountain shrub-dominated sites within the project area are found in openings next to conifer and quaking aspen (*Populus tremuloides*) stands, and typically have a few quaking aspen in the overstory. Stands are typically densely populated with shrubs, and understory growth is sparse. Understory species, when present, consist of herbaceous species such as mule's ears (*Wyethia amplexicaulus*), buckwheat, biscuitroot, and heartleaf arnica (*Arnica cordifolia*).

Grass-dominated

Grass-dominated communities consist of native grass species, rather than seeded or non-native species. Grass-dominated plant communities within the project area are typically found on steep, rocky, south-aspect slopes and gentle slopes where soils are deeper. These communities are typically closely associated with, and interspersed between, areas dominated by sagebrush.

In grass-dominated vegetation communities, one or more species of sagebrush may be present, but the dominant plant species consist of native grasses and herbaceous species. On steep, rocky sites, typical species include bluebunch wheatgrass, Junegrass, and pinegrass (*Calamagrostis rubescens*). Arrowleaf balsamroot is also abundant on some sites. Other herbaceous species that are common to a lesser degree include lupine (*Lupinus* spp.), buckwheat, biscuitroot, and Oregon grape (*Berberis repens*). On sites where slopes are gentler and soils are deeper, Idaho fescue, and needle-and-thread grass are also typically present.

Aspen-dominated

Quaking aspen occurs as a minor component of several vegetation communities within the project area, but also occurs in relatively pure stands. Aspen-dominated stands are found at the base of the forested mountains of the Gray's Range, adjacent and intermixed with mountain shrub vegetation on ridgetops and in riparian areas. They also occur as isolated stands among sagebrush-dominated communities.

The forested stands at the northern end of the Gray's range are characterized by relatively mature aspen and an understory dominated by mountain shrubs such as serviceberry, chokecherry, mountain snowberry (*Symphoricarpos oreophilus*), woods' rose (*Rosa woodsii*), hollyleaved barberry (*Mahonia aquifolium*), and currants (*Ribes* spp.). Almost all of these stands have a component of Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) that is greater than 10 percent of the overstory canopy, or that is regenerating in the sapling layer. Herbaceous understory vegetation in these stands consists predominantly of pinegrass and/or elk sedge (*Carex geyeri*). Other herbaceous species include northern bedstraw (*Galium boreale*), mule ears, sticky purple geranium (*Geranium viscossissimum*), and elegant aster (*Eucephalus elegans=Aster perelegans*).

Isolated stands of quaking aspen that occur interspersed with sagebrush communities are similar in composition, though trees tend to be smaller, and understory vegetation tends to be more variable. Some stands have fairly dense understories dominated by shrubs such as serviceberry, roses, and currants. Other stands are relatively open in the understory, with Wyoming big sagebrush and tall three-tip sagebrush as dominant shrubs. Rocky mountain juniper (*Juniperus scopulorum*) is also frequently a component of these stands.

Conifer-dominated

Conifer-dominated plant communities are primarily present within the portions of the North Alternative corridor that are located on the C-TNF and in C-TNF lands on the eastern end of the proposed ROW for the South Alternative corridor.

The conifer-dominated forests are typically mixed conifer stands, with Rocky Mountain Douglas-fir as the climax species. Other coniferous species include lodgepole pine (*Pinus contorta*), and subalpine fir (*Abies lasiocarpa*). Engelmann spruce (*Picea engelmannii*) is also infrequently present at higher elevations.

Most of the conifer-dominated stands within the North Alternative corridor are mature Douglas-fir between 100 and 180 years of age. These stands may have a few large, old relic trees older than 200 years.

Understory vegetation typically consists of shrubs such as serviceberry, woods' rose, and snowberry, and grasses and forbs such as pinegrass, elk sedge, licorice root (*Osmorhiza chilensis*), Oregon grape, and sticky purple geranium.

Some of the younger conifer-dominated forest stands are mixed conifer/aspen stands (typically seral aspen stands) that have not yet reached a climax Douglas-fir plant community. These stands are typically younger than 100 years, and have an understory that is more densely vegetated with shrubs and saplings.

Wetlands

A detailed discussion of wetland resources and impacts can be found in Section 3.6, Water Resources, Floodplains, and Wetlands. Several emergent wetlands occur in association with riparian floodplain areas adjacent to the Blackfoot River, Little Blackfoot River, Gravel Creek, and portions of Meadow Creek. Reed canarygrass (*Phalaris arundinacea*) is the predominant emergent species in these riparian wetlands, but other native emergent sedges (*Carex praegracilis*, *Carex utriculata*), rushes (*Juncus acuminatus*, *Juncus ensifolius*), and meadow barley (*Hordeum brachyantherum*) are present. Scrub-shrub wetlands in the project area are dominated by Booth willow (*Salix boothii*), Wolf's willow (*Salix wolfii*), coyote willow (*Salix exigua*), and red osier dogwood (*Cornus sericea*).

Basalt Outcrops with Native Vegetation

Basalt outcrops are primarily confined to agricultural lands in the southwestern portion of the project area. These are isolated rocky outcrops where land has not been tilled and where native vegetation has been preserved within areas otherwise converted to agricultural uses. Many of these areas are very small (less than 100 square feet) and uniform. Others are larger and/or have more irregular shapes.

Vegetation on these basalt outcrops is typically limited to low-growing shrubs such as sagebrush (typically silver sagebrush, Wyoming big sagebrush, or tall three-tip sagebrush), bitterbrush, chokecherry, and serviceberry; low-growing forbs such as mule ears, yarrow, and buckwheat; and bunchgrasses such as basin wildrye (*Elymus=Leymus cinereus*) and Idaho fescue.

There are also a few long, linear basalt outcrop features in the southwestern portion of the project area. These linear outcrop features are sparsely forested talus slopes. They are situated along a north-south axis, are approximately 100 to 200 feet in elevation, and range in length from 200 to 300 feet to more than 3 miles. The dominant tree in these areas is quaking aspen, and there are many snags present. Shrub and understory composition is similar to other basalt outcroppings, where it occurs, but the majority is talus slopes with little vegetation.

Other Vegetation Communities

The project area includes farm and agricultural lands and non-vegetated areas. Agricultural land is the most common vegetation community, and includes cultivated fields and managed pastures that are used for grazing and hay production. Primary cultivated crops are small grains, mostly grown without irrigation.

Special Status Plant Species

Special status species are those species that have been identified for protection under federal or state laws. These species include species listed under the federal ESA of 1973, species listed as threatened, endangered, or sensitive by the state of Idaho, and/or species identified as sensitive by USFS and/or BLM. Table 3-9 lists special status plant species that are known or expected to occur in or near the project area, and assesses their likelihood of occurring. The North Alternative corridor was surveyed for the presence of special status species during botanical surveys conducted in May and July 2011. Public lands were surveyed on foot. Privately owned lands were evaluated from publicly accessible vantage points, and supplemented with data collected during helicopter surveys in July 2011. More detailed information regarding special status species is presented in Appendix D. Additional follow-up surveys were conducted in spring/summer 2013 to assess any new occurrences of special status species on the North and South alternatives and their route options, and no new special status species were encountered.

Ute ladies'-tresses (*Spiranthes diluvialis*) is the only ESA-listed species (threatened) with documented occurrence in southeast Idaho. There have been documented occurrences in Bonneville, Jefferson, and Madison counties in Idaho, but USFWS considers all of Idaho to be within the potential range of the species (IDFG 2011a); however, it is not listed by USFWS as potentially occurring in Caribou County. Ute ladies'-tresses is categorized as critically imperiled (S1) by the state of Idaho; however, this species was not encountered during field surveys of the North Alternative conducted in May and July 2011. Similarly, no Ute ladies'-tresses were documented during field surveys of the South Alternative or in additional surveys conducted in May and August 2013 of the North Highland Option and the South Alternative and its route options (including areas within the Blackfoot River WMA).

Payson's bladderpod (*Lesquerella paysonii*), compact (Cache) beardtongue (*Penstemon compactus*), hoary willow (*Salix candida*), Idaho sedge (*Carex idahoa*), green needlegrass (*Nassella viridula =Stipa viridula*), and red glasswort (*Salicornia rubra*) all have the potential to occur in the project area and all are listed as imperiled by the state of Idaho due to rarity or other factors that make the species vulnerable to extinction. None of these species were observed in botanical surveys conducted for the North Alternative in May and July 2011; however, habitat is present within the corridor of the North Alternative for Payson's bladderpod, hoary willow, Idaho sedge, and green needlegrass. Similarly, none of these species were documented in summer 2007 surveys of the South Alternative. Additionally, during follow-up surveys conducted in spring/summer 2013 no new occurrences of these species were encountered within the corridors of the North Highland Option and the South Alternative and its route options; however, habitat is present within the corridor of the South Alternative and its route options for Payson's bladderpod, compact beardtongue, green needlegrass, and red glasswort.

Table 3-9. Special Status Plant Species and Potential to Occur within the North and South Alternatives and Route Option Corridors

Species	ESA Status[1]	USFS R4 Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence: North Alternative and Route Options	Potential for Occurrence: South Alternative and Route Options
Ute ladies'-tresses	FT (Not known to occur in Caribou County)	None	Type 1	S1	Sub-irrigated, alluvial soils along streams and rivers and their floodplains, including abandoned river channels, wet meadows, and open seepy areas (IDFG 2011c)	Low	Low
Payson's bladderpod	None	S	None	S2	Ridgelines and on slopes in openings in sagebrush and forest stands. Gravelly, skeletal soils (Moseley 1996)	Low	Moderate
Compact (Cache) beardtongue	SC	S	None	S2	Bedrock, outcrops or cliff bands, usually rooted in crevices, mostly subalpine to alpine (Mancuso and Moseley 1990a)	Low	Moderate
Starveling milkvetch	None	S	Type 2	S2	Barren, eroding shale substrata of the Twin Creek Limestone formation (Mancuso and Moseley 1990b)	Low	Low
Hoary willow	None	None	Type 4	S2	Bogs, fens, marshes, pond edges, and seepage areas (Walford et al. 1997)	Moderate	Low
Idaho sedge	None	None	Type 2	S2	Moist mountain meadows, on border between wet meadow, emergent wetlands and sagebrush-steppe vegetation (Mancuso and Severud 2004)	Moderate	Low
Green needlegrass	None	None	Type 4	S2	Grasslands and sagebrush slopes and adapted to a wide range of soil textures (Herzman et al. 1959)	Moderate	Moderate

Species	ESA Status[1]	USFS R4 Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence: North Alternative and Route Options	Potential for Occurrence: South Alternative and Route Options
Red glasswort	None	None	Type 4	S2	Moist or seasonally moist streambanks and meadows that are high in salt concentrations with open and exposed soils (Jankovsky-Jones 2001)	Low	Moderate

[1] USFWS Classification (USFWS 2011): FE=Federal Endangered, FT= Federal Threatened, SC = Species of Concern

[2] USFS C-TNF Status (USFS 2011a), S=Sensitive; R=Rare, W=Watch list

[3] BLM Special Status Species Types (IDFG 2011c): Type 1 - Species federally identified as threatened, endangered, proposed, candidate, or species designated by the BLM State Director as sensitive. Type 2 - Species that have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors. Type 3 - Species that are globally rare or very rare in Idaho, with moderate endangerment factors. Their global or state rarity and the inherent risks associated with rarity make them imperiled species. Type 4 - Species that are generally rare in Idaho with small populations or localized distribution and currently have low threat levels. However, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species.

[4] Idaho State Status (IDFG 2011c): S1 = critically imperiled because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; S2 = imperiled because of rarity or because of other factors demonstrably making it vulnerable to extinction; S3 = rare or uncommon, but not imperiled; S4 = not rare and apparently secure, but with cause for long-term concern; S5 = demonstrably widespread, abundant, and secure.

Noxious Weeds

Idaho Code (Title 22, Chapter 24, Noxious Weeds) designates 64 species of noxious weeds; this law is implemented by administrative rules established under the Idaho Administrative Procedures Act (IDAPA) (IDAPA 02, Title 06, Chapter 22, Noxious Weed Rules). The administrative rules place each noxious weed species into one of three categories. Each category has specific management requirements associated with detection, control, and/or containment of the given species. The categories are as follows:

- **Early Detection and Rapid Response**—Plants in this category must be reported to the Idaho State Department of Agriculture within 10 days of observation. Eradication must begin in the same season in which the weed is found.
- **Statewide Control**—Plants in this category may already exist in some parts of the state. In some areas of the state, control or eradication may be possible, and a plan must be established that will reduce population levels within 5 years.
- **Statewide Containment**—Plants in this category already exist in the state. New or small infestations can be reduced or eliminated, while established populations may be managed as determined by the local weed control authority.

The project area is within the Highlands Cooperative Weed Management Area (HCWMA). Major weed concerns in this area are Dyer's woad (*Isatis tinctoria*), leafy spurge (*Euphorbia esula*), perennial pepperweed (*Lepidium latifolium*), and yellow toadflax (*Linaria vulgaris*) (HCWMA 2009). Major efforts are being made to control these weeds in the HCWMA, including chemical treatment, biological control, and GPS mapping efforts.

The North Alternative corridor was surveyed for the presence of invasive species during botanical inventory surveys conducted in May and July 2011. The following noxious weed species have been documented within the corridor.

- **Canada thistle (*Cirsium arvense*)**—Canada thistle is listed as a statewide containment species in Idaho. It is a tall, herbaceous perennial plant that reproduces from seeds and via an extensive underground root system (Prather et al. 2010). It is widespread in Idaho and throughout the western United States, and throughout the project area. This species is found along access roads and other disturbed habitats, and at the margins of wetlands, swales, and streamside habitats where soils stay moist.
- **Leafy spurge**—Leafy spurge is listed as a statewide containment species in Idaho. It is an erect perennial that grows up to 2.5 feet tall, with roots that can exceed 20 feet in length (Prather et al. 2010). In Idaho, this species typically invades rangeland habitats, pastures, roadsides, and riparian areas. One small population (approximately 100 square feet) of leafy spurge was documented in the vicinity of a livestock pond on state-owned land within the North Alternative corridor.
- **Yellow toadflax**—Yellow toadflax is listed as a statewide containment species in Idaho. It is an erect perennial that grows up to 3 feet tall, with vertical creeping roots (Prather et al. 2010). In Idaho, this species typically grows in rangeland, pastures,

cultivated fields, gardens, and roadsides. A portion of the North Alternative corridor crosses C-TNF lands where toadflax has been documented (Parker 2011, personal communication).

The presence of invasive species in the South Alternative was documented during other field inventories conducted along the South Alternative corridor, including several species of state-listed Control and Containment noxious weeds. These include the following species:

- **Canada thistle**—Canada thistle was found in the bottom of swales, drainages, and other areas where soil stays moist and in upland areas near certain wetlands
- **Musk thistle (*Carduus nutans*)**—Musk thistle is an Idaho control status species. It is a biennial thistle that reproduces from seeds. One plant can produce up to 20,000 seeds, of which two-thirds are typically viable. It was found in only a few places in disturbed sagebrush sites in the South Alternative corridor.
- **Spotted knapweed (*Centaurea maculosa*)**—Spotted knapweed is an Idaho containment species. It is a biennial that produces up to 25,000 seeds per plant, and these may remain in the soil for up to 8 years. Knapweed was found in abundance in one upland area of the South Alternative corridor.

During spring/summer 2013 special status species and old growth surveys, no additional noxious weeds occurrences were documented.

Old-growth Forest

As described earlier, the project area crosses forested portions of the C-TNF. The 2003 CNF RFP (USFS 2003a) established standards for vegetation management such that 15 percent of the forested acres within each 5th level Hydrologic Unit Code (HUC) meet or are actively managed to attain old-growth characteristics. The 2003 CNF RFP states that the definition of old-growth characteristics by forest type should be consistent with the guidelines established in Characteristics of Old-growth Forests in the Intermountain Region (Hamilton 1993).

Forest inventory surveys were conducted within the North and South alternative corridors to determine if any of the stands met the criteria for old-growth forests as defined in the 2003 CNF RFP (USFS 2003a). Survey results indicate the forest stands within the project corridors for the North and South alternatives do not meet Region 4 old-growth criteria.

Alternative Route Options

North Alternative Route Options

Long Valley Road Option—The Long Valley Road Option is approximately 7 miles long, resulting in an overall route that is 0.6 mile longer than the North Alternative. This area is predominantly cultivated land, with some native grass, sagebrush, mountain shrub, basalt outcrop, wetland, aspen, and conifer communities. Forest inventory surveys conducted for the route options in May and August 2013 indicate the forest stands within the Long Valley Road Option corridor do not meet Region 4 old-growth criteria.

North Highland Option—The North Highland Option crosses predominantly cultivated land; sagebrush and aspen-dominated plant communities, with basalt outcrops; wetlands; and mountain shrub-, grassland-, and conifer-dominated plant communities. Forest inventory surveys conducted for the route options in May and August 2013 indicate the forest stands within the North Highland Option corridor do not meet Region 4 old-growth criteria.

South Alternative Route Options

Options 1 and 2—Options 1 and 2 and the western portion of Option 4 cross the same plant communities as the South Alternative. Forest inventory surveys conducted for the South Alternative route options in May and August 2013 indicate the forest stands within these corridors do not meet Region 4 old-growth criteria.

Option 3—Option 3 crosses the same plant communities as the North Alternative in the western portion of the corridor along Highway 34 including grass and basalt outcrop species. However, the majority of this area is characterized by cultivated fields and managed pastures used for grazing and hay production. Plant communities where the Option 3 corridor parallels Blackfoot River Road are the same as the South Alternative to the eastern end of the corridor. As described above, forest inventory surveys indicate the forest stands within Option 3 do not meet Region 4 old-growth criteria.

Option 3A—Option 3A also crosses the same plant communities as the North Alternative in the western portion of the corridor along Highway 34 and the same communities as the South Alternative parallel to Blackfoot Road to line mile 17. Where Option 3A traverses private, BLM, and C-TNF lands between line miles 17 and 23, mountain shrub-dominated communities and conifer- and aspen-dominated forest are present. Vegetation present where Option 3A crosses the Blackfoot River WMA is composed primarily of sagebrush-dominated communities with smaller areas of mountain shrub-, aspen-, and grass-dominated communities. As described above, forest inventory surveys indicate forest stands within Option 3A do not meet Region 4 old-growth criteria.

Additional follow-up surveys were conducted in spring/summer 2013 to assess any new occurrences of special status species on Option 3A, and no new species status species were encountered.

Option 4—The western portion of Option 4 between line miles 1 and 4 crosses the same plant communities as the North Alternative and the same communities as the South Alternative parallel to Blackfoot Road to eastern end of the corridor. Forest inventory surveys indicate the forest stands do not meet Region 4 old-growth criteria.

Option 4 crosses a wetland area where the option joins the South Alternative corridor (see Section 3.6, Water Resources, Floodplains, and Wetlands).

3.4.2 Environmental Consequences of the North Alternative

Long-term impacts to vegetation would occur from vegetation removal for permanent access roads, structure footing installation, forested vegetation removal within the ROW, counterpoise installation, and the use of pulling sites. Short-term impacts to vegetation communities would occur from temporary vegetation disturbance, crushing or trampling by workers and vehicles, and soil compaction from vehicles and construction equipment at structure construction sites, temporary access roads, and pulling sites. Indirect impacts to vegetation could include the potential for invasive species to colonize disturbance areas, the potential for changes in local microclimates associated with vegetation removal and increased sunlight and/or soil compaction, and habitat fragmentation.

Vegetation Communities

A large portion of the North Alternative corridor would cross grass-, mountain-shrub-, and sagebrush-dominated vegetation communities with no tall-growing vegetation. Approximately 451.5 acres of native vegetation would be removed or crushed by construction equipment, structure installation, and access road construction (see Table 3-10), including 194.3 acres of short-term impacts and 257.2 acres of long-term impacts. This includes vegetation temporarily crushed or removed at pulling sites located along the ROW. The short-term impacts to these vegetation communities would be ***low*** because these temporarily disturbed areas would be restored to their original contours following installation, and would be revegetated. Additionally, grass- and sagebrush-dominated vegetation communities have the potential to reestablish within two growing seasons.

Approximately 30.9 acres of aspen- and conifer-dominated communities at structure installation sites would be cleared for poles, counterpoise installation, and access road construction and would be considered a long-term, direct impact because vegetation within the ROW would be maintained as low-growing vegetation (see Table 3-10). The North Alternative also would require removal of approximately 133.4 acres of trees or other tall growing vegetation within the transmission line ROW also managed for low-growing vegetation for the life of the line. In addition, trees outside of the ROW that have the potential to fall or grow close enough to the conductors to cause a flashover (danger trees) would be removed. Impacts to aspen- and conifer-dominated vegetation communities would be ***moderate***. Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species.

Table 3-10 summarizes the impacts to vegetation communities from construction and operation of the North Alternative.

Approximately 42.5 acres of other non-native vegetation communities would be permanently lost through structure installation and access road construction. Of this area, approximately 5.8 acres of tilled agricultural lands would be permanently lost from construction of the Hooper Springs Substation. The remaining 36.7 acres of non-native vegetation would be impacted by structure and access road installation. Relative to the overall quantity of agricultural and other non-native vegetation within the project area, the North Alternative would result in a ***low*** impact to non-native vegetation communities. Construction at Lanes Creek Substation would take place within the boundaries of the existing substation, so ***no*** impact to vegetation would occur.

Table 3-10. Vegetation Community Impacts within the North Alternative Corridor

Vegetation Communities		Short Term (acres)[1]	Long Term (acres)		
			Permanent Loss[2]	Clearing Conversion[3]	Total
Native Vegetation communities	Sagebrush-dominated	136.8	71.3	0.0	**71.3**
	Mountain shrub–dominated	30.1	8.5	0.0	**8.5**
	Grass-dominated	10.4	11.4	0.0	**11.4**
	Aspen-dominated	1.2	20.9	104.1	**124.9**
	Conifer-dominated	1.3	10.0	29.3	**39.3**
	Wetlands	10.3	1.5	0.0	**1.5**
	Basalt outcrops with native vegetation	4.1	0.3	0.0	**0.3**
Total		**194.3**	**123.9**	**133.4**	**257.2**
Other Non-native Vegetation Communities	Seeded grasslands and agricultural and non-vegetated lands	100.5	42.5	0.0	42.5
Total		**100.6**	**42.5**	**0.0**	**42.5**

[1] Short-term impacts are related to trampling or crushing or where the impacted vegetation has the potential to be reestablished within two growing seasons.

[2] Permanent loss represents vegetation that would be permanently removed for the placement of structure footings, permanent access roads, and the Hooper Springs substation. A disturbance area of 0.012 acre (26 foot diameter) was used to calculate permanent footing disturbance for steel poles and 0.01 acre (10 feet by 30 feet) for wood H-frame structures.

[3] Clearing conversion represents areas that would remain vegetated; however, they would be converted from forested communities to low-growing vegetation and maintained. Areas crossing the C-TNF include a 250-foot-wide clearing width. All other areas include a 100-foot-wide clearing width.

The necessary staging and work areas would be located on already developed areas, either paved or previously graded parking lots so ***no*** to ***low*** impacts to vegetation would occur. Vegetation impacts would be limited to possible mowing or trampling of highly disturbed grass- and sagebrush-dominated communities. The staging and work areas would be about 10 acres and would be identified prior to construction.

In addition to the direct impacts discussed above, construction of the North Alternative could also result in impacts such as habitat fragmentation, noxious weed proliferation, and soil compaction. Tree removal could cause habitat fragmentation and edge effects that would reduce habitat suitability for plant species that grow in non-edge forest habitats. When canopy trees are removed, understory plants are exposed to increased sunlight and different microclimatic conditions. This would result in a change in the vegetative composition. Some plants would die off, some would experience temporary stresses or would become less dominant, and others would have increased competitive advantage and, therefore, would increase their relative dominance. In some cases, this change in conditions and subsequent plant development could lead to an overall reduction in the diversity of plant species at the site. Tree removal in dense forest could also cause trees at the edge of the cut to be more susceptible to blow down, because their growth form is not developed for the increased stresses at the forest edge. Soil disturbance associated with vegetation removal could also lead to increased potential for the spread of noxious weeds. Soil compaction caused by construction vehicles and equipment could reduce soil suitability for many native plant species, and could also result in increased potential for noxious weeds to proliferate. Noxious weeds threaten the existence of most native plants and greatly reduce plant diversity.

Impacts to vegetation could occur during operation and maintenance of the North Alternative. Vegetation maintenance activities that occur along the proposed ROW include mechanical or chemical control of vegetation. Maintenance activities would create impacts by trampling vegetation in work areas around structures or removing vegetation in the ROW. Additional danger trees would be identified in the future for removal, which would have similar impacts as described above, but limited in scope to small areas. Impacts from maintenance activities would be ***low***.

Special Status Plant Species

There are no documented occurrences of any special status plant species within the North Alternative corridor. In addition, no special status plant species were observed during botanical inventory surveys conducted in May and July 2011.

Vegetation clearing associated with structure installation and access road construction would impact potentially suitable habitat for special status plant species. Specific habitats impacted include riparian areas potentially suitable for hoary willow. Wetland- and mountain shrub-dominated vegetation communities on C-TNF lands are potentially suitable for Idaho sedge, and sagebrush-dominated communities are potentially suitable for green needlegrass. However, relative to the overall quantity of these vegetation communities in the project area, construction of the North Alternative would result in a ***low*** impact to potentially suitable habitat.

As described below, operation of the North Alternative could result in the spread or introduction of invasive species or noxious weeds in potentially suitable habitat, which would reduce habitat suitability and increase competition. However, impacts to vegetation communities that are potential suitable habitat for special status plant species have been minimized through project design to the extent possible, resulting in a ***low*** impact.

Noxious Weeds

Soil disturbance and vegetation removal associated with access road and structure construction have the potential to increase the proliferation of noxious weed species. In addition, construction equipment that has not been properly cleaned could introduce noxious weed species not currently found in the project corridor or spread existing populations of noxious weeds. Noxious weeds could displace native species through increased competition for resources, and could negatively impact the composition and function of native vegetation communities. Field surveys documented two noxious weed species, Canada thistle and leafy spurge, within the project corridor of the North Alternative. However, yellow toadflax is also known to occur in the area. Canada thistle is distributed throughout the project corridor, but is most concentrated in disturbed areas and along the margins of wetland and riparian areas. Surveys documented only one small population of leafy spurge within the proposed ROW in the vicinity of a livestock pond on state-owned land. Yellow toadflax has been documented in other areas of the C-TNF lands near existing power line ROWs. Construction could spread the known populations of noxious weeds that are present within the North Alternative corridor because soil disturbance, native vegetation removal, and inadvertent transport by construction equipment and personnel could provide opportunities for invasive species to proliferate. Canada thistle is already widespread within the region, and is also distributed throughout the project area. Given its propensity for local spread, construction of the North Alternative could increase the local presence of Canada thistle. There is little potential for increased spread of any statewide control or early detection/rapid response species, as none of these species have been encountered in the project area. These species would need to be inadvertently transported in from other sites. Pre-construction noxious weed surveys would allow for the identification of current populations allowing for pre-construction treatment to reduce spread. Cleaning construction equipment prior to arrival at the project site would reduce the potential spread of noxious species from outside the area. Post-construction monitoring during vegetation maintenance activities would allow for the timely identification of noxious weeds associated with the project corridor. Vegetation maintenance activities within the North Alternative corridor would control the small population of leafy spurge and other noxious weeds. Pre- and post-construction weed surveys would be conducted to identify potential weed introduction or possible spread areas, with monitoring and treatment focused in any areas where noxious weeds were present. For these reasons, impacts from the spread of noxious weed populations would be ***low***.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would primarily impact agricultural lands with minor disturbances to aspen- and sagebrush-dominated vegetation. Although this route option would increase the length of the North Alternative by 0.6 mile, the impacts are primarily on non-native vegetation communities that are abundant in the project area. Similar to the North Alternative, impacts to native communities from this option would be ***low to moderate***.

North Highland Option

The North Highland Option would result in the removal of less sagebrush-, conifer-, and grass-dominated habitat and more aspen-dominated habitat than the North Alternative. Although this option would increase the length of the North Alternative by approximately 0.2 mile, impacts to these native communities would be similar to those described for the North Alternative (***low*** to ***moderate***).

3.4.3 Environmental Consequences of the South Alternative

Similar to the North Alternative, impacts to vegetation from the South Alternative would occur from the loss of vegetation for permanent access roads, structure footing installation, forested vegetation removal within the ROW, counterpoise installation, and the use of pulling sites. Short-term impacts and indirect impacts to vegetation communities would be the same as those described for the North Alternative.

Vegetation Communities

A large portion of the South Alternative corridor would cross grass-, mountain-shrub-, and sagebrush-dominated communities and basalt outcrops with no tall-growing vegetation. Approximately 322.9 acres of native vegetation would be removed or crushed by construction equipment, structure installation, and access road construction (see Table 3-11), including 178 acres of short-term impacts and 144.9 acres of long-term impacts. This includes vegetation temporarily crushed or removed at pulling sites located along the ROW. The short-term impacts to these vegetation communities would be ***low*** because these temporarily disturbed areas would be restored to their original contours following installation, and would be revegetated. As described above, grass- and sagebrush-dominated communities have the potential to reestablish within two growing seasons.

Approximately 13.5 acres of aspen- and conifer-dominated vegetation communities at structure installation sites would be cleared for structure and counterpoise installation and access road construction. This would be a long-term, direct impact because vegetation within the ROW would be maintained as low-growing vegetation (see Table 3-11). The South Alternative would also require removal of approximately 72.8 acres of trees or other tall growing vegetation converting the transmission line ROW to low-growing vegetation. Danger trees outside of the ROW that have the potential to fall or grow close enough to the conductors also would be removed. Impacts to aspen- and conifer-dominated vegetation communities would be ***moderate***. Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species.

Approximately 10.1 acres of other non-native vegetation communities would be permanently lost through structure installation and access road construction. The same permanent loss of 5.8 acres of tilled agricultural lands for Hooper Springs Substation would occur for the South Alternative. The remaining 4.3 acres of non-native vegetation communities would impacted by structure installation and access road installation. Because agricultural and other non-native vegetation is common in the project area, impacts from removal of this type of vegetation community from construction of the South Alternative would be ***low***.

Table 3-11 summarizes the impacts to vegetation communities from construction and operation of the South Alternative.

Table 3-11. Vegetation Community Impacts within the South Alternative Corridor

Vegetation Communities		Short Term (acres)[1]	Long Term (acres)		
			Permanent Loss[2]	Clearing Conversion[3]	Total
Native vegetation communities	Sagebrush-dominated	80.0	33.2	0.0	**33.2**
	Mountain shrub–dominated	34.8	7.6	0.00	**7.6**
	Grass-dominated	57.0	17.8	0.0	**17.8**
	Aspen-dominated	0.5	8.3	39.9	**48.2**
	Conifer-dominated	0.9	5.2	32.9	**38.1**
	Wetlands	4.2	0.0	0.0	**0.0**
	Basalt outcrops with native vegetation	0.6	0.0	0.0	**0.0**
Total		**178.0**	**72.1**	**72.8**	**144.9**
Other Non-native Vegetation Communities	Seeded grasslands and agricultural and non-vegetated lands	53.7	10.1	0.0	10.1
Total		**53.7**	**10.1**	**0.0**	**10.1**

[1] Short-term impacts are related to trampling or crushing or where the impacted vegetation has the potential to be reestablished within two growing seasons.

[2] Permanent loss represents vegetation that would be permanently removed for the placement of structure footings, permanent access roads, and the Hooper Springs substation. A disturbance area of 0.012 acre (26 foot diameter) was used to calculate permanent footing disturbance for steel poles and 0.01 acre (10 feet by 30 feet) for wood H-frame structures.

[3] Clearing conversion represents areas that would remain vegetated; however, they would be converted from forested communities to low-growing vegetation and maintained. Areas crossing C-TNF include a 250-foot wide clearing width. All other areas include a 100-foot wide clearing width.

Similar to the North Alternative, the staging and work areas needed for the South Alternative would be located on already developed areas, either paved or previously graded parking lots so ***no*** to ***low*** impacts to vegetation would occur. Vegetation impacts would be limited to possible mowing or trampling of highly disturbed grass- and sagebrush-dominated communities. The staging areas would be about 10 acres and would be identified prior to construction.

In addition to the indirect impacts discussed above, construction of the South Alternative would also result in impacts such as habitat fragmentation, noxious weed proliferation, and soil compaction. Impacts from tree removal, including reduced plant diversity and increased susceptibility to blow down would be the same as those described for the North Alternative.

Impacts to vegetation could occur during operation and maintenance of the South Alternative. Vegetation maintenance activities that occur along the proposed ROW would be the same as those described for the North Alternative. Impacts from maintenance activities would be ***low***.

Special Status Plant Species

There are no documented occurrences of any special status plant species within the corridor of the South Alternative.

Vegetation clearing associated with structure installation and access road construction would impact potentially suitable habitat, if present, for special status plant species. Specific habitats impacted include riparian areas potentially suitable for hoary willow. Wetland- and mountain shrub-dominated vegetation communities on C-TNF lands are potentially suitable for Idaho sedge, and sagebrush-dominated communities are potentially suitable for green needlegrass. However, relative to the overall quantity of these vegetation communities in the project area, construction of the South Alternative would result in a ***low*** impact to potentially suitable habitat.

As described below, operation of the South Alternative could result in the spread or introduction of invasive species or noxious weeds in potentially suitable habitat, which would reduce habitat suitability and increase competition. However, impacts to vegetation communities that are potential suitable habitat for special status plant species have been minimized through project design to the extent possible, resulting in a ***low*** impact.

Noxious Weeds

Soil disturbance and vegetation removal associated with access road and structure construction have the potential to increase the proliferation of noxious weed species. In addition, construction equipment that has not been properly cleaned could introduce noxious weed species not currently found in the project corridor or spread existing populations of noxious weeds. Noxious weeds could displace native species through increased competition for resources, and negatively impact the composition and function of native vegetation communities. Previous field inventories conducted along the corridor for the South Alternative noted Canada thistle, musk thistle, and spotted knapweed in the area. Project construction (through vegetation removal, soil disturbance, or inadvertent introduction or spread by construction equipment or personnel) could spread the known populations of noxious weeds that are present within the project corridor of the South Alternative by providing opportunities for invasive species to proliferate or be introduced. Canada thistle is already widespread within the region, and is also distributed throughout the project area; however, it could increase locally due to its invasive nature. It is unlikely that new noxious species would be introduced. These species would need to be inadvertently transported in from other sites. Pre-construction noxious weed surveys would allow current populations to be identified allowing for pre-construction treatment to reduce spread. Cleaning construction equipment prior to arrival at the project site would reduce the potential spread of noxious species from outside the area. Post-construction monitoring during vegetation maintenance activities would allow for the timely identification of noxious weeds associated with the project corridor. Vegetation maintenance activities within the corridor of the South Alternative would control the small populations of musk thistle, spotted knapweed, and other noxious weeds. Similar to the North Alternative, pre- and post-construction weed surveys would be conducted to identify potential weed introduction or possible spread areas, with monitoring and treatment focused in any areas where noxious weeds were present. For these reasons, impacts from the spread of noxious weed populations would be ***low***.

South Alternative Route Options

Impacts were assessed for Options 1, 2, 3, and 4 based on acres occurring within the ROW for each option compared to acres within the South Alternative ROW This acreage does not include access road or pull site locations.

<u>Option 1</u>

Impacts to vegetation in the Option 1 ROW would be slightly greater than impacts within the South Alternative ROW because this route option would cross an additional 11 acres near Conda. Impacts to sagebrush-, mountain shrub-, and grassland-dominated communities and basalt outcrop native vegetation would be approximately the same as those described for the South Alternative (***low***). Option 1 would impact fewer acres of sagebrush-, conifer-, and aspen-dominated habitat (approximately 14 fewer acres of sagebrush, 1 fewer acre of conifer, and 2 fewer acres of aspen) than the South Alternative. Impacts to aspen- and conifer-dominated vegetation communities would be similar to impacts described for the South Alternative (***moderate***). Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species. Impacts to special status plant species and from noxious weeds would be the same as those described for the South Alternative (***low***).

<u>Option 2</u>

Impacts to vegetation in the Option 2 ROW would be slightly greater than impacts within the South Alternative ROW, because the route option would cross approximately 4.3 more acres. Impacts to sagebrush-, mountain shrub-, and grassland-dominated communities and basalt outcrop native vegetation would be approximately the same as those described for the South Alternative (***low***). Impacts to aspen- and conifer-dominated vegetation communities would be similar to those described for the South Alternative (***moderate***). Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species. Impacts to special status plant species and from noxious weeds from Option 2 would be the same as those described for the South Alternative (***low***).

<u>Option 3</u>

Impacts to vegetation in the Option 3 ROW would impact slightly less than impacts within South Alternative ROW, because it would cross fewer acres than the South Alternative (approximately 0.4 acre). Option 3 would have impacts to sagebrush-, mountain shrub-dominated communities, grassland, and basalt outcrop native vegetation similar to those described for the North and South alternatives (***low***). In addition, it would impact about 12 fewer acres of conifer-dominated vegetation (along the base of treed slopes at the entrance of the C-TNF), 31 fewer acres of aspen-dominated vegetation, 27 fewer acres of sagebrush-dominated vegetation, and 21 fewer acres of grass-dominated vegetation. Impacts to aspen- and conifer-dominated vegetation communities would be similar to impacts described for North and South alternatives (***moderate***). Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species. Impacts to special status plant species and from noxious weeds would be the same as those described for the North and South alternatives (***low***).

Option 3A

Vegetation impacts in the Option 3A corridor would be slightly greater than impacts within the South Alternative corridor, because Option 3A would cross approximately 22.9 more acres than the South Alternative. This route option would have impacts to sagebrush-, mountain shrub-dominated communities, grassland, and basalt outcrops similar to those described for the North and South alternatives (***low***). However, Option 3A would impact 5 fewer acres of sagebrush-dominated communities than the South Alternative because it travels north from the proposed Hooper Springs Substation through agricultural lands and avoids several sagebrush areas. It would cross more basalt outcrops with native vegetation (approximately 2.5 more acres). In addition, about 27 fewer acres of conifer-dominated vegetation (along the base of treed slopes at the entrance of the C-TNF), 26 fewer acres of grass-, and 9 fewer acres of mountain shrub-dominated vegetation would be impacted under Option 3A. Impacts to aspen- and conifer-dominated vegetation communities would be similar to those described for the North and South alternatives (***moderate***). Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species. Impacts to special status plant species and from noxious weeds would be the same as those described for the North and South alternatives (***low***). Table 3-12 summarizes the impacts to vegetation communities from construction and operation of Option 3A.

Option 3A crosses approximately 1.6 miles of the Blackfoot River WMA. Approximately 14.2 acres of sagebrush-dominated communities, 0.01 acre of mountain shrub-dominated communities, 0.1 acre of grassland vegetation, 12.7 acres of aspen-dominated forest, 0.1 acre of conifer-dominated forest, 0.3 acre of wetland, and 0.1 acre of other non-native vegetation communities occur within the Option 3A corridor located on the Blackfoot River WMA. Impacts to low-growing vegetation communities within the Blackfoot River WMA (sagebrush-, mountain shrub-, and grassland-dominated communities and basalt outcrop native vegetation) are similar to those described for the South Alternative (***low***). Impacts to aspen- and conifer-dominated vegetation communities within the Blackfoot River WMA would be similar to those described for the South Alternative (***moderate***). Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species.

Table 3-12. Vegetation Community Impacts within the Option 3A Corridor

Vegetation Communities		Short Term (acres)[1]	Long Term (acres)		
			Permanent Loss[2]	Clearing Conversion[3]	Total
Native vegetation communities	Sagebrush-dominated	77.2	30.9	0.0	**30.9**
	Mountain shrub–dominated	19.7	14.2	0.00	**14.2**
	Grass-dominated	33.7	15.2	0.0	**15.2**
	Aspen-dominated	0.7	9.0	36.4	**45.4**
	Conifer-dominated	0.7	1.4	10.2	**11.6**
	Wetlands	4.9	0.1	0.0	**0.1**
	Basalt outcrops with native vegetation	2.9	0.2	0.0	**0.2**
Total		**139.8**	**71.0**	**46.6**	**117.6**
Other Vegetation Communities	Seeded grasslands and agricultural and non-vegetated lands	101.7	50.8	0.0	50.8
Total		**101.7**	**50.8**	**0.0**	**50.8**

1 Short-term impacts are related to trampling or crushing or where the impacted vegetation has the potential to be reestablished within two growing seasons.

2 Permanent loss represents vegetation that would be permanently removed for the placement of structure footings, permanent access roads, and the Hooper Springs substation. A disturbance area of 0.012 acre (26 foot diameter) was used to calculate permanent footing disturbance for steel poles and 0.01 acre (10 feet by 30 feet) for wood H-frame structures.

3 Clearing conversion represents areas that would remain vegetated; however, they would be converted from forested communities to low-growing vegetation and maintained. Areas crossing C-TNF include a 250-foot wide clearing width. All other areas include a 100-foot wide clearing width.

Specific habitats that Option 3A may impact include riparian areas potentially suitable for hoary willow at the two Blackfoot River crossings and in the two wetland drainages that convey water north onto the Blackfoot River WMA. Additionally, wetland- and mountain shrub-dominated vegetation communities on C-TNF lands and the Blackfoot River WMA are potentially suitable for Idaho sedge, and sagebrush-dominated communities are potentially suitable for green needlegrass. Relative to the overall quantity of these vegetation communities in the project area, construction of Option 3A would result in a ***low*** impact to potentially suitable habitat.

There are no documented occurrences of any special status plant species within the corridor of Option 3A including on the Blackfoot River WMA.

<u>Option 4</u>

Vegetation impacts in the Option 4 ROW would be impact slightly greater than impacts within the South Alternative ROW, because Option 4 crosses more acres than the South Alternative (8.2

more acres). This route option has similar impacts to sagebrush-, mountain shrub-, and grassland-dominated communities and basalt outcrop native vegetation as those described for the North and South alternatives (***low***). Similar to Option 3, Option 4 crosses more basalt outcrops with native vegetation (approximately 2.4 more acres), but would impact fewer acres of sagebrush-dominated habitat (approximately 21 fewer acres) than the South Alternative because the route travels north from the Hooper Springs Substation site through agricultural lands and avoids several sagebrush areas. Impacts to aspen- and conifer-dominated vegetation communities would be similar to those described for the North and South alternatives (***moderate***). Permanent tree removal would not only impact the trees, but could also change the understory vegetation, removing cover for shade-tolerant species. Impacts to special status plant species and from noxious weeds would be the same as those described for the North and South alternatives (***low***).

3.4.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate vegetation impacts from the Project.

- Use BMPs to limit erosion and the spread of invasive and noxious weeds.
- Use appropriate seed mixes, application rates, and seeding dates to revegetate disturbed areas following completion of construction activities.
- Monitor reseeded areas for adequate growth and implement contingency measures as necessary.
- Identify and treat invasive and noxious weeds on ROW, access roads, and other disturbed areas during routine post-construction ROW vegetation management.
- Consult with USFWS concerning any ESA-listed plant species identified in the project corridor during follow-up surveys, and implement any mitigation measures (such as feasible and appropriate avoidance measures) identified as a result of these consultations.
- Develop appropriate avoidance measures if other special status plant species are identified during follow-up surveys.
- Identify invasive and noxious weed populations for construction crews so these populations can be avoided when possible. Cooperate with private, county, state, and federal landowners to reduce the introduction and spread of invasive and noxious weeds, including a pre-construction weed survey and locating vehicle wash or blow stations as appropriate.
- Cooperate with private, county, state, and federal landowners to treat noxious weeds along access roads that would be used to bring construction equipment into the project corridor to reduce the introduction and spread of noxious weeds.
- Follow the guidelines in the noxious weed strategies used by land managers on state and federally managed land. Seed all disturbed areas as soon as possible with noxious weed-free seed (as certified by the state) to stabilize the sites following completion of construction activities. On C-TNF, use a seed mixture approved by the forest officer.

On BLM lands, use a seed mixture approved by the BLM botanist. On state-owned lands, use a seed mixture approved by the district biologist.

- Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities to promote regrowth from the native seed bank in the topsoil, where possible.
- Use weed-free mulches for erosion control during construction and restoration activities.
- Clean equipment using wash or blow stations before entering project areas, as needed.
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations to ensure protection of surface water, ecological integrity, and public health and safety.
- Avoid snag and large tree removal to the extent possible.
- Retain existing low-growing vegetation where possible to prevent sediment movement off site.
- Encourage workers to cut or crush vegetation in-place, rather than blade, in temporary disturbance areas in order to maximize the ability of plant roots to keep soil intact and prevent sediment movement off-site.
- Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.
- Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site (see Section 3.1.4, Land Use).
- Minimize the ground-disturbance footprint of the Project, particularly in sensitive areas such as stream crossings and wetlands, and stream and wetland buffers and AIZs (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Leave plants shorter than 4 feet undisturbed within the 100-foot-wide ROWs where they would not interfere with the safe operation of the transmission line (see Section 3.3.4, Visual Resources) and to prevent sediment movement off site.
- Restore compacted cropland soils as close as possible to pre-construction conditions using tillage. Break up compacted soils where necessary by ripping, tilling, or scarifying before seeding (see Section 3.5.4, Geology and Soils).
- Design temporary and permanent access roads to control runoff and prevent erosion (see Section 3.5.4, Geology and Soils).
- Minimize the project ground-disturbance footprint; particularly in sensitive areas (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Consult with the appropriate state or federal land management agency (C-TNF, BLM, or IDFG) concerning any special status species (see Section 3.7.4, Wildlife).

- Avoid manipulating or altering sagebrush stands that are suitable as grouse nesting habitat during the nesting period (see Section 3.7.4, Wildlife).
- Seed disturbed areas within big game winter ranges with preferred big game forage species (see Section 3.7.4, Wildlife).
- Identify wetlands and other sensitive areas prior to initiating construction (see Section 3.7.4, Wildlife).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner.
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).
- Initiate discussions with local fire districts and work with the districts and other appropriate entities to develop fire and emergency response plans (see Section 3.13.4, Public Health and Safety).

3.4.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts to vegetation would occur as vegetation is removed for construction of the transmission line, access roads and substation. Low-growing vegetation would be allowed to regrow within the ROW; however, forest clearing in the ROW would not return to pre-project conditions, but would remain cleared and vegetated with low-growing species. On the Blackfoot River WMA, removal of trees for the ROW and access roads would permanently decrease the number of aspen- and conifer-dominated communities.

3.4.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to vegetation from the construction, operation, and maintenance of the transmission lines would not occur.

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3.5 Geology and Soils

3.5.1 Affected Environment

The project area extends from the northern portion of the Basin and Range physiographic province in Idaho eastward into the Snake River Plain of the Columbia Plateau physiographic province (USGS 2003). Topography is mostly mountain ranges that parallel low, broad valleys and foothills with elevations within the project corridor ranging from about 5,800 feet above mean sea level (msl) to 9,000 feet above msl (BPA 2009). Mountain ranges and foothills in southeastern Idaho are generally composed of sedimentary rocks, including thick marine deposits. The valleys are filled-in sediments deposited by water and gravity underlain by volcanic rocks that include basalt in some places (USGS and USFS 1977). The North and South alternatives cross similar topography with valleys in the western portions and foothills and mountains in the eastern portions. Soils in the area generally support agriculture, grazing lands, wetlands, and forested lands.

Geology

The project area is also located within the Western Phosphate Field, a 350,000-square kilometer area in the northern Rocky Mountains which includes the southeastern Idaho phosphate resource area. The principal mineral resource of southeastern Idaho is phosphate rock. Phosphate mining has occurred in the project area since the early 20th century. Other mineral resources in the project corridor include lime, hydromagnesite, cement materials, road metal, building stone, gravel, salt, sulfur, lead, copper, gold, silver, gypsum, manganese, and potassium nitrate (Mansfield 1927). Elevated concentrations of selenium occur in portions of southeastern Idaho. The source of the elevated selenium is phosphate rock.

Review of U.S. Geologic Survey (USGS) Geologic Mapping and earthquake information for the region indicates that neither the North or South alternative corridors traverses any mapped seismic areas or landslide complexes (Adams, Breckenridge, and Othberg 1991; Oriel and Platt 1980). The corridor for the South Alternative passes within approximately 1,500 feet of two identified landslide deposits near the Blackfoot River Narrows area along Blackfoot River Road. No faults were identified in the corridor for either the North Alternative or the South Alternative based on review of the USGS Quaternary Fault and Fold Database (USGS 2006b). One Quaternary scarp (Bear Lake fault) with a high potential for activity, is located approximately 40 miles south of the southern-most portion of the project area (Othberg 1984).

Liquefaction is the process by which certain sediments undergo a complete loss of strength during strong earthquake shaking. Sediments sensitive to liquefaction are saturated fine sands and silty sands. The Idaho Geologic Survey currently does not have a liquefaction susceptibility map available for the project corridor, but there is potential for liquefaction given the presence of sands and other unconsolidated sediments in river valleys (Othberg 1984).

Soils

Soils on mountains and ridges in the project area formed on steep slopes with sedimentary parent material. Soils are moderately deep to very deep (20 inches or greater), with some shallow soils on the ridges (less than 20 inches) (C-TNF 2002a). Loess derived soils in the valleys and foothills are typically very deep and well drained. Soils formed in the drainages are generally very deep and influenced by moisture during at least some period of the year with some areas of hydric soils.

Soils in the project area were investigated using the State Soil Geographic Database (STATSGO) and the CNF Soil Survey (USFS 1990) (see Appendix E for a description of the STATSGO and CNF Soil Survey soil map units). STATSGO data are available for the entire project area (USDA Soil Conservation Service 1977 and 1981). Natural Resource Conservation Service (NRCS) draft data are available for the southwestern portions of the North Alternative and the South Alternative and its options; however, these data are not available for the North Alternative route options north of line mile 11, or for the South Alternative options east of line mile 15 (Griffiths 2012, personal communication). For those portions of the project area crossing C-TNF lands (line miles 22 to 26 and 30 to Lanes Creek Substation for the North Alternative and line mile 19 to the connection facility for the South Alternative), the CNF Soil Survey was used in combination with additional on-site, field soil characterizations conducted in support of project planning. Soils along the North Alternative range from sands and silt loams in the western part of the corridor to silt loams and silty clay loams in the eastern portion where the corridor enters more mountainous areas. Along the South Alternative, soils also range from sand and silts in the valleys in the west and along the Blackfoot River to silt loams, loams, and silty clay loams in the eastern portion of the corridor.

Subsidence is the gradual or rapid lowering of the ground surface that takes place when the soil surface is depressed or becomes dried out and can occur when the groundwater table is lowered. In southeast Idaho subsidence occurs from (1) the dissolution of limestones and dolomites, which results in karst topography characterized by sink holes and underground drainage; (2) sinks in volcanic fields; (3) active tilting, warping, or basining due to crustal movement along faults or folds; and 4) sinks that form when subsurface voids are created by compaction and ejection of subsurface materials during vigorous earthquake vibration (Othberg 1984). These types of terrain (limestones/dolomites and volcanics) are present in the project area. Subsidence could occur in localized instances due to underground mining in the area, although subsidence has not been documented to date (Othberg 1984).

Prime Farmland

Prime farmland and farmland of statewide importance are special categories of highly productive cropland that are recognized and described by the NRCS. Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops. Soils that do not meet the prime farmland category but are still recognized for their productivity by states may qualify as farmland of statewide importance. In either case, cropping practices such as irrigation or drainage may be required for the soil to meet its production potential. Farmland in the project area includes cultivated fields and seeded grasslands that could be used for grazing or hay production (see Section 3.1, Land Use). The corridor for the North Alternative traverses soils identified as prime farmland in the NRCS 2012 draft soil data, provided the area is irrigated (Kukachka 2012, personal communication). The NRCS draft data indicates that prime farmland in the vicinity of the North Alternative corridor is found north of the proposed Hooper Springs Substation site (between line miles 1 and 2), along the southeast and east side of the Blackfoot

Reservoir (between line miles 11 and 20), and north of the alternative corridor crossing of Gravel Creek (between line miles 26 and 28). The acreage of prime farmland within the North Alternative ROW and associated access roads is approximately 85 acres. The South Alternative corridor crosses areas of prime farmland in the western portion of the alternative corridor, between line miles 1 and 11. No farmland of statewide importance is identified within the project area. The acreage of prime farmland within the South Alternative ROW and associated access roads is approximately 34 acres. Table 3-13 summarizes prime farmland in the ROW for the North and South alternatives and their route options.

Hydric Soils

Hydric soils are soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (NRCS 2010). Hydric soils develop under conditions sufficiently wet to support the growth and regeneration of hydrophytic vegetation; however, the presence or absence of hydrophytic vegetation does not determine whether a soil is considered hydric. Soils that have hydric indicators because of artificial measures are also considered hydric soils; additionally, soils in which the hydrology has been artificially modified are hydric if the soil, in an unaltered state, was hydric in the upper part (NRCS, 2010). Some soil series, designated as hydric, have phases that are not hydric depending on the water table, flooding, and ponding characteristics (NRCS 2013). Hydric soils were identified using draft NRCS data, information from field wetland surveys, and desktop wetland surveys.

The acreage of hydric soils within the ROW and associated access roads of the North Alternative route options ranges between approximately 7.7 and 11.3acres. The acreage of hydric soils within the ROW and associated access roads of the South Alternative route options ranges between 3.4 and 14.2 acres. Table 3-14 summarizes hydric soils in the ROW for the North and South alternatives and their route options.

Table 3-13. Prime Farmland within the Right-of-way

Soil Type	North Alternative	Long Valley Road Option	North Highland Option	South Alternative	Option 1	Option 2	Option 3	Option 3A	Option 4
Off-ROW access roads									
Prime	8.2	-	-	0.6	-	-	-	8.1	-
ROW									
Prime	76.4	76.4	76.4	33.3	33.3	33.2	126.1	104.8	76.8
TOTAL Prime	84.6	76.4	76.4	33.9	33.3	33.2	126.1	112.9	76.8

Table 3-14. Hydric Soils within the Right-of-way

Soil Type	North Alternative	Long Valley Road Option	North Highland Option	South Alternative	Option 1	Option 2	Option 3	Option 3A	Option 4
Off-ROW access roads									
Hydric	1.4	-	-	0.0	-	-	-	0.1	-
ROW									
Hydric	9.9	10.2	7.7	4.2	3.5	3.5	3.2	5.0	14.4
TOTAL Prime	11.3	10.2	7.7	4.2	3.5	3.5	3.2	5.1	14.4

Alternative Route Options

North Alternative Route Options

Long Valley Road Option—Topography along the Long Valley Road Option consists of valleys and foothills with loess derived soils such as sand and silt loam. A small area of hydric soils is present near the option's north end (at line mile 17). The NRCS draft data indicates that approximately 9.3 acres of prime farmland is found southeast and east of the Blackfoot Reservoir along the Long Valley Road Option (between line miles 11 and 17). Within the Long Valley Road Option ROW and associated access roads, about 76.4 acres of prime farmland are crossed. The Long Valley Road Option crosses approximately 10.2 acres of hydric soils.

North Highland Option—Topography along the North Highland Option consists of foothills with deep, well-drained silt loam soils. NRCS draft data does not record any hydric soils along the North Highland Option; however, wetlands were identified within the ROW and these areas would be considered hydric soil. Therefore, the North Highland Option passes through 7.7 acres of hydric soils. In addition, approximately 76 acres of prime farmland was identified within the ROW, which is similar to the amount of prime farmland for the Long Valley Road Option.

South Alternative Route Options

Options 1 and 2—Geology, soils, and topography along Options 1 and 2 are the same as the South Alternative. One exception occurs between line miles 3 and 5, where Option 1 continues east and loops around the south and east side of the city of Conda. This portion of Option 1 does not cross prime farmland but crosses approximately 0.6 mile of active phosphate mines owned and operated by the J.R. Simplot Company (Simplot). NRCS draft data indicate that approximately 33 acres of prime farmland is found along Option 1 and Option 2 between line miles 1 and 11 in both corridors. The ROW and associated access roads for both options cross approximately 3.5 acres of hydric soils.

Option 3—Option 3 heads north from Hooper Springs Substation through deep to very deep, well-drained silt loam soils, crossing approximately 3.2 acres of hydric soils, similar to Options 1 and 2. The remaining portion of Option 3 travels generally within the same corridor as the South Alternative with similar soils and topography. It passes through approximately 126 acres of prime farmland within the ROW. These prime farmland areas are located north of the Hooper Springs Substation and north and east of the Blackfoot River between line miles 1 and 11.

Option 3A—Option 3A travels through the same silt loam soils without hydric components as Option 3 from Hooper Springs Substation to where it rejoins the same general corridor as the South Alternative in line mile 12. From line miles 12 to 17, Option 3A travels generally within the South Alternative corridor passing through comparable soils and topography. Between line miles 17 and 20, Option 3A crosses the Wooley Valley Mine where soils are primarily loams and silt loams. From line mile 21 to the connection facility, soils along Option 3A are similar to those along Option 3 and the South Alternative. Where Option 3A crosses the Blackfoot WMA, the topography becomes gentler, but the soil textures are still loam and silt loam. NRCS draft data indicates that approximately 113 acres of prime farmland are within the Option 3A ROW and associated access roads. Similar to Option 3, the ROW and associated access roads of Option 3A cross approximately 5 acres of hydric soils.

Option 4—Option 4 crosses similar geology, soils, and topography as Options 1, 2, and 3. NRCS draft data indicate that approximately 77 acres of prime farmland within the proposed transmission line ROW. The ROW and associated access roads of Option 4 cross approximately 14 acres of hydric soils.

3.5.2 Environmental Consequences of the North Alternative

Geology

Portions of the North Alternative corridor located in river valleys have areas of sands and other unconsolidated sediments that may be susceptible to liquefaction. Generally, transmission structures are likely to survive settlement associated with liquefaction with only minor structural damage. Liquefaction hazard areas would be identified prior to construction, based on anticipated soil and groundwater conditions. Several liquefaction mitigation options are available, including avoiding areas susceptible to liquefaction, soil densification, and deep footings. Mitigation would be considered on a site by site basis. While the development of roads has the potential to cause mass wasting (e.g., erosion or landslides), road grades would be varied depending on the erosion potential of the soil and roads would be rocked where needed for dust abatement, stability, load bearing, and seasons of use. Accordingly, impacts to the transmission lines, access roads, and substations related to liquefaction and landslides are expected to be ***low***.

Construction of the North Alternative could require drilling and blasting in areas of shallow soil or where exposed bedrock limits the ability to install structures, counterpoise, or develop access roads. Bedrock in those locations would be excavated, removed, or broken up to allow for construction activities. Areas where exposed bedrock would most likely occur include where the North Alternative ROW crosses over the Gray's Range north of Henry Peak (between line miles 23 and 26). Installation of transmission structures would require the excavation of holes approximately 10 feet deep for wood pole suspension structures and 15 feet deep for steel pole suspension structures, although dead-end steel pole structures would require concrete footings up to 30 feet deep (see Section 2.2.2, Transmission Lines). Geotechnical investigations, including exploratory borings and test pits, would be conducted prior to construction of the line to ensure that excavation would not be deep enough to contact phosphate rock. Therefore, there would be little to no potential for release of selenium during project construction (see Section 3.13, Public Health and Safety). Blasting holes or other excavations would be backfilled with native material from the original excavation.

Soils

Construction of the North Alternative would involve excavation (for structure footings, substation ground mat, equipment, and counterpoise), counterpoise installation, grading and cut-and-fill for roads, tree removal, movement of heavy equipment, and lay-down of materials. All these activities would disturb soils and remove or damage vegetative cover. The exposed soil would be vulnerable to movement off-site through water runoff, wind dispersal, or movement by gravity (soil/rocks rolling down hill). Soil compaction from heavy equipment also contributes to erosion as rainfall is less easily absorbed (increasing runoff) and it is more difficult for plants to grow (creating areas with patchy or no vegetation coverage). Removal of all tall growing vegetation along the transmission line ROW and access roads would increase the potential for erosion because roots help to hold soil in place and vegetation impedes the velocity of surface water flow.

Some soil would be removed from potential use in localized areas around transmission structure footings, road beds, and at the new Hooper Springs Substation. The ground beneath new or improved access roads would be subject to long-term compaction. Where footings and roadways are built on expansive soil, impacts would be greater because more work (e.g., grading, graveling, and more extensive footings) would be required to ensure stability. Roads on steep slopes would be the most likely to cause erosion because ground cover would be removed, soils would be compacted, and drainage patterns could potentially be changed. Proper road design (such as gravelling surfaces, selecting appropriate road locations and grades, and installing water bars or other appropriate drainage) would be essential to help avoid long-term erosion impacts (see Section 3.5.4, Mitigation).

Limiting site disturbance is the single most effective method for reducing erosion. Preserving vegetative cover to the maximum extent feasible helps shield the soil from the elements, slowing runoff velocity and increasing infiltration time, and holding soils in place. Vegetation removal would be limited to the extent possible during construction. Temporary erosion control measures would be maintained until vegetation reestablished and/or permanent erosion control measures were in place. Mitigation measures proposed for construction would reduce soil disturbance and erosion (see Section 3.5.4, Mitigation). Temporary soil impacts would be ***low*** with the implementation of these erosion limiting mitigation measures, which would include implementing a Stormwater Pollution Prevention Plan (SWPPP), designing roads to control runoff and prevent erosion, constructing during the dry season, and other measures to prevent or limit soil impacts.

Soil compaction occurs when soil particles are pressed together by equipment operation or vehicle traffic. When soils are compacted, the pore spaces between soil particles are reduced, thus restricting infiltration and deep rooting, and reducing the amount of water available for plant growth. When infiltration is reduced, runoff may occur and lead to erosion, nutrient loss, and potential water quality problems (NRCS 1996, 2004). Soil water content influences compaction such that the risk is greatest when soils are moist or wet; dry soils are much more resistant to compaction than moist or wet soils (NRCS 1996, 2004). Other factors affecting compaction include the pressure exerted upon the soils (from heavy equipment or vehicles), soil characteristics (organic matter content, clay content and type, and texture), and the number of passes by equipment or vehicle traffic (NRCS 1996).

Soil compaction would occur if heavy equipment or repeated vehicle traffic press soil particles together, especially if the soils are moist or wet. Compaction would be expected where equipment operates off access roads, such as during structure construction, counterpoise installation, and at pulling/tensioning sites. To limit soil compaction, heavy equipment and vehicles would only be operated on access roads and within approved construction footprints, and off-road construction would be limited during wet conditions. Implementation of mitigation as described in Section 3.5.4, Mitigation, would reduce compaction and long-term impacts to soils would be ***low***.

Permanent loss of prime farmland or hydric soils under structure footings and permanent access roads would occur with construction of the North Alternative. Additionally, temporary compaction impacts from heavy machinery would occur on prime farmland soils. Permanent impacts from structure footings are generally nominal because the area of disturbance is very low; based on the proposed structures, it is anticipated that each structure would impact approximately 0.01 acre of soil. Approximately 41 structures are proposed to be constructed in prime farmland for the North Alternative; therefore, it is anticipated that permanent impacts to prime farmland from structures would be approximately 0.5 acre. Additionally, approximately 8.2 acres of prime farmland would be permanently impacted from the construction of permanent access roads. Permanent access roads for the North Alternative would also impact approximately 1.4 acres of hydric soils; however, because the amount of prime farmland soils and hydric soils impacted from construction of transmission towers and access roads is relatively low (less than 10 percent of the overall acreage), the long-term impact from construction would be ***low***. Implementation of mitigation as described in Section 3.5.4, Mitigation, would reduce temporary impacts to prime farmland and hydric soils from compaction.

Typical operations and maintenance would have a ***low*** impact to soils. Annual vehicle ground inspections and vegetation maintenance activities could cause some dust, create ruts on wet roads, or disturb vegetation that could expose soil. Where temporary roads would be constructed, maintenance vehicles and equipment may need to drive through fields and could cause temporary soil erosion or compaction. Implementation of mitigation as described in Sections 3.1.4 and 3.5.4 would reduce impacts to soil function.

North Alternative Route Options

Long Valley Road Option

Impacts to geology soils from the Long Valley Road Option would be similar to impacts described for the North Alternative (***low***); however, this option would generally impact slightly more soils because this option increases the transmission line length by 0.6 mile. Impacts to prime farmland soils and hydric soils under this option would also be similar to those described above (***low***). If hydric soils in line mile 17 of this option are compacted during construction, impacts would continue to be ***low*** because post-construction activities such as aerating soils would mitigate for compaction.

North Highland Option

Impacts to geology and soils from the North Highland Option would be similar to impacts described for the North Alternative (***low***); however, the general impacts to geology and soils would be slightly less because this option decreases the transmission line length by 0.1 mile. The North Highland Option would have similar permanent (***low***) impacts to prime farmland soil and hydric soils as those described above.

3.5.3 Environmental Consequences of the South Alternative

Geology

Portions of the South Alternative corridor located in river valleys along the Blackfoot River, for example, have areas of sands and other unconsolidated sediments that may be susceptible to liquefaction. Liquefaction hazard areas would be identified prior to construction and mitigation would be considered on a site by site basis. Road grades would be varied depending on the erosion potential of the soil, and rock would be applied where needed for dust abatement, stability, load bearing, and seasons of use. Accordingly, similar to the North Alternative, impacts to the transmission lines, access roads, and substations related to liquefaction and landslides under the South Alternative are expected to be ***low***.

Also similar to the North Alternative, construction of the South Alternative could require drilling and blasting in areas of shallow soil or where exposed bedrock limits necessary construction activities. Bedrock in those locations would be excavated, removed, or broken up to allow for construction activities. Areas where exposed bedrock would most likely occur include the area east of the Blackfoot River Narrows area, where the proposed transmission ROW crosses onto C-TNF lands between line miles 19 and 22. Geotechnical investigations, including exploratory borings, would be conducted prior to construction of the South Alternative to ensure that excavation would not be deep enough to contact phosphate rock. Therefore, there would be little to no potential for release of selenium during project construction (see Section 3.13, Public Health and Safety). Blasting holes or other excavations would be backfilled with native material from the original excavation.

Soils

Construction of the South Alternative would involve the same ground-disturbing activities described for the North Alternative, which would disturb soils and remove or damage vegetative cover. The newly exposed soil would be vulnerable to compaction from heavy equipment; removal of vegetation along the transmission line ROW and access roads would increase the potential for erosion.

Similar to the North Alternative, the South Alternative would remove some soil from potential use and subject the ground beneath new or improved access roads to long-term compaction. The impacts from footings and roadways built on expansive soil or steep slopes would be the same as those described for the North Alternative, and would require more work to limit erosion and ensure stability. Proper road design would mitigate long-term erosion impacts (see Section 3.5.4, Mitigation).

Strategies to reduce soil disturbance and erosion along the South Alternative would be the same as those described for the North Alternative, including limiting site disturbance, preserving vegetative cover, and implementing temporary erosion control measures (see Section 3.5.4, Mitigation). Similar to the North Alternative, temporary soil impacts from the South Alternative would be ***low*** with the implementation of the erosion control mitigation measures.

Soil compaction under the South Alternative would be expected in similar locations to those described for the North Alternative. The implementation of the same mitigation measures would reduce compaction, and yield ***low***, long-term impacts to soils (see Section 3.5.4, Mitigation).

Permanent loss of prime farmland soils under structure footings and permanent access roads would occur with construction of the South Alternative. Additionally, temporary compaction impacts from heavy machinery would occur on prime farmland and hydric soils. Approximately 23 structures are proposed to be constructed in prime farmland soils for the South Alternative; therefore, it is anticipated that permanent impacts to prime farmland soils from structures would be approximately 0.3 acre. An additional tenth of an acre of prime farmland soils is also proposed to be permanently impacted from the construction of permanent access roads for the South Alternative. There are no proposed permanent impacts to hydric soils from any construction activities for the South Alternative. Because the amount of prime farmland soils impacted from construction of transmission towers and access roads is relatively (less than 1 percent of the overall acreage), the long-term impact from construction would be ***low***. Implementation of mitigation measures as described in Section 3.5.4, Mitigation, would reduce temporary impacts to prime farmland and hydric soils from compaction.

Similar to the North Alternative, typical operations and maintenance under the South Alternative would have a ***low*** impact to soils. Impacts to soil from annual vehicle ground inspections and vegetation maintenance would be the same, as would the impacts and mitigation for temporary road construction.

South Alternative Route Options

Options 1, 2, and 4

The exact number and location of structures has yet to be determined for Options 1, 2, and 4; however, they are assumed to be similar to the South Alternative (approximately 23 structures permanently impacting approximately 0.3 acre of prime farmland). Therefore, impacts to geology and soils from Options 1, 2, and 4 would be similar to impacts described for the South Alternative (***low***). These options would have similar soil productivity, hydric soils, and geologic impacts as those described above.

Option 3

Impacts to geology and soils from Option 3 would be similar to impacts described for the South Alternative (***low***). However, the transmission ROW for Option 3 would traverse almost four times as many acres of prime farmland as the South Alternative and Options 1 and 2, about two times as many acres as Option 4, and slightly more acres than Option 3A. Although exact structure numbers and locations are not available for Option 3, permanent impacts to prime farmlands from structure placement would generally be the same as those described for the Option 3A (described below), approximately 0.7 acre (***moderate***).

Option 3A

Impacts to geology and soils from Option 3A would be similar to impacts described for the South Alternative (***low***). The transmission line ROW for Option 3A would traverse almost four times as many acres of prime farmland as the South Alternative and Options 1 and 2, and about two times as many acres as Option 4. Option 3A would construct approximately 59 structures on prime farmland soils; therefore, it is anticipated that permanent impacts to prime farmland soils from structures would be approximately 0.7 acre, which is more than double the permanent impacts to prime farmland soils from construction of the South Alternative. Additionally, there would be approximately 8.1 acres of permanent impacts to prime farmland soils from construction of permanent access roads for Option 3A. There are no anticipated permanent impacts to hydric soils from Option 3A. Similar to the South Alternative, permanent impacts to prime farmland soil are generally low (less than 10 percent of the overall acreage); therefore, impacts to prime farmland under Option 3A would be ***moderate***. Temporary impacts to prime farmland and hydric soils would be ***low*** because BMPs would minimize loss during construction. When construction is complete, soils would be aerated to mitigate the effects of compaction.

3.5.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate impacts to soils from the Project.

- Restore compacted cropland soils as close as possible to pre-construction conditions using tillage. Break up compacted soils where necessary by ripping, tilling, or scarifying before seeding.
- Remove topsoil from cropland soils in a manner that will allow it to be reused after construction.
- Follow all applicable soil and water conservation measures listed in Forest Service Handbook 2509.22 - Soil and Water Conservation Practices Handbook (R-1/R-4 Amendment No. 1, effective 05/88), on C-TNF managed lands, as determined through coordination with the C-TNF.
- Minimize construction on steep or unstable slopes where possible.
- Locate structures or access roads outside of previously active slides, bedrock hollows, or other geologic hazard areas, where possible.
- Develop and implement a SWPPP to control erosion and sedimentation.
- Monitor erosion control BMPs during construction to ensure proper function.
- Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize off-site sediment movement where the potential exists for construction activities to impact surface water or wetlands.
- Limit grubbing to the area around structure sites to reduce the impact to the roots of low-lying vegetation so that they can resprout.
- Design temporary and permanent access roads to control runoff and prevent erosion by using low grades, outsloping, intercepting dips, water bars, or ditch-outs, or a combination of these methods.
- Surface all permanent access roads with rock to help prevent erosion and rutting of road surfaces and support vehicle traffic.

- Limit the amount of time soils are left exposed. Use BMPs on exposed piles of soil to reduce erosion potential from rain or wind.
- Prepare a Fugitive Dust Control Plan to control windblown dust, include measures to develop and implement a dust control plan.
- Use BMPs to limit erosion and the spread of invasive and noxious weeds (see Section 3.4.4, Vegetation).
- Use appropriate seed mixes; application rates, methods, and timing to revegetate disturbed areas (see Section 3.4.4, Vegetation).
- Monitor reseeded areas for adequate growth and implement contingency measures as necessary (see Section 3.4.4, Vegetation).
- Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities, where possible (see Section 3.4.4, Vegetation).
- Retain existing low-growing vegetation where possible (see Section 3.4.4, Vegetation).
- Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions (see Section 3.4.4, Vegetation).
- Encourage workers to cut or crush vegetation in-place, rather than blade, in temporary disturbance areas (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency (see Section 3.4.4, Vegetation).
- Locate staging areas in previously disturbed or graveled areas where practicable (see Section 3.4.4, Vegetation).
- Maintain erosion controls near waterbodies (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Minimize ground-disturbing activities, particularly in sensitive habitats (see Section 3.7.4, Wildlife).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Avoid excavation in areas of identified contaminants (see Section 3.13.4, Public Health and Safety).
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).
- Ensure construction vehicles travel at low speeds on access roads and at construction sites to minimize dust (see Section 3.14.4, Air Quality).
- Use local rock sources for road construction where practicable (see Section 3.14.4, Air Quality).

3.5.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable short-term impacts to soils would result from soil compaction, erosion, and vegetation degradation from construction regardless of the alternative or option. Long-term impacts would result from soil compaction and reduced soil productivity especially on prime farmlands under new structures, roadbeds, and at the Hooper Springs Substation and Lanes Creek Substation (for the North Alternative).

3.5.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to soils from the construction, operation, and maintenance of the transmission lines would not occur.

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3.6 Water Resources, Floodplains, and Wetlands

3.6.1 Affected Environment

Surface Water

Watersheds in the project area include the Bear Lake (16010201), Blackfoot (HUC 17040207), Willow (HUC 17040205), and Salt (HUC 17040105) watersheds. The Bear Lake watershed includes Bear Lake, a large natural lake on the Utah/Idaho border as well as the Bear River. Much of the land within the watershed is used for grazing and multi-purpose public lands. The Blackfoot watershed includes the Blackfoot River and tributaries, as well as the Blackfoot Reservoir. Much of the land within the Blackfoot watershed is used for agriculture and mining purposes, but some areas have relatively intact sagebrush-dominated vegetation communities. The Willow watershed includes Gray's Lake and the tributaries that flow into it, including Willow Creek and Gravel Creek. Additionally, the Willow watershed contains forested mountains of the C-TNF, as well as wetlands and drainages. The Salt watershed includes Tincup Creek and other tributaries of the Salt River. Lands within the Salt watershed are used primarily for agriculture and mining purposes.

The North Alternative corridor crosses four perennial waterbodies, including the Blackfoot River, Little Blackfoot River, Meadow Creek, and Gravel Creek (see Map 3-7). Several smaller tributaries and intermittent waterbodies (i.e., Chippy Creek and Tincup Creek), are also located within the North Alternative corridor. The South Alternative crosses the Blackfoot River in two locations, and also crosses East Mill Creek, and several intermittent and ephemeral drainages (see Map 3-7).

The Blackfoot River is approximately 32 miles long and listed on the Nationwide Rivers Inventory (NRI) for scenery and fish resources (National Park Service 2011). The waterbody is a low gradient, highly sinuous river with headwaters in the wetlands and drainages of Chippy Creek and Upper Lanes Creek before draining into the Blackfoot Reservoir. The Blackfoot River's other major tributaries include Diamond Creek, Dry Valley Creek, and Slug Creek. The North Alternative corridor crosses the Blackfoot River in one location (between line miles 9 and 10) near the Blackfoot Reservoir (see Map 3-7). At this crossing, the river is approximately 100 feet wide and topographically constrained with little riparian buffer. The corridor for the South Alternative crosses the Blackfoot River in two locations (line miles 10 and 18) (see Map 3-7). Both river crossings are less sinuous than other parts of the river because they are constrained by steeper topography. Where the Blackfoot River travels through the broad flat valley south of the South Alternative and Blackfoot River Road, the river is highly sinuous with a fairly dense riparian buffer. This is also true of the upper river basin where it crosses the Blackfoot River WMA.

The headwaters of the Little Blackfoot River are in the mountains of the C-TNF south of the North Alternative corridor in line mile 23. The river flows into a small reservoir and then down through Enoch Valley and Long Valley before entering the Blackfoot Reservoir at the town of Henry, Idaho. The portion of the river crossed by the North Alternative (between line miles 16 and 17) has a narrow emergent wetland floodplain that is approximately 300 feet wide.

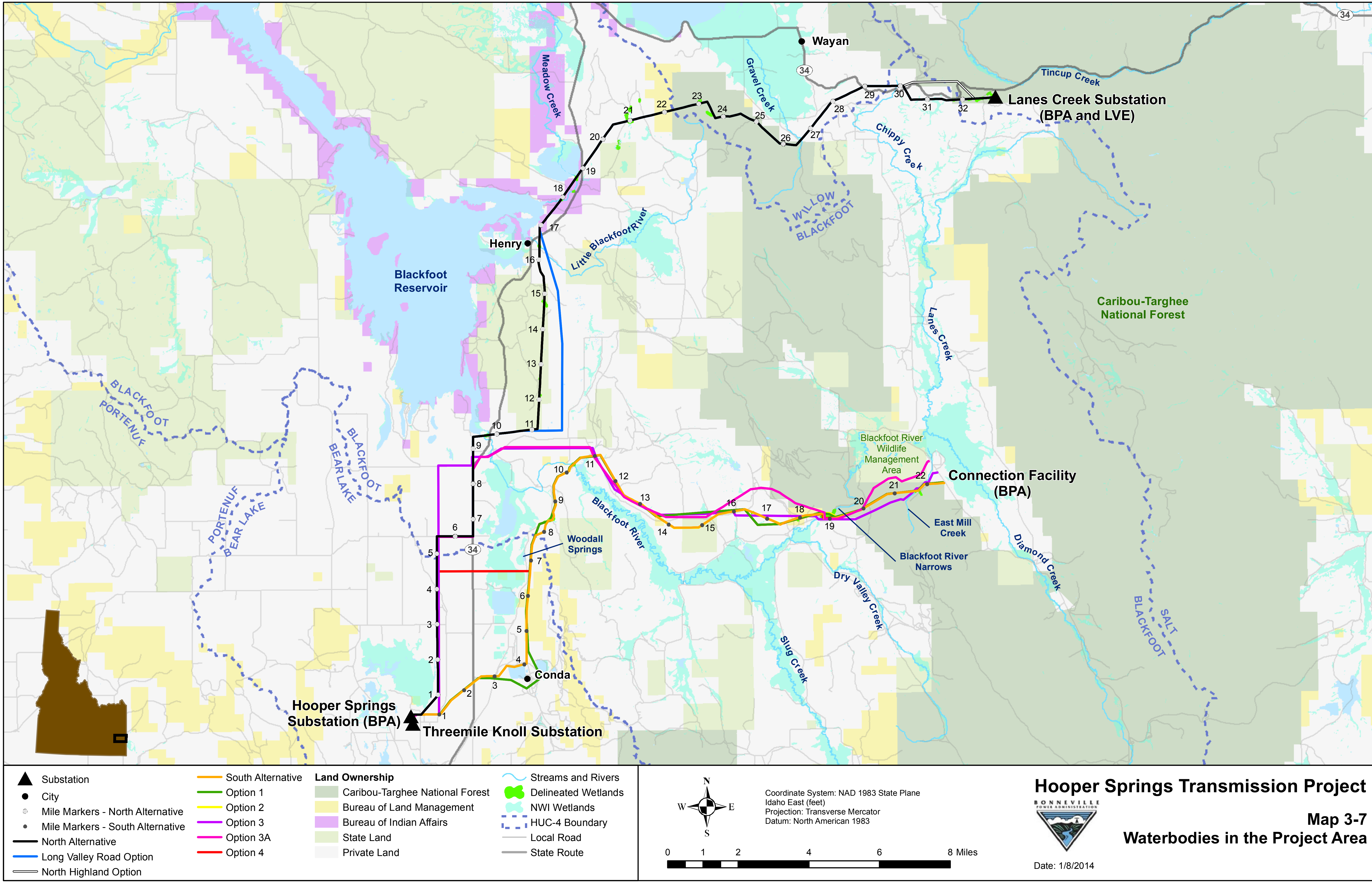
Meadow Creek is a low-gradient stream with headwaters east of the Blackfoot Mountains in Bingham County, Idaho. The creek flows through Crane Flat and Chubb Flat before emptying into Goose Lake, a seasonal marsh north of the Blackfoot Reservoir. The portion of Meadow Creek crossed by the North Alternative corridor (between line miles 18 and 19) is at the southernmost end of Goose Lake. In this location, the creek has been artificially bermed and channelized and there are several emergent wetlands and backwater channels along the banks of the creek north of the North Alternative corridor.

The headwaters of Gravel Creek are on the north aspect slopes of the Gray's Range in the C-TNF. The portion of the creek crossed by the North Alternative corridor (between line miles 26 and 27) is low-gradient, shallow, and sinuous with a 400- to 500-foot-wide floodplain of scrub-shrub wetland.

The North and South alternative corridors also cross intermittent drainages. Intermittent waterbodies are typically shallow topographic features that convey seasonal snowmelt and precipitation for a short period in the spring, but are dry for much of the year. The alternatives cross several intermittent drainages that are not mapped by USGS, but were identified on C-TNF, BLM, and BIA lands during wetland and waterbody surveys.

Surface Water Quality

The state of Idaho's water quality standards (IDAPA 58.01.02.100) designates beneficial uses for surface waterbodies. Beneficial uses are broadly defined as "[a]ny of the various uses which may be made of the water of Idaho, including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics" (IDAPA 58.01.02.010.08). The state monitors water quality as it relates to the beneficial use designations and lists those waters not meeting the appropriate standards. Table 3-15 lists the beneficial use designations for the perennial surface waterbodies crossed by the North and South alternatives.



Hooper Springs Transmission Project

Map 3-7
Waterbodies in the Project Area

Date: 1/8/2014

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Table 3-15. Perennial Waterbodies with Beneficial Use Designations in the Project Area

Waterbody	Beneficial Use Designations		
	Aquatic Life	Recreation	Other
Blackfoot River (confluence of Lanes and Diamond Creeks to Blackfoot Reservoir)	Cold; SS	PCR	DWS; SRW
Little Blackfoot River	Cold; SS	PCR; SCR	ND
Meadow Creek (source to Blackfoot Reservoir)	Cold	SCR	ND
Gravel Creek	Cold; SS	SCR	ND
East Mill Creek	Cold; SS	SCR	ND

Source: IDEQ 2010a

Cold – Cold Water Communities; SS – Salmonid Spawning; PCR – Primary Contact Recreation; SCR – Secondary Contact Recreation; DWS – Domestic Water Supply; SRW – Special Resource Water; ND – non-designated waters for those uses.

The Blackfoot River, Little Blackfoot River, Meadow Creek, East Mill Creek, and Tincup Creek are listed on the 2010 303(d) list (IDEQ 2010a). Section 303(d) of the Clean Water Act establishes requirements for states and tribes to identify and prioritize waterbodies that do not meet water quality standards. The Blackfoot River is listed for impaired cold water aquatic life attributable to dissolved oxygen, sedimentation, selenium, and temperature. In 2006, a Blackfoot River Total Maximum Daily Load (TMDL) Implementation Plan was developed as part of the Blackfoot Subbasin Assessment to address sedimentation and nutrients. The Little Blackfoot River is impaired for cold water aquatic life and salmonid spawning, with the primary causes being low flow alterations, substrate habitat alterations, and sedimentation/siltation. Meadow Creek is impaired for cold water aquatic life, with sedimentation/siltation as the primary causes of impairment. Neither the Little Blackfoot River nor Meadow Creek have TMDL plans (IDEQ 2012). East Mill Creek is listed for impaired cold water aquatic life and salmonid spawning attributable to physical substrate habitat alterations, sedimentation/siltation, and selenium (see Section 3.13, Public Health and Safety, for more information about the potential for contamination in East Mill Creek). Tincup Creek is listed for sedimentation/siltation. Gravel Creek is not on the 303(d) list, although grazing and limited riparian shade are present along the waterbody near the North Alternative corridor.

Groundwater Resources

The North and South alternative corridors cross the Soda Springs and Blackfoot Reservoir groundwater systems, which are both composed primarily of valley fill materials (Graham and Campbell 1981). Major sources of recharge for the Soda Springs groundwater system include downward percolation of precipitation and snowmelt, seepage from surface streams along the margins of the basin, seepage from the Blackfoot Reservoir, and possible underflow from the Bear River-Dingle Swamp groundwater system. Major sources of recharge for the Blackfoot Reservoir groundwater system include downward percolation of precipitation and snowmelt, runoff from the adjacent uplands, and seepage from the Blackfoot Reservoir and overlying streams (Graham and Campbell 1981). Groundwater flow in the project area is generally from the northeast to the southwest (Graham and Campbell 1981); however, in mountainous areas of the C-TNF, groundwater flow can be from the northwest to the southeast.

Most of the project area falls within the source area of the Eastern Snake River Plain Aquifer, which is designated by the U.S. Environmental Protection Agency (EPA) as a sole-source aquifer under Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et seq.). EPA defines a sole source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

Groundwater well data indicates that one domestic well is located about 375 feet from the North Alternative corridor in line mile 5 (Idaho Department of Water Resources 2012). No wells were identified within 50 feet of any proposed access roads for the North Alternative. Two groundwater monitoring wells are located within the South Alternative corridor. One is within both the transmission line and access road ROW, while the other is just within the transmission line ROW.

Floodplains

The Federal Emergency Management Agency has not produced floodplain maps for the project area. Floodplains were identified for this assessment based on topographic conditions, aerial photographic interpretation, and field verification of hydrologic indicators. Surface waterbodies with defined floodplains in the North Alternative corridor include the Blackfoot River, Little Blackfoot River, Meadow Creek, and Gravel Creek. The South Alternative crosses two defined floodplains that include the Blackfoot River and East Mill Creek.

Floodplains crossed by the North and South alternative corridors are largely undisturbed (though narrow in some areas). Where the North Alternative corridor crosses the Blackfoot River, the floodplain is naturally constrained and has little functional floodplain habitat. The Little Blackfoot River is tightly constrained by the physical topography for much of its length, but empties onto a large floodplain/wetland complex where it crosses Enoch Valley. The portion of the Little Blackfoot River crossed by the North Alternative corridor has a narrow emergent wetland floodplain that is approximately 300 feet wide. Gravel Creek has a 400- to 500-foot-wide floodplain with emergent and scrub-shrub wetlands in the North Alternative corridor, but further downstream, the creek is heavily channelized and largely isolated from the historic floodplain. At the North Alternative corridor crossing, Meadow Creek has been channelized and isolated from portions of its natural floodplain. Along the South Alternative corridor, a wide floodplain with emergent and scrub-shrub wetlands is present in the valley south of the South Alternative and Blackfoot River Road. To the east and west of this valley, the floodplain is very narrow to nonexistent where the river is constrained by the Blackfoot River Narrows, Blackfoot River Road, and hilly topography.

Wetlands

Wetlands are areas of transition between aquatic and terrestrial systems, where water is the dominant factor determining the development of soil characteristics and associated biological communities. Intact wetland systems provide a myriad of benefits to aquatic systems and the ecosystem as a whole, including sediment capture, large woody debris recruitment, temperature buffering, nutrient input, habitat, cover, and many more. Wetlands can also filter heavy metals and pollutants out of the water and capture them in soils. They are important communities that have declined over the years due to an increase in agriculture practices and development in the project area. Wetland habitats within the project area consist of a combination of natural and human-made features on the landscape. Natural wetland features include emergent wetland depressions, floodplain wetlands, and backwater sloughs. Human-made features include excavated or artificially impounded livestock and/or wildlife ponds.

Wetland types within the project area were identified using the Cowardin classification (1979) and include palustrine aquatic bed (PAB), palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine unconsolidated bottom (PUB). PAB wetlands are present in topographically low areas where standing water remains throughout most of the year and vegetation growth is limited. Vegetation in PAB wetlands is limited, but includes hardstem bulrush (*Scirpus acutus*), sharp-fruited rush (*Juncus acuminatus*), and reed canary grass (*Phalaris arundinacea*). PEM wetland are the most common wetland type within the project area along the margins of excavated and/or impounded livestock and/or wildlife ponds, in floodplain wetlands adjacent to the streams and rivers, and in naturally occurring topographical depressions. Vegetation in PEM wetlands is primarily reed canarygrass but also includes tufted hairgrass (*Deschampsia caespitosa*) and a mix of native sedges (*Carex praegracilis*, *Carex utriculata*) and rushes (swordleaf rush [*Juncus ensifolius*] and sharp-fruited rush). Several species of sagebrush and upland grasses grow up to the edges of the PEM wetlands, making their boundaries fairly distinct. PSS wetlands also occur within the riparian floodplains of streams and rivers crossed by the alternative corridors and are dominated by willows, particularly Booth willow (*Salix boothii*), Wolf's willow (*Salix wolfii*), Geyer's Willow (*Salix geyeriana*), and coyote willow (*Salix exigua*). A few, small PUB wetlands were identified where the project corridors cross the Blackfoot River and the Little Blackfoot River. These wetlands occur below the waterbodies' ordinary high water mark and are characterized by a lack of vegetation within the channel and an unconsolidated, silty substrate.

For the purpose of this document, wetland boundaries were identified within the proposed transmission line ROW, within the corridors for proposed new and improved access roads within and outside of the transmission line ROW, and at the location of the Hooper Springs Substation site. Wetland boundaries were identified through a combination of both on-site wetland delineations and wetland reconnaissance assessments. Wetland delineations were conducted within portions of the project corridors for the North and South alternatives (and associated route options) that were located on accessible public lands, or where permission to enter private property had been granted (BergerABAM 2012, CH2M HILL 2008). For portions of the project corridors where permission to enter private property had not been granted, wetland boundaries were assessed via a review of aerial imagery interpretation including use of aerial photography and LIDAR imagery collected during flights of the project area between 2010 and 2013, USFWS National Wetland Inventory data (NWI) (USFWS 2012b), and ground level photography and reconnaissance conducted from publicly accessible vantage points in the field. Wetlands were also classified by Cowardin classification, based on the vegetation class, hydrology, position of the wetland within the landscape, and water source (Cowardin et al. 1979). Finally, wetlands within the project area were rated by the degree of hydrologic service, water quality enhancement, and habitat functions they provide using the Montana Wetland Assessment Method (PBSJ 2008). Category I wetlands provide the highest wetland function and are difficult to replace, while Category IV wetlands are degraded and disturbed wetlands providing limited function.

Approximately 11.3 acres of wetlands were identified within the project corridor for the North Alternative (see Table 3-16). Wetland types within the North Alternative corridor include PAB, PEM, PSS, and PUB. Wetlands within the North Alternative corridor are categorized as Category III and IV wetlands, which are relatively common in the state but provide fewer high quality functions, compared to Category I and II wetlands. The North Alternative corridor crosses approximately 0.1 mile of the Gravel Creek Special Emphasis Area, which is a wetland mitigation parcel for Idaho Transportation Department (ITD) managed under a Memorandum of Understanding by USFS. Review of wetland data indicate that the small portion of the special emphasis area crossed by the North Alternative corridor may not contain wetlands.

Table 3-16. Wetlands Identified within the North Alternative and Option Corridors

Cowardin Class[1]	Acres[2]			
	North Alternative		North Highland Option (North)[3]	Long Valley Road Option (North)[3]
	ROW	Off-ROW Access Roads		
PAB	0.8	0.0	0.3	0.8
PEM	7.9	1.5	6.2	8.3
PSS	0.6	0.0	0.6	0.6
PUB	0.6	0.0	0.6	0.5
Total	**9.9**	**1.5**	**7.7**	**10.2**

[1] Cowardin et al. 1979.

[2] Wetland acreages were compiled from a combination of wetland delineation and wetland assessment. Wetland assessments were conducted based on a review of NWI data, aerial photography, and field reconnaissance from publicly accessible locations.

[3] The corridors for the North Highland and Long Valley Road Options do not include access roads because road alignments have not been developed for these options.

About 4.2 acres of wetlands were identified within the South Alternative corridor (see Table 3-17). Wetland types include PEM, PSS, and PUB. These wetlands are associated with the Blackfoot River, smaller drainages, and depressional wetlands (CH2M HILL 2008). Most of these wetlands were characterized as Category II wetlands (Berglund 1999). The South Alternative also crosses East Mill Creek on the C-TNF, east of the Blackfoot River Narrows.

Table 3-17. Wetlands Identified within the South Alternative and Route Option Corridors

Cowardin Class[1]	Acres[2] South Alternative ROW	South Alternative Off-ROW Access Roads	Option 3A (south) ROW	Option 3A (south) Off-ROW Access Roads	Option 1 (South)[3]	Option 2 (South)[3]	Option 3 (South)[3]	Option 4 (South)[3]
PEM	0.9	0.0	2.0	0.1	0.8	0.8	2.2	11.3
PSS	2.7	0.0	2.6	0.0	2.2	2.3	0.4	2.1
PUB	0.4	0.0	0.3	0.0	0.2	0.2	0.1	0.5
PEM/PSS	0.2	0.0	0.0	0.0	0.3	0.2	0.4	0.3
Total	**4.2**	**0.0**	**4.9**	**0.1**	**3.5**	**3.5**	**3.0**	**14.2**

[1] Cowardin et al. 1979.

[2] Wetland acreages were compiled from a combination of wetland delineation and wetland assessment. Wetland assessments were conducted based on a review of NWI data, aerial photography, and field reconnaissance from publicly accessible locations.

[3] The corridors for the South Alternative Route Options 1, 2, 3, and 4 do not include access roads because road alignments have not been developed for these options.

Aquatic Influence Zones

Portions of the North and South alternative corridors are within the C-TNF. Lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands crossed by the corridors on C-TNF lands are prescribed as AIZs. These zones control the biotic and abiotic processes that affect water quality and habitat characteristics important for aquatic plant and animal species. Many vegetation types and habitats within AIZs are rare and sensitive to disturbance. Default boundary widths for various habitat types identified as AIZs are identified in the CNF RFP (USFS 2003a) and vary relative to site-specific conditions and management goals and objectives. AIZ management direction overrides direction from other overlapping management areas.

Alternative Route Options

North Alternative Route Options

Long Valley Road Option—The Long Valley Road Option crosses the Little Blackfoot River approximately 1,300 feet upstream of the previously described North Alternative crossing. There is a wetland floodplain associated with the Little Blackfoot River in this location that is similar to the wetland floodplain associated with the North Alternative crossing of the Blackfoot River. The floodplain is topographically constrained, is between 100 and 150 feet wide, and consists predominantly of grasses and other emergent vegetation. The wetland assessment conducted for the Long Valley Road Option did not identify any other wetlands within the project corridor for this route option. In total, the project corridor for the North Alternative with the Long Valley Road Option includes approximately 10.2 acres of wetlands.

North Highland Option—The North Highland Option crosses five wetland drainages. One drainage is in a shallow depression west of Forest Service Road NF-190 and north of Highway 34. This drainage conveys water under Highway 34 to the south toward Chippy Creek. The remaining four drainages are all located south of Highway 34 near the eastern end of the route option, and they convey water northeast under Highway 34 toward Tincup Creek. All five of these drainages are similar in condition and function. They appear to flow seasonally with snowmelt and precipitation, but also are likely maintained by seasonally high groundwater tables, which allow wetland conditions to develop. The drainages are all narrow constrained drainages, typically smaller than 10 feet wide. Wetlands associated with these drainages are PEM wetlands dominated by emergent grasses and forbs. The North Highland Option relocates a portion of the North Alternative to bypass the Kackley Family Wetland Preserve, and reduces the amount of wetlands within the project corridor. In total, the project corridor for the North Alternative with the North Highland Option includes approximately 7.7 acres of wetlands.

South Alternative Route Options

Option 1 and 2—Options 1 and 2 cross the Blackfoot River in two locations. The first is in the same location as the South Alternative, just north of the Haul Road. There is an area of PEM and PSS wetland floodplain in this location approximately 200 feet wide. The second crossing is at the Blackfoot River Narrows. At the Narrows, the river is topographically constrained by topography and the presence of Blackfoot River Road. However, there are PEM and PSS wetlands and a narrow vegetated floodplain in this location.

Streams and floodplains within the corridors for Options 1 and 2 are largely the same as those described above for the South Alternative. Options 1 and 2 are also similar with respect to wetlands, although both options reduce the quantity of wetlands when compared to the South Alternative from approximately 4.2 acres to about 3.5 acres.

Option 3—Option 3 crosses the Blackfoot River approximately 1,500 feet east of the intersection of Highway 34 and Blackfoot River Road. The Blackfoot River flows north under Blackfoot River Road in this location, and there is a wetland floodplain with areas of PEM and PSS wetlands. The corridor for Option 3 includes approximately 3 acres of wetlands. Option 3 also crosses the Blackfoot River a second time near the Blackfoot River Narrows, in approximately the same location as the South Alternative, and Options 1, 2, and 4. Option 3 also crosses East Mill Creek on the C-TNF, in a similar location as the South Alternative and Options 1, 2, and 4.

Option 3A—Option 3A also crosses the Blackfoot River approximately 1,500 feet east of the intersection of Highway 34 and Blackfoot River Road. The second crossing is at the Blackfoot River Narrows in a similar location to the South Alternative. East of the Narrows, Option 3A does not cross East Mill Creek although it does cross two wetland drainages on the Blackfoot River WMA, just north of the C-TNF boundary between structures 23/6 and 23/7 and also 23/7 and 23/8. These two drainages convey water north toward the Blackfoot River. The first drainage (between structures 23/6 and 23/7) is a PSS wetland, dominated by riparian shrubs, and the second (between structures 23/7 and 23/8) is a PEM wetland, dominated by emergent grasses and forbs. Option 3A also crosses a small PEM wetland drainage located near the east end of Option 3A between structures 24/5 and 24/6. This wetland is located in a broad valley, and conveys water west toward the Blackfoot River. In total, the Option 3A ROW contains approximately 4.9 acres of wetlands.

Option 4—Option 4 crosses the Blackfoot River in the same location as the South Alternative, just north of the Haul Road. There is an area of PEM and PSS wetland floodplain in this location approximately 200 feet wide. Option 4 has approximately 14.2 acres of wetlands within its project corridor, most of which are associated with the crossing of the emergent wetland complex north of the Conda mine, known as Woodall Springs. This is a PEM wetland complex that drains north to the Blackfoot River. Option 4 crosses the Blackfoot River and East Mill Creek in the same locations as the South Alternative and as Options 1 and 2.

3.6.2 Environmental Consequences of the North Alternative

Construction Impacts

Construction of the North Alternative would result in riparian and wetland vegetation clearing, soil disturbance, and changes in contours associated with construction of access roads, structure installation, and crane pads and vegetation clearing and maintenance. The indirect impacts to water resources from these activities could include the potential for increased sedimentation in surface waters and wetlands; spills entering groundwater, surface water, and wetlands; and changes in stream and wetland habitat suitability and water quality associated with vegetation removal and/or soil compaction.

No impacts to water resources, floodplains, or wetlands would occur from substation construction at the Hooper Springs or Lanes Creek substation sites under the North Alternative. None of these resources are present at the substation sites.

Surface Water, Groundwater, and Water Quality

Although the North Alternative may have some structures within 50 feet of smaller, intermittent streams crossed by the corridor, structures would not be placed in or within 100 feet of the Blackfoot River, Little Blackfoot River, Meadow Creek, or Gravel Creek. Proposed structures near the NRI-designated segment of the Blackfoot River would be located more than 250 feet from the river bank. Based on this structure placement, there would be no alteration to the free-flowing nature of the Blackfoot River or appreciable changes to its remarkable values. Therefore, the North Alternative would not foreclose options to classify any portion of the NRI segment as a wild, scenic, or recreation river area.

No new access roads would be constructed over any perennial waterbodies and no access roads crossing the Blackfoot River, Little Blackfoot River, Meadow Creek or Gravel Creek would be improved. New and improved access road crossings, including culvert installations, at intermittent waterbodies would result in local changes to the physical characteristics of waterbodies and work activities may temporarily contribute sediment into the waterbodies. Waterbody impacts associated with access road construction and improvement for the North Alternative would be ***low*** with implementation of mitigation measures described in Section 3.6.4, Mitigation.

Vegetation clearing in the ROW and soil disturbance in structure and access road work areas could result in increased erosion and corresponding sediment transport into downgradient waterbodies. Lands most at risk for down slope sedimentation from soil or vegetation disturbance are slopes that exceed 40 percent (primarily on C-TNF lands). The North Alternative corridor would cross few areas with slopes exceeding this threshold that would be located up gradient of water resources (see Section 3.5, Geology and Soils). Further, the erosion control mitigation measures described in Section 3.6.4 would limit sedimentation travelling outside of the North Alternative corridor. Overall, there would be a ***low*** impact to surface water quality from sediment entering waterbodies from construction activities.

The North Alternative corridor would cross through portions of the Blackfoot, Willow, and Salt watersheds. Impacts associated with stream crossings, vegetation clearing, and soil disturbance in the Blackfoot and Willow watersheds would be short term in nature and would deliver minor quantities of sediment relative to the overall sediment contribution to the watersheds. Overall, impacts to streams and rivers would be ***low*** at the watershed level.

Construction of the North Alternative could potentially result in accidental fuel spills or equipment leaks, that if left uncontained during a storm event could leach through the soil into the groundwater. As described in Section 3.6.4, spill response procedures would be implemented to manage hazardous material spills. Should a spill occur, strategies would be in place to ensure such releases are contained and cleaned up promptly in accordance with applicable regulations. Impacts to groundwater, including the sole-source aquifer and wells would be ***low***. Only one well is located near the North Alternative corridor and mitigation measures would be implemented to limit accidental spills or equipment leaks that may contaminate groundwater.

Floodplains

No structures would be placed and no new permanent or temporary access roads would be constructed in active floodplains under the North Alternative. A short section of an access road would be improved along the southern boundary of the Little Blackfoot River floodplain. Because the access road already exists, road improvement would not require the removal of any vegetation, nor would it result in additional soil compaction, reduced infiltration of groundwater, or decreased flood storage capacity. Overall, ***no*** to ***low*** impacts to floodplains associated with the North Alternative would occur. There would be little detectable localized change to natural floodplain functions and there would be no appreciable increased risk of flood loss.

Wetlands

Short-term wetland impacts that could occur include temporary vegetation clearing and ground disturbance within wetlands from construction activities at structures and pulling sites. Approximately 0.2 acre of vegetation removal and temporary ground disturbance would occur at each structure during construction, and approximately 0.7 acre of temporary vegetation removal and temporary ground disturbance would occur at each pulling site. Construction of temporary roads could also cause direct temporary impacts to wetland vegetation. Shrub-dominated (PSS) wetlands within the ROW could also be temporarily affected by vegetation clearing activities with the ROW. In general, vegetation taller than 10 feet would be cleared within the ROW, which could result in short-term impacts to PSS wetlands. This vegetation clearing would not be expected to affect emergent (PEM) or aquatic (PUB, PAB) wetlands.

Construction of the North Alternative would result in approximately 1.1 acre of short-term impacts associated with vegetation removal during temporary access road construction and at locations of pulling sites. These short-term impacts would be distributed along the route at pulling locations and locations of temporary access road construction. In addition, construction of the North Alternative would result in approximately 1.5 acres of long-term, direct impacts to wetlands associated with fill placement for newly constructed access roads (see Table 3-18). These long-term impacts would be distributed along access roads between approximately line mile 14 and the eastern terminus of the North Alternative at the Lane's Creek Substation (approximately line mile 33).

Table 3-18. Wetland Impacts within the North Alternative and Route Option Corridors

Cowardin Class[1]	Acres[2]					
	North Alternative		North Highland Option (North)[3]		Long Valley Road Option (North)[3]	
	Short-Term Impacts	Long-Term Impacts	Short-Term Impacts	Long-Term Impacts	Short-Term Impacts	Long-Term Impacts
PAB	0.1	0.0	Similar to North Alternative		Similar to North Alternative	
PEM	0.4	1.5				
PSS	0.6	0.0				
Total	1.1	1.5				

[1] Cowardin et al. 1979.

[2] Wetland acreages were compiled from a combination of wetland delineation and wetland assessment. Wetland assessments were conducted based on a review of NWI data, aerial photography, and field reconnaissance from publicly accessible locations.

[3] The corridors for the North Highland and Long Valley Road Options do not include access roads because road alignments have not been developed for these options.

Short-term vegetation removal and construction-related impacts could potentially reduce habitat suitability and water quality function within wetlands. Vegetation removal would temporarily reduce habitat function for a variety of wildlife species. Construction equipment can compact soils, temporarily affecting groundwater percolation and increasing potential for soil erosion. However, areas where temporary vegetation clearing or construction impacts occur would be restored in accordance with permit conditions and mitigation measures described in Section 3.6.4, Mitigation. Short-term impacts would not functionally reduce the size, integrity, or connectivity of impacted wetlands within the project corridor. Overall, short-term impacts to wetlands would be ***low*** to ***moderate***.

Long-term impacts to wetlands could result from fill placement associated with new, permanent access road construction. No wetlands would be permanently impacted by construction of structure footings and no PSS wetlands would be permanently converted to PEM wetlands within the North Alternative corridor. To the extent possible, access roads have been located outside of wetlands, to minimize the potential for long-term impacts. However, some unavoidable long-term impacts could occur. Construction of new, permanent access roads would require vegetation removal and placement of fill material so that impacted wetlands would no longer provide wetland functions. However, relative to the quantity of wetlands identified in the North Alternative corridor and the general project area, the estimated 1.5 acres of permanent wetland fill would be minor. In addition, implementation of mitigation measures described in Section 3.6.4 would further minimize the potential for long-term impacts to wetlands. Due to the potential for a small quantity of permanent wetland fill, however, wetland impacts from permanent access road construction would be ***moderate.***

Indirect impacts from vegetation clearing and soil disturbance outside of wetlands could indirectly result in decreased infiltration due to soil compaction that could decrease hydrologic input, increase erosion, introduce weeds, and increase sediment transport. All of these results could negatively affect the water quality and habitat conditions in wetlands within the North Alternative project corridor. Overall, because most of the vegetation clearing and soil disturbance activities would be conducted at a sufficient distance from wetlands, the indirect impacts would be ***low.***

No structures or access roads would be placed in the Gravel Creek Special Emphasis Area under the North Alternative. Because the Gravel Creek Special Emphasis Area contains tall-growing vegetation in the North Alternative corridor crossing, vegetation trimming or clearing may occur within the portion of the corridor that crosses this parcel resulting in indirect impacts to nearby wetlands in the area that would be similar to those described above (see Section 3.1.2, Environmental Consequences of the North Alternative, for more information on land use impacts). While wetland impacts to the Special Emphasis Area would be small and temporary, these parcels have been protected as enhancement areas; therefore, the impact would be ***moderate.***

Aquatic Influence Zones

Tree and vegetation removal within AIZs under the North Alternative would have the potential to increase erosion and sediment delivery to downstream waters, decrease woody debris recruitment, locally increase temperatures within the waterbodies, decrease groundwater infiltration, and increase vectors for invasive species and noxious weeds. AIZ vegetation removal also would decrease infiltration of precipitation and decrease bank stability, which could increase runoff and sediment loads to surface waters. Soil compaction associated with operating heavy machinery within AIZs would compact soils, which would contribute to increased runoff and sediment delivery.

Vegetation removal and soil disturbance in AIZs would have the potential to impact surface waters and could occur during structure installation, access road construction, culvert installation, and ROW vegetation clearing. Under the North Alternative, no proposed structures would be placed in perennial waterbody AIZs, though one access road improvement (including bridge replacement) would occur in the perennial Meadow Creek AIZ. Approximately 5 acres of vegetation clearing and soil disturbance from road construction, structure installation, and ROW clearing would occur in AIZs associated with wetlands and/or intermittent drainages under the North Alternative. Approximately 2.5 acres of this area would occur within forested AIZ habitat on the C-TNF. Removal of tall-growing vegetation within forested habitat would have a long-term impact because vegetation would not be allowed to regrow. Approximately 2.5 acres of non-forested AIZ areas would be impacted by road or tower construction. Of the 2.5 acres, the majority (2.47 acres) would be from road construction. Relative to the overall AIZ size over the entire waterbody length or wetland area, the localized changes to AIZ vegetation or soils associated with the North Alternative would not alter the physical or chemical qualities of the AIZ; impacts would be ***low***.

Operation and Maintenance Impacts

Operation and maintenance of the North Alternative corridor would have ***no*** to ***low*** impact to water resources, floodplains, and wetlands. Maintenance vehicles would stay on established access roads and little vegetation maintenance would be needed in wetland areas along the corridor. All vegetation management would be conducted in accordance with BPA's vegetation management practices, which would limit potential impacts to nearby waterbodies. Low-growing vegetation would be maintained within the ROW, which would result in the long-term control of vegetation in a small portion of previously forested AIZs.

North Alternative Route Options

<u>Long Valley Road Option</u>

Impacts from the Long Valley Road Option would be similar to the indirect surface and groundwater impacts described above for the North Alternative. The option would slightly modify the location of the proposed crossing of the Little Blackfoot River, but would not result in significantly different impacts from those previously described. The Long Valley Road Option would result in a ***low*** impact to water resources. Indirect impacts to water resources and soil disturbance within the Long Valley Road Option also would be similar to those described for the North Alternative (***low***).

<u>North Highland Option</u>

The North Highland Option would reduce the quantity of impacts to wetlands and perennial streams because the option would relocate a significant portion of the corridor to non-wetland areas. The five intermittent drainages that would be spanned by the corridor are all dominated by emergent vegetation, and would not be affected by any vegetation clearing within the ROW. Impacts to water resources from the North Highland Option, therefore, would be ***low***. Indirect impacts to water resources from clearing and soil disturbance within the North Highland Option also would be similar to those described for the North Alternative (***low***).

3.6.3 Environmental Consequences of the South Alternative

Construction Impacts

While construction of the South Alternative would require less riparian and wetland vegetation clearing than the North Alternative, direct impacts to water resources from soil disturbance, changes in contours associated with construction of access roads, structure and crane pad installation, and vegetation clearing and maintenance would be similar to those described for the North Alternative. Indirect impacts also would be similar.

Similar to the North Alternative, ***no*** impacts to water resources, floodplains, or wetlands would occur from construction at the Hooper Springs Substation site under the South Alternative. None of these resources are present at the proposed substation site.

Surface Water, Groundwater, and Water Quality

Similar to the North Alternative, the South Alternative may have some structures within 50 feet of smaller, intermittent streams; however, structures would not be placed in or within 100 feet of the Blackfoot River. Proposed structures near the NRI-designated segment of the Blackfoot River would be located more than 245 feet from the river bank; there would be no alteration to the free-flowing nature of the Blackfoot River. Also similar to the North Alternative, placement of the South Alternative would not foreclose options to classify any portion of the NRI segment as a wild, scenic, or recreation river area.

New access roads would be constructed over three perennial streams, but none over the Blackfoot River. New and improved access road crossings for the South Alternative, including culvert installations at intermittent waterbodies would result in the same impacts as those described for the North Alternative; ***low*** with implementation of mitigation measures described in Section 3.6.4.

The South Alternative would require ROW vegetation clearing and soil disturbance in structure and access road work areas, similar to the North Alternative, resulting in increased erosion and corresponding sediment transport into downgradient waterbodies. The South Alternative corridor would cross few areas with slopes exceeding 40 percent located upgradient of water resources at the east end of the corridor. Implementation of erosion control measures described in Section 3.6.4 would limit sedimentation travelling outside of the South Alternative corridor; limiting the potential for contributions to sedimentation in the Blackfoot River or East Mill Creek, which are impaired. Overall, there would be a ***low*** impact to surface water quality from sediment entering waterbodies from construction activities.

The South Alternative corridor would cross through portions of the Bear Lake and Blackfoot watersheds. Impacts associated with stream crossings, vegetation clearing, and soil disturbance in these watersheds would be short term in nature and would deliver minor quantities of sediment relative to the overall sediment contribution to the watersheds. Overall, impacts to water resources would be ***low*** at the watershed level.

Similar to the North Alternative, the South Alternative could potentially result in accidental fuel spills or equipment leaks. As described in Section 3.6.4, spill response procedures would be implemented to manage hazardous material spills. Impacts to groundwater, including the sole-source aquifer and wells would be ***low***. Two wells are located within the South Alternative corridor and mitigation measures would be implemented to limit accidental spills or equipment leaks that may contaminate groundwater.

Floodplains

Similar to the North Alternative, structures would not be placed and no new permanent or temporary access roads would be constructed in active floodplains under the South Alternative resulting in ***no*** to ***low*** impacts.

Wetlands

Short- and long-term wetland impacts associated with construction of the South Alternative would be similar to those associated with the North Alternative. Short-term wetland impacts that could occur include temporary vegetation clearing and ground disturbance within wetlands from construction activities at structures and pulling sites. Approximately 0.2 acre of vegetation removal and temporary ground disturbance would occur at each structure during construction, and approximately 0.7 acre of temporary vegetation removal and temporary ground disturbance would occur at each pulling site. Construction of temporary roads could also cause direct temporary impacts to wetland vegetation. Shrub-dominated (PSS) wetlands within the ROW could also be temporarily affected by vegetation clearing activities. In general, vegetation taller than 10 feet would be cleared within the ROW, which could result in short-term impacts to PSS wetlands. This vegetation clearing would not be expected to affect emergent (PEM) or aquatic (PUB, PAB) wetlands.

Construction of the South Alternative would result in approximately 2.8 acres of short-term impacts associated with vegetation removal during temporary access road construction and at the pulling site locations. These short-term impacts would be distributed along the route at pulling locations and locations of temporary access road construction. Construction of the South Alternative would not result in any long-term wetland impacts because new permanent access roads and structures have all been located outside of wetland areas (see Table 3-19).

Table 3-19. Wetland Impacts within the South Alternative and Route Option Corridors

	Acres[2]											
	South Alternative		Option 1 (South)[3]		Option 2 (South)[3]		Option 3 (South)[3]		Option 3A (South)[3]		Option 4 (South)[3]	
Cowardin Class[1]	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
PEM	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
PSS	2.8	0.0	2.8	0.0	2.8	0.0	2.6	0.0	2.6	0.0	2.8	0.0
PEM/PSS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**2.8**	**0.0**	**2.8**	**0.0**	**2.8**	**0.0**	**2.7**	**0.1**	**2.7**	**0.1**	**2.8**	**0.0**

[1] Cowardin et al. 1979.

[2] Wetland acreages were compiled from a combination of wetland delineation and wetland assessment. Wetland assessments were conducted based on a review of NWI data, aerial photography, and field reconnaissance from publicly accessible locations.

[3] The project corridors for the Options 1, 2, 3, and 4 do not include access roads because road alignments have not been developed for these options. Option 4 would likely have long-term wetland impacts from structures or access roads; however, their locations are not known at this time.

Short-term vegetation removal and construction-related impacts would be greater than those associated with the North Alternative. Construction of the South Alternative would result in more than twice as much short-term wetland impacts. Vegetation removal and temporary construction activity could temporarily affect habitat suitability and water quality functions in wetlands. However, areas in which temporary vegetation clearing or construction impacts occur would be restored in accordance with permit conditions and mitigation measures described in

Section 3.6.4, Mitigation. Short-term impacts would not functionally reduce the size, integrity, or connectivity of impacted wetlands within the project corridor. Overall, short-term impacts to wetlands associated with the South Alternative would be ***low*** to ***moderate***.

The South Alternative would result in significantly fewer long-term wetland impacts when compared to the North Alternative. Construction of the South Alternative would not result in any long-term wetland impacts. No wetlands would be permanently impacted by construction of permanent access roads or structure footings and no PSS wetlands would be permanently converted to PEM wetlands within the South Alternative corridor. In addition, implementation of mitigation measures described in Section 3.6.4 would further minimize the potential for long term impacts to wetlands. For these reasons, long-term wetland impacts associated with the South Alternative would be ***low.***

Indirect impacts from vegetation clearing and soil disturbance outside of wetlands associated with construction of the South Alternative would be same as those described for the North Alternative. These activities could indirectly result in decreased infiltration due to soil compaction that could decrease hydrologic input, increase erosion, introduce weeds, and increase sediment transport. All of these results could negatively affect the water quality and habitat conditions in wetlands within the South Alternative project corridor. Overall, because most of the vegetation clearing and soil disturbance activities would be conducted at a sufficient distance from wetlands, indirect impacts would be ***low.***

Aquatic Influence Zones

Six structures for the South Alternative would be placed in areas defined as AIZs. One structure would be near the Blackfoot River in line mile 10, and five structures would be in Mill Canyon at the end of corridor. Impacts from vegetation removal within AIZs along the South Alternative would be the same as those described for the North Alternative. The potential for increased erosion and sediment delivery to downstream waters, decreased woody debris recruitment locally, increases in stream temperatures, decreases in groundwater infiltration, and increased vectors for invasive species and noxious weeds could occur. Other impacts could include decreased infiltration of precipitation and decreased bank stability, possibly increasing runoff and sediment loads to surface waters. Soil compaction associated with operating heavy machinery within AIZs could also occur, potentially increasing runoff and sediment delivery. However, all structures would be located above the high water line of the streams. Additionally, implementation of mitigation measures would further protect AIZ resources (see Section 3.6.4). The South Alternative is not expected to result in temporary or permanent impacts to AIZs; impacts would be ***low***.

Operation and Maintenance Impacts

Operation and maintenance activities under the South Alternative would be same as those described for the North Alternative. Maintenance vehicles would stay on established access roads and vegetation maintenance would be conducted in a manner that limits potential impacts to nearby waterbodies. Overall, ***no*** to ***low*** impacts to water resources, wetlands, and floodplains would occur during operation and maintenance of the South Alternative.

South Alternative Route Options

Options 1 and 2

Impacts to water resources, floodplains, and wetlands from Options 1 and 2 would be the same as those associated with the South Alternative (***low*** to ***moderate***), because these two route options are in the same corridor as the South Alternative.

Option 3

Along the southern portion of Option 3, impacts to water resources, floodplains, and wetlands would be similar to those described for the North Alternative because the routes are in the same general corridor (***low*** to ***moderate***). Where Option 3 joins the same general corridor as the South Alternative east of the Blackfoot River to the connection facility, impacts to water resources, floodplains, and wetlands would be similar to those described for the South Alternative (***low*** to ***moderate***).

One structure would be placed in an AIZ of the Blackfoot River in line mile 10 of Option 3. With implementation of mitigation measures discussed in Section 3.6.4, impacts to the AIZ would be ***low***, similar to the South Alternative.

Option 3A

Along the southern portion of Option 3A, impacts to water resources, floodplains, and wetlands would be the same as those described for the North Alternative because the routes are in the same corridor (***low*** to ***moderate)***. Where Option 3A joins the same general corridor as Option 3 just west of the Blackfoot River to line mile 20, impacts to water resources would be similar to those described for the South Alternative (***low*** to ***moderate***).

Option 3A also would include construction of the same structure described for Option 3 within the buffer zone of an AIZ for the Blackfoot River in line mile 10. With implementation of mitigation measures discussed in Section 3.6.4, impacts would be ***low*** similar to those described for Option 3 and the South Alternative.

Where Option 3A crosses the Blackfoot River WMA, all construction activity and structures would be approximately 0.5 mile from the Blackfoot River. The transmission line would span the three wetland drainages that flow to the Blackfoot River, although drain dips would be constructed in the two eastern drainages for access roads. No impacts to the wetland drainages would occur where the line would span; however ***low*** to ***moderate*** impacts would occur where drain dips would be constructed in the drainages or floodplains. Implementation of mitigation measures discussed in Section 3.6.4 would reduce impacts on water resources along Option 3A.

Option 4

Option 4 also closely follows the North Alternative and Option 3A corridors for the first 4 miles; impacts in this area would be the same as those described above for both routes (***low*** to ***moderate***). Where Option 4 joins the South Alternative corridor in line mile 7, Option 4 could result in both short- and long-term impacts to the large wetland complex associated with

Woodall Springs. The Woodall Springs' wetland complex and adjacent open waterbodies have been disturbed by various activities, including mining (IDFG 1997). However, these waterbodies still provide significant water quality and habitat function. Permanent impacts to the Woodall Springs wetland complex could result in ***moderate*** to ***high*** impacts to wetland and surface water resources.

Impacts to water resources, floodplains, and wetlands from Option 4 would be the same as those described for the South Alternative (***low*** to ***moderate***), because the route option is in the same corridor.

3.6.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate water resource, wetland, and floodplain impacts from the Project.

- Obtain all required permits with approved wetland delineations and compensatory mitigation plans prior to construction, and implement required wetland compensation in accordance with these plans and permits.
- Maintain erosion controls near waterbodies.
- Minimize the number of access road stream crossings during project planning.
- Minimize the project ground-disturbance footprint, particularly in sensitive areas such as stream crossings and wetlands, and stream and wetland buffers and AIZs.
- Cease project construction near stream courses under high flow conditions, except for efforts to avoid or minimize resource damage.
- Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site (see Section 3.1.4, Land Use).
- Use BMPs to limit erosion and the spread of invasive and noxious weeds (see Section 3.4.4, Vegetation).
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Retain existing low-growing vegetation where possible (see Section 3.4.4, Vegetation).
- Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner (see Section 3.4.4, Vegetation).
- Develop and implement erosion and sediment control plans (see Section 3.5.4, Geology and Soils).

- Design temporary and permanent access roads to control runoff and prevent erosion (see Section 3.5.4, Geology and Soils).
- Install sediment barriers and other suitable erosion and runoff control devices (see Section 3.5.4, Geology and Soils).
- Surface all permanent access roads with rock (see Section 3.5.4, Geology and Soils).
- Limit the amount of time soils are left exposed (see Section 3.5.4, Geology and Soils).
- Identify wetlands and other sensitive areas prior to initiating construction (see Section 3.7.4, Wildlife).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).
- Provide spill prevention kits at designated locations on the project site (see Section 3.13.4, Public Health and Safety).
- Inspect equipment daily for potential leaks (see Section 3.13.4, Public Health and Safety).

3.6.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts to water resources would occur from vegetation clearing and soil disturbance within wetlands and riparian zones, which may result in the potential for sedimentation in surface waters. Additionally, permanent fill in wetlands would represent a long-term impact from permanent conversion of wetland to non-wetland.

3.6.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so impacts to water resources, wetlands, and floodplains from the construction, operation, and maintenance of the transmission lines would not occur.

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3.7 Wildlife

3.7.1 Affected Environment

Wildlife Habitats and Species

The following section describes specific wildlife habitat types and wildlife species generally associated with these habitats that are found along the corridors for the North and South alternatives and their route options. Both special status and common wildlife species are identified, but special status wildlife species are discussed in greater detail later in Section 3.7.1.

Given the small (smaller than 10 miles at its widest point) distance between the North and South alternative corridors, the habitat types described below are generally found along both corridors, including the route options. These habitat types include: sagebrush-dominated and basalt outcrops, mountain shrub-dominated, grass-dominated, aspen-dominated, conifer-dominated, and wetlands. In addition, many common wildlife species are expected to be present throughout the project area and thus in the vicinity of the project corridors. However, the information below also identifies species that were documented during project-specific surveys.

Sagebrush-dominated and Basalt Outcrops

Sagebrush-dominated habitats within the project area provide potentially suitable habitat for a variety of species, including six special status bird species: greater sage-grouse (*Centrocercus urophasianus*); Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*); ferruginous hawk (*Buteo regalis*); loggerhead shrike (*Lanius ludovicianus*); Brewer's sparrow (*Spizella breweri*); and sage sparrow (*Amphispiza belli*). Appendix F lists all wildlife species that were identified during wildlife and vegetation surveys of the project corridors. A detailed description of special status wildlife species is presented below and in Appendix G.

A variety of common bird species that are typically associated with sagebrush-dominated habitats include Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), sage thrasher (*Oreoscoptes montanus*), prairie falcon (*Falco mexicanus*), and western meadowlark (*Sturnella neglecta*) (Ritter 2000). Species of birds that are known to nest in sagebrush include Brewer's sparrow, vesper sparrow (*Pooecetes gramineus*), sage thrasher, sage sparrow, and western meadowlark. Other common wildlife species include black-tailed jackrabbits (*Lepus californicus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), elk, mule deer, and sagebrush lizard (*Sceloporus graciosus*).

Species observed within sagebrush habitats during field surveys conducted in spring of 2011 along the corridor for the North Alternative include red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferous*), ring-necked pheasant (*Phasianus colchicus*), turkey vulture (*Cathartes aura*), cottontail rabbit (*Sylvilagus* sp.), mule deer, coyote, and striped skunk. Species observed within sagebrush habitats along the corridor for the South Alternative include mountain bluebird (*Sialia curricoides*), prairie falcon, greater sage-grouse, and mule deer. Species tracks that were observed in sagebrush habitats while conducting surveys for the South Alternative in winter/spring 2013 include coyote, elk, mule deer, moose, cottontail rabbit, and snowshoe hare (*Lepus americanus*). Aerial surveys observed one male and two female greater sage-grouse on top of a steep ridge approximately 3,000 feet north of the South Alternative. A follow-up ground visit of this site did not reveal any evidence of greater sage-grouse presence (i.e., nests, droppings, or tracks).

Basalt outcrops with native vegetation, another vegetation type identified within the project area, are confined primarily to agricultural lands in the southwestern portion of the project area. These areas provide wildlife habitat for a similar suite of species to those that use native sagebrush habitat, although the habitat is typically more fragmented and of lower functional value.

Mountain Shrub–dominated

Mountain shrub-dominated habitats within the project area provide potentially suitable nesting, brood-rearing, and wintering habitat for Columbian sharp-tail grouse, a special status species. Other species that are typically associated with this habitat type include birds such as lazuli bunting (*Passerina amoena*), yellow-breasted chat (*Icteria virens*), and various warbler species. Big game such as moose, elk, and mule deer also forage in these types of habitats.

Species observed within mountain shrub-dominated habitat during field surveys conducted along the North Alternative in spring of 2011 and 2013 included red-tailed hawk, bald eagle (*Haliaeetus leucocephalus*), northern flicker (*Colaptes auratus*), mule deer, and moose. Bear scat was abundant in several mountain shrub-dominated areas during field surveys conducted along the South Alternative corridor.

Grass-dominated

Grass-dominated habitats within the project area provide potentially suitable nesting and foraging habitat for long-billed curlew (*Numenius americanus*), and suitable nesting, brood-rearing, and winter habitat for Columbian sharp-tailed grouse. Both of these species are special status species. Greater sage-grouse, another special status species, use grass-dominated habitats near sagebrush for courtship displays and foraging.

Other species that are typically associated with grass-dominated habitats include Western meadowlark and Savannah sparrow (*Passerculus sandwichensis*) (Ritter 2000). Raptors, including the red-tailed hawk and bald eagle frequently forage in these types of habitats. Common mammal species include coyote, mule deer, cottontail rabbits, and striped skunks.

Species observed within grass-dominated habitat along the corridor for the North Alternative include red-tailed hawk, bald-eagle, mule deer, cottontail rabbits, and striped skunks.

Aspen-dominated

Aspen-dominated habitats within the project area provide potentially suitable habitat for several special status species. Mature aspen stands in the area provide suitable nesting and foraging habitat for boreal owl (*Aegolius funereus*), great gray owl (*Strix nebulosa*), and flammulated owl (*Otus flammeolus*), and suitable nesting habitat for northern goshawk (*Accipiter gentilis*) and three-toed woodpecker (*Picoides tridactylus)*. Aspen-dominated forests in the project area may also provide suitable nesting and foraging habitat for red-naped sapsucker (*Sphyrapicus nuchalis*), another special status species.

Mule deer, moose, and elk forage and winter in aspen stands. A variety of bird species also nest in these stands, particularly cavity-nesting species such as woodpeckers. Other bird species typically observed in aspen-dominated habitats include warbling vireos (*Vireo gilvus*), American robin (*Turdus migratorius*), American goldfinch (*Carduelis tristis*), dark-eyed junco, Townsend's solitaire (*Myadestes townsendi*), and black-capped chickadee (*Parus atricapillus*). Ruffed grouse (*Bonasa umbellus*) is another species for which aspen is a primary nesting habitat (Ritter 2000).

Wildlife species observed within aspen-dominated habitats along the North Alternative include northern goshawk, three-toed woodpecker, northern flicker, ruffed grouse, great-horned owl (*Bubo virginianus*), snowshoe hare, mule deer, black bear, moose, and yellow-bellied marmot (*Marmota flaviventris*). During surveys of the South Alternative in 2013, a flammulated owl call was heard near a ridge top in a mature aspen stand.

Conifer-dominated

Conifer-dominated habitats within the project area also provide potentially suitable habitat or movement (migratory) corridors for several special status species. Mature conifer forests within the area provide suitable nesting and foraging habitat for boreal owl, great gray owl, and red-naped sapsucker, and suitable nesting habitat for northern goshawk and three-toed woodpecker. Mature conifer-dominated forested habitats may provide potentially suitable foraging and/or migratory habitat for gray wolf, migratory habitat for Canada lynx (*Lynx canadensis*), and suitable winter and spring foraging habitat for wolverine (*Gulo gulo*).

Other species typically associated with conifer-dominated habitat include snowshoe hare (*Lepus americanus*), pine squirrel (*Tamiasciurus hudsonicus*), chipmunk (*Tamias* sp.), and many species of migratory birds. Mule deer, elk, and moose forage and winter in higher elevation stands and use the forested habitat as a migratory corridor. Bird species diversity is also typically high.

Wildlife species observed using conifer-dominated forest habitats along the North Alternative include flammulated owl, northern goshawk, three-toed woodpecker, common raven (*Corvus corax*), ruffed grouse, great-horned owl, snowshoe hare, black bear, mule deer, coyote, elk, moose, yellow-pine chipmunk (*Tamias amoenus*), and red fox. Raptors such as red-tailed hawks were documented in the South Alternative using canopy openings and nesting in snags. Other bird species observed within conifer-dominated forest habitats in the South Alternative include ruby-crowned kinglet (*Regulus calendula*), golden-crowned kinglet (*Regulus satrapa*), western wood pewee (*Contopus sordidulus*), mountain chickadee (*Parus gambeli*), black-capped chickadee, pine siskin (*Carduelis pinus*), northern flicker, downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), American robin, Cassin's finch (*Carpodacus cassinii*), house wren (*Troglodytes aedon*), dark-eyed junco (*Junco hyemalis*), mountain bluebird, American kestrel (*Falco sparverius*), white-breasted nuthatch (*Sitta carolinensis*), red-breasted nuthatch (*Sitta canadensis*), great horned owl (*Bubo virginianus*), and saw-whet owl (*Aegolius acadicus*). During winter 2013 surveys, tracks for several species were observed including coyote, squirrel, cottontail rabbit, snowshoe hare, mule deer, and moose.

Wetlands

Wetland habitat in the project area provides potentially suitable habitat for several special status species including trumpeter swan (*Cygnus buccinator*), Columbian spotted frog (*Rana luteiventris*), Western boreal toad (*Bufo boreas boreas*), and common garter snake (*Thamnophis sirtalis*).

In addition, wetland habitats within the area provide substantial habitat for migratory birds. Trumpeter swans and sandhill cranes (*Grus canadensis*) have been documented in the Blackfoot Reservoir and have been observed in and adjacent to Meadow Creek along the North Alternative. In addition, American white pelicans (*Pelecanus erythrorhynchos*) were observed foraging in the Blackfoot River and Reservoir. The area between the wetlands of the Gray's Lake National Wildlife Refuge and the Blackfoot Reservoir is an important migratory corridor for these species. Bald eagles have also been observed soaring over the project area. Moose, elk, deer, and other game animals all use wetlands on C-TNF land for water during the dry summer months.

Wildlife species observed using wetland habitats along the North Alternative include sandhill crane, killdeer, northern flicker, mule deer, and leopard frog (*Rana pipiens*). Lincoln's sparrow (*Melospiza lincolnii*), song sparrow (*Melospiza melodia*), and yellow warbler (*Dendroica petechia*) have been documented in willows associated with the Blackfoot River along the South Alternative.

Additional avian species that have been documented using wetlands along the North and South alternatives include Canada geese, dabbling ducks (northern pintail [*Anas acuta*], mallard, northern shoveler [*Anas clypeata*], cinnamon teal [*Anas cyanoptera*], blue-winged teal [*Anas discors*], green-winged teal [*Anas carolinensis*], American widgeon [*Anas americana*], and gadwall); diving and sea ducks (lesser scaup [*Aythya affinis*], greater scaup [*Aythya marila*], ring-necked duck [*Aythya collaris*], canvasback [*Aythya valisineria*], redhead [*Aythya americana*], bufflehead [*Bucephala albeola*], ruddy duck [*Oxyura jamaicensis*], hooded merganser [*Lophodytes cucullatus*], red-breasted merganser [*Mergus serrator*], and common merganser[*Mergus merganser*]); grebes, rails, and other marshbirds (eared grebe [*Podiceps nigricollis*], western grebe [*Aechmophorus occidentalis*], Clark's grebe [*Aechmophorus clarkii*], American coot [*Fulica americana*], sora [*Porzana carolina*], Virginia rail [*Rallus limicola*], American bittern [*Botaurus lentiginosus*], and Wilson's phalarope [*Phalaropus tricolor*]); shorebirds (long-billed curlew, spotted sandpiper [*Actitis macularius*], willet [*Tringa semipalmata*], Wilson's snipe [*Gallinago delicata*], white-faced ibis [*Plegadis chihi*], upland sandpiper [*Bartramia longicauda*], black-necked stilt [*Himantopus mexicanus*], American avocet [*Recurvirostra americana*], greater and lesser yellowlegs [*Tringa melanoleuca* and *Tringa flavipes*], and the long-billed dowitcher [*Limnodromus scolopaceus*]); and gulls and terns (including Franklin's gulls [*Leucophaeus pipixcan*] and Forster's tern [*Sterna forsteri*]).

Big Game Habitat

Mule deer and Rocky Mountain elk are the two most visible big game species in the project area, particularly on C-TNF lands, and can be found there year-round, although they are not a USFS Management Indicator Species (MIS). Moose also occur within the C-TNF. USFS (2003b) identified 18 percent of the C-TNF as big game winter range habitat. Only 30 percent of the mule deer that summer in the C-TNF actually use the winter range in forest; most move to adjacent private and state-owned lands (USFS 2003a).

Regional studies conducted by Kuck (1984) found that most elk in southeastern Idaho tend to be nomadic but do not migrate long distances between summer and winter ranges. The mean year-round home range for elk was 26 square miles, with a mean migration distance between summer and winter ranges of 3.6 miles. Mule deer tend to migrate greater distances, typically about 13.7 miles, between summer and winter ranges.

USFS defines big game winter range as either critical or non-critical (USFS 2003a). Both contribute to a population's ability to maintain itself over the long term. Critical winter range is defined in part by the portion of the winter range where available forage and winter security is emphasized. It is also defined based on factors including the number of wintering animals, the proximity to threatened winter ranges, and the presence of species not meeting certain management objectives (USFS 2003a). Non-critical winter range is land that is managed for multiple land use benefits, to the extent these land uses are compatible with maintaining or improving elk and deer winter range.

As shown on Map 3-8, the North and South alternative corridors cross non-critical big game winter ranges identified by both USFS and BLM. The North Alternative corridor crosses approximately 94.2 acres of non-critical big game winter range. The South Alternative corridor crosses approximately 121.8 acres of non-critical big game winter range. No critical big game winter range was identified within any of the alternative or route option corridors.

During surveys conducted in the corridor for the North Alternative in spring of 2011, elk and signs of elk presence were frequently documented throughout the aspen- and Douglas-fir-dominated stands in the C-TNF. Elk and moose were observed on several occasions crossing exposed southern-aspect slopes in the early morning. During winter surveys, bedding areas were frequently documented in dense aspen stands with gentle slopes. Mule deer and mule deer signs were also observed in the C-TNF, although not as frequently as elk or moose. Mule deer tracks were also observed on state and BIA lands in sagebrush habitats. During forest carnivore winter tracking surveys of the South Alternative in March 2013, signs of elk, mule deer, and moose were documented in the C-TNF. These signs were recorded within survey transects with several wildlife habitat types including open sagebrush areas, Douglas-fir stands, mixed conifer stands, mixed aspen/conifer stands, and relatively pure quaking aspen stands.

On C-TNF lands, forested habitats provide important cover, while undisturbed open areas provide migratory habitat. All habitat types identified within the project area represent either suitable migratory or cover habitat for elk and mule deer. C-TNF and BLM lands represent suitable winter range habitat for mule deer, elk, and moose. Sagebrush and grassland habitats on state and BIA lands provide suitable wintering habitat for mule deer. Wetland and riparian habitats provide water sources and forage during dry summer months.

Blackfoot River Wildlife Management Area

The Blackfoot River WMA is located in the vicinity of the South Alternative, and the corridor for Option 3A crosses forested areas of the WMA along its southeastern boundary with the

C-TNF. The Blackfoot River WMA was established to provide wildlife habitat and wildlife-related recreation such as hunting, fishing, and wildlife viewing. Management of the Blackfoot River WMA focuses on providing diverse upland and riparian communities for game and nongame wildlife species and improving cutthroat trout habitat. Recreational access is maintained as possible without compromising wildlife habitat (IDFG 1999).

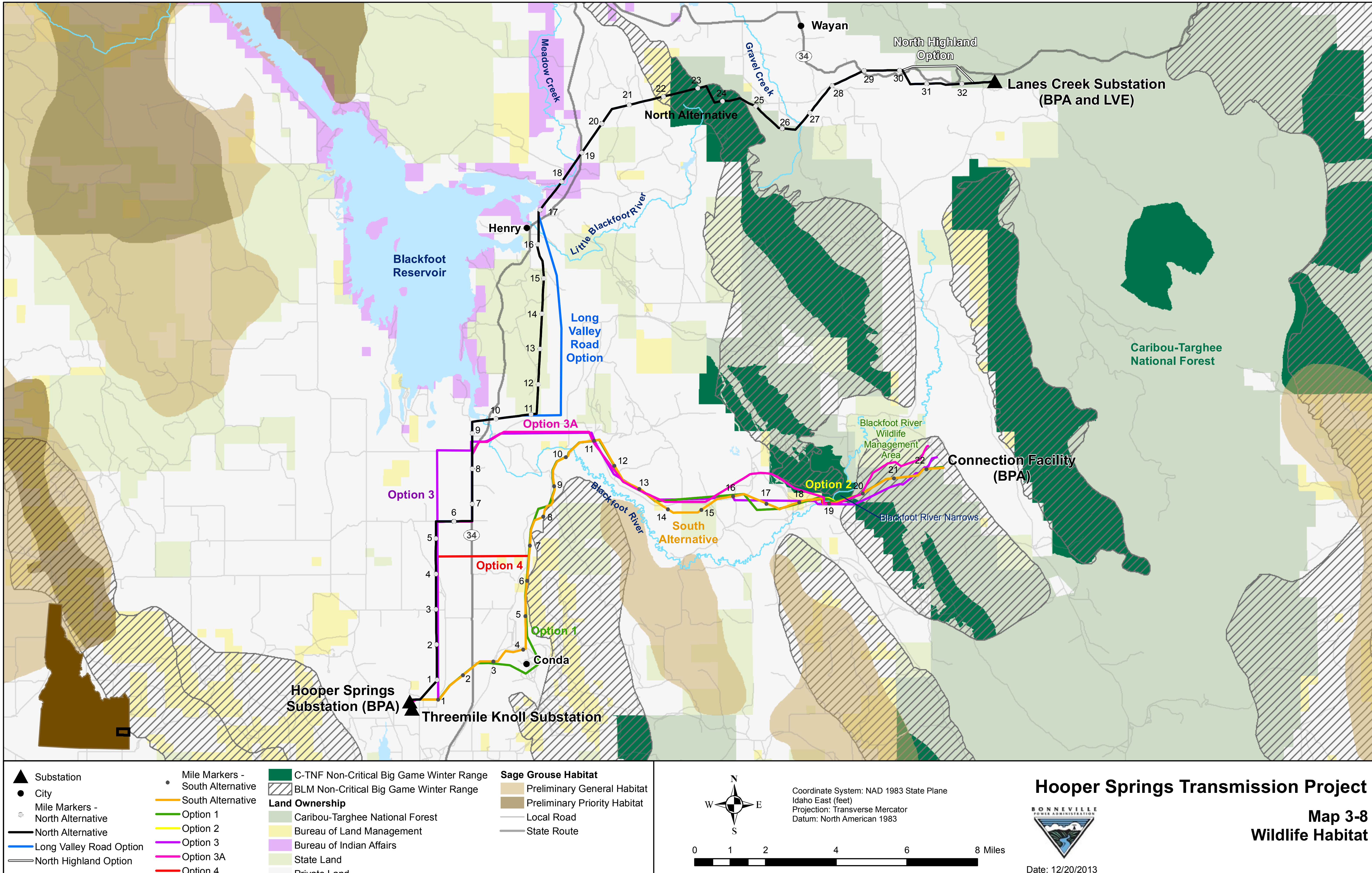
Habitats within the Blackfoot River WMA are composed primarily of willow-dominated riparian areas, sedge-dominated wet meadows, aspen and Douglas fir forests, and sagebrush-grasslands (IDFG 1999). See descriptions above for species typically found in these habitat types. Forested hills within the WMA provide year-round habitat for moose as well as some winter habitat for elk, although the area is not considered big game winter range by IDFG. Elk and mule deer use the area in the spring, summer, and fall. The area is used by many waterfowl species, including mallards, teal, gadwall, pintail, widgeon, Canada geese, and sandhill cranes to nest and rear young. Upland game species include blue grouse and ruffled grouse and a greater sage-grouse lek was recorded near Angus Creek in 1967 (IDFG 1999).

Special-status species with the potential to occur within the project area and that are known to occur within the Blackfoot River WMA include bald eagle, Brewer's sparrow, long-billed curlew, and the common garter snake.

Historically, the Blackfoot River has supported a high quality trout fishery, although anglers and biologists began observing an apparent decline in angler success and in the size of trout harvested in the 1960s (see Section 3.8, Fish). However, management changes implemented since 1993, have led to an apparent trend toward cutthroat trout recovery in the Blackfoot River system (IDFG 1999).

Grays Lake National Wildlife Refuge

Grays Lake National Wildlife Refuge was established in 1965 to protect and restore habitat for nesting ducks and geese (USFSW 2013). The refuge also serves as important nesting habitat for trumpeter swans and sandhill cranes. In fact, Grays Lake National Wildlife Refuge provides nesting habitat for "the largest nesting population of sandhill cranes in the world" (USFWS 2013). Annually, approximately 700 sandhill cranes, including 200 to 250 breeding pairs, use shallow flooded wetlands at Grays Lake National Wildlife Refuge and the surrounding areas within the valley. As many as 3,000 migratory sandhill cranes use the area within the Grays Lake basin, as they stage for the migration to wintering areas. The cranes arrive in early April to nest and migrate south in fall for wintering areas each year. In addition to sandhill cranes, numerous waterfowl species nest here, including trumpeter swans, shorebirds (killdeer, long-billed curlew, willet, spotted sandpiper, Wilson's phalarope, Wilson's snipe), waterbirds (American coot, Virginia rail, sora, American bittern), and northern harriers. During migration, shorebirds such as greater yellowlegs, American avocet, and sandpipers are abundant. Tall grass wet meadows around the marsh support bobolinks and savannah sparrows, while the willow patches support willow flycatchers and yellow warblers (USFWS 2013a). The refuge is currently engaged in developing a Comprehensive Conservation Plan to help further define management practices.



Hooper Springs Transmission Project

Map 3-8
Wildlife Habitat

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Grays Lake National Wildlife Refuge is a little more than 2 miles from the northernmost section of the North Alternative corridor. However, the Gravel Creek area north of the corridor provides important bird habitat to species that nest on the refuge, including sandhill cranes. Here, the corridor is approximately 0.1 mile away and crosses the valley floor, which could also serve as a migratory route because it runs north-south. It has been designated as an Important Bird Area by the National Audubon Society.

The South Alternative is approximately 12 miles south of the Grays Lake National Wildlife Refuge.

Special-status Wildlife Species

ESA and special status species are those that have been identified for protection under federal or state laws. ESA species include those species listed under the federal ESA as endangered, threatened, or candidate. Special-status species include those that are listed as sensitive and/or MIS by the USFS, species listed as sensitive (Type 1 through Type 4) by BLM, and/or species listed as state Species of Greatest Conservation Need (endangered, threatened, or otherwise protected) by IDFG. Table 3-20 lists the ESA and special-status wildlife species that are known or expected to occur in or near the project area and specifies the likelihood of occurrence. Definitions of the different species classifications are included as a footnote to Table 3-20. Detailed descriptions of these special status wildlife species are included in Appendix G.

Federally Listed Species

Although no federally listed or candidate wildlife species were observed during field surveys, habitat for several species is found within the project area. Federally listed species that could occur in the area include the federally threatened Canada lynx, the federally proposed wolverine, and the federal candidate species greater sage-grouse. Below are descriptions of the ESA-listed, proposed, and candidate species and species protected under the Bald and Golden Eagle Protection Act (BGEPA) identified as potentially occurring within the study area.

Canada lynx—There is no ESA-designated critical habitat in or near the project area (USFWS 2008). USFS has not designated any lynx analysis units within the area; however, the Project is within an area designated as linkage habitat (migratory corridor) by USFS (2007a). Suitable foraging habitat for lynx occurs in the project area on C-TNF lands. However, the potential for lynx to occur in the area is low. Forest carnivore winter tracking surveys conducted in March 2011 and 2013 did not document the presence of this species within the vicinity of the project area.

Yellow-billed cuckoo—There have been no documented occurrences of yellow-billed cuckoo within 2 miles of the project corridor (IDFG 2011b) and it is not on the USFWS ESA candidate species list for Caribou County. Little habitat exists for the yellow-billed cuckoo within the corridor for the North Alternative, and none were observed during wildlife surveys conducted in spring of 2011. Suitable dense willow and willow-dogwood habitat exists for the species along the Blackfoot River crossing on the east side of the corridor for the South Alternative and Option 3A, but none were observed during wildlife surveys conducted in March 2013.

Table 3-20. Special-status Wildlife Species and their Potential to Occur within the Project Area

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Birds									
Yellow-billed cuckoo	C (not reported in Caribou County)	None	Type 1	PNG	Dense willow understory with mature cottonwoods and generally within 100 meters of slow or standing water (Gaines and Laymon 1984).	Low	Low	G5	S2B
Bald eagle	None	S	Type 2	PNG	Closely associated with lakes and large rivers in open areas, forests, and mountains. Nest near open water in late-successional forest with low levels of human disturbance (McGarigal 1988, Wright and Escano 1986).	High	High	G4	S3B, S4N

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	Federal ESA Status[1]	USFS Region 4 (R4) Status[2]	BLM Status[3]	Idaho Species of Greatest Conservation Need Status[4]	Habitat Requirements	North Alternative	South Alternative	Global Ranking	State Ranking
Boreal owl	None	S	None	PNG	Nesting habitat consists of forests with a relatively high density of large trees, an open understory, and a multi-layered canopy (Hayward and Verner 1994).	High	High	G5	S2
Great gray owl	None	S	None	PNG	Mixed coniferous forests, usually bordering meadows or small open areas in the forest (Hayward and Verner 1994).	High	High	None	None
Flammulated owl	None	S	Type 3	PNG	Secondary cavity nesters (Hayward and Verner 1994) that typically prefer ponderosa pine habitat, but also use Douglas-fir, aspen, and limber pine habitat (Linkhart and Reynolds 1997).	High	High	G4	S3B

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Northern goshawk	None	S/MIS	None	PNG	Mature to old forest stands with relatively large-diameter trees and high canopy closure (Hayward and Escano 1989, Siders and Kennedy 1996).	High	High	None	None
Three-toed woodpecker	None	S	None	PNG	Mature stands of spruce/fir and lodgepole pine (Imbeau and Desrochers 2002). Snags preferred for nesting and foraging.	High	High	G5	S2
Columbian sharp-tailed grouse	None	S/MIS	Type 3	G	High quality shrub/meadow steppe, primarily grasslands and open-canopy sagebrush (Moyles 1981).	High	High	G4T3	S1

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	Federal ESA Status[1]	USFS Region 4 (R4) Status[2]	BLM Status[3]	Idaho Species of Greatest Conservation Need Status[4]	Habitat Requirements	North Alternative	South Alternative	Global Ranking	State Ranking
Greater sage-grouse	PLC	S/MIS	Type 2	G	Prefer relatively tall sagebrush for nesting and wintering areas and open sites surrounded by sagebrush for lekking (Connelly et al. 2000).	High	High	G4	S2
Peregrine falcon	None	S	Type 3	T	Typically nest on large cliffs less than 9,500 feet in elevation, and in areas closely associated with open water, wetlands, and riparian habitat (Cade 1982).	High	Low	G4T3	S2B
Trumpeter swan	None	S	Type 3	G	Typically found in/near lakes and ponds and adjacent marshes containing sufficient vegetation and nesting locations (Mitchell 1994).	High	High	G4	S1B, S2N

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Harlequin duck	None	S	Type 4	GB	Need low gradient streams with shrub cover and loafing sites (Clark et al. 1989).	Low	Low	G4	S1B
Ferruginous hawk	None	None	Type 3	PNG	Nest on cliffs and small trees (typically, junipers less than 30 feet tall) in dry habitats (Bechard et al. 1990).	Low	Low	G4	S3B
Loggerhead shrike	None	None	Type 3	PNG	Sagebrush-steppe habitats in southern Idaho. Nesting occurs in both shrubs and trees (Woods and Cade 1996).	Low	Low	None	None
Long-billed curlew	None	None	None	PNG	Prairies and grassy meadows, often near water (Groves et al. 1997).	Low	Low	G5	S2B

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Brewer's sparrow	None	None	Type 3	PNG	Prefers to nest at mid-level in tall, living sagebrush plants (Schroeder and Sturges 1975).	Low	Low	G5	S3B
Sage sparrow	None	None	Type 3	U	Typically nest in the canopy of the peripheral smaller branches of larger sagebrush plants (Reynolds 1981, Rich 1980).	Low	Low	None	None
Mammals									
Canada lynx	FT	None	Type 1	T	Boreal forest habitats. Strongly ties to abundance and distribution of snowshoe hare (Koehler and Brittell 1990).	Low	Low	G5	S1

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Gray wolf	None	S	Type 1	G	Variety of habitats, including coniferous forests, montane meadows, and shrub-steppe. Key components include a sufficient year-round prey base; suitable and semi-secluded denning and rendezvous sites; and sufficient space with minimal exposure to humans (USFWS et al. 2002).	Low	Low	G4	S3

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Wolverine	PLPT	S	Type 3	PNG	High mountain forests of dense conifers, primarily in true fir (*Abies* sp.) cover types as well as subarctic-alpine tundra (Groves et al. 1997).	Moderate	Moderate	G4T3	S2
Pygmy rabbit	None	S	Type 2	G	Sagebrush obligate species that typically inhabits either big sagebrush and rabbitbrush communities with deep soil for digging burrows, or rocky habitats (Green and Flinders 1980).	Low	Low	G4	S2

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Spotted bat	None	S	Type 3	PNG	Requires open, arid areas (and associated riparian areas) for foraging and steep cliff faces with crevices for roosting (Clark et al. 1989).	Low	Low	G4	S3
Townsend's (Western) big-eared bat	None	S	Type 3	PNG	Uses a variety of forest, sagebrush, and woodland habitats. Require caves or abandoned mines for roosting (Clark et al. 1989).	Low	Low	G4	S3
Amphibians									
Columbia spotted frog	C (not in Bonneville or Caribou counties)	S	Type 1	PNG	Mountainous areas near cold, slow moving streams, springs, or marshes where emergent vegetation is not extensive (USFS 2007b).	Low	Low	G4T2T3	S2

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	**Federal ESA Status[1]**	**USFS Region 4 (R4) Status[2]**	**BLM Status[3]**	**Idaho Species of Greatest Conservation Need Status[4]**	**Habitat Requirements**	**North Alternative**	**South Alternative**	**Global Ranking**	**State Ranking**
Western (boreal) toad	None[5]	S	Type 3	PNG	Variety of habitats, including wetlands, forests, sagebrush meadows, and floodplains from sea level to 12,000 feet in elevation (Maxell 2000).	High	High	None	None
Reptiles									
Common garter snake	None	None	Type 3	U	Prefer densely vegetated habitats along pond margins where they can sun, feed, and find cover (Groves et al. 1997).	Moderate	Moderate	None	None

						Potential for Occurrence		Nature Serve Conservation Status Ranks[6]	
Species	Federal ESA Status[1]	USFS Region 4 (R4) Status[2]	BLM Status[3]	Idaho Species of Greatest Conservation Need Status[4]	Habitat Requirements	North Alternative	South Alternative	Global Ranking	State Ranking

[1] USFWS Classification (USFWS 2011): FE = federal endangered; FT = federal threatened; SC = species of concern; C = candidate; PT = proposed for threatened listing.

[2] USFS C-TNF Status (USFS 2011a): S = Sensitive—Plant or animal species which are susceptible to habitat changes or impacts from activities; MIS = Management Indicator Species—A wildlife species whose population indicate the health of the ecosystem in which it lives and, consequently, the effects of forest management activities to that ecosystem. MIS are selected by land management agencies.

[3] BLM Special-status Species Types (BLM 2011b): Type 1—species federally identified as threatened, endangered, proposed, candidate, or species designated by the BLM State Director as sensitive; Type 2—species that have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors; Type 3—species that are globally rare or very rare in Idaho, with moderate endangerment factors; their global or state rarity and the inherent risks associated with rarity make them imperiled species; Type 4—species that are generally rare in Idaho with small populations or localized distribution and currently have low threat levels; however, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species.

[4] IDFG Status (IDFG 2011f and g): Species of Greatest Conservation Need–E = endangered; T = threatened; G = game species; PNG = protected non-game species; U = unprotected; P = predatory. A complete list of Idaho Species of Greatest Conservation Need is available at http://fishandgame.idaho.gov/public/docs/compWildStrategy/appendixB.pdf.

[5] On April 11, 2012, USFWS published a 90-day finding that the listing of the Southern Rocky Mountain population of boreal toads may be warranted; therefore, they are currently undergoing a 12 month review of this species.

[6] NatureServe conservation status ranks (GRanks and SRanks) which reflect an assessment of the condition of the species rangewide (GRank) and Statewide (SRank). Rangewide ranks are assigned by NatureServe and statewide ranks are assigned by the Idaho Conservation Data Center. GX or SX: presumed extinct or extirpated; GH or SH: possibly extinct or extirpated; G1 or S1: critically imperiled; G2 or S2: imperiled; G3 or S3: vulnerable; G4 or S4: apparently secure; G5 or S5: secure. B: conservation status refers to the breeding population; N: conservation status refers to the non-breeding population; T: infraspecific taxon; G#G# or S#S#: indicates a range of uncertainty about the status of the species.

Greater sage-grouse—The greater sage-grouse is a candidate species for listing under the ESA and listed as a USFS MIS for sagebrush habitats. It is also a BLM Type 2 special status species and an IDFG game species. The greater sage-grouse has a high potential for occurrence in sagebrush areas within the project area. Most of the sagebrush-dominated habitats within the area provide potentially suitable habitat for sage-grouse lekking, nesting, brooding, and/or wintering. Lek surveys were conducted on state and BIA lands in spring of 2011. No ground surveys were conducted for sage-grouse on USFS land because there are no known leks and suitable habitat does not exist on USFS land on the North Alternative. Aerial surveys were conducted over USFS land on the North Alternative, which would have detected sage-grouse activity if any had been present.

A previously documented sage-grouse lek site is located approximately 1,500 feet west of the corridor for the North Alternative on the large piece of state-owned land east of the Blackfoot Reservoir (IDFG 2011b). Lek surveys were conducted at this lek on three occasions in the spring and summer of 2011, and no evidence of sage-grouse, feathers, droppings, or tracks was observed. A second documented sage-grouse lek site is also located west of the corridor for the North Alternative near the previously described lek (IDFG 2011b). Lek surveys were conducted several times, and no evidence of sage-grouse, feathers, droppings, or tracks was observed. This lek is approximately 30 feet wide, and is located adjacent to an OHV track.

A sage-grouse was observed during raptor surveys on C-TNF land in 2007 on the west side of the South Alternative corridor, and a lek was observed near the eastern boundary of the corridor for the South Alternative. During the same surveys, sage-grouse scat was observed in areas where the South Alternative crosses BLM parcels. A lek was discovered adjacent to the South Alternative corridor close to the easternmost BLM parcel.

Ground-based and aerial surveys were conducted along the South Alternative and Option 3A alternative in March 2013. Sage-grouse surveys were completed based on the interim BLM survey guidance. The ground-based lek surveys did not document any greater sage-grouse or any sign of grouse activity such as feathers, tracks, or droppings that would indicate the presence of a lek. Aerial surveys within the project corridor also did not document any signs of greater sage-grouse activity. However, during this aerial survey one male and two female greater sage-grouse were observed on top of a steep ridge approximately 3,000 feet north of the South Alternative and Option 3A corridors, near the Narrows. A follow up ground visit of this site did not reveal any evidence of greater sage-grouse presence (i.e., birds, feathers, tracks, or droppings).

USFWS expects to make a decision related the potential need for ESA-listing the greater sage-grouse sometime in 2015. In the meantime, federal, state, and private partners are trying to develop conservation strategies to avoid a federal listing. BLM and USFS have been reviewing and revising plans to better manage for sage-grouse conservation. In October 2013, the BLM and USFS sub-regional sage-grouse planning group for Idaho and southwestern Montana released a draft land use plan amendment/EIS. As part of this effort, BLM and USFS developed and mapped habitat categories. The first category is "preliminary priority habitat," which is defined as areas that have the "highest conservation value to maintaining sustainable greater sage-grouse populations" (BLM 2013). These areas include habitat important for breeding, late-brood rearing, and winter concentration areas. The second category is "preliminary general habitat." This category is defined as areas of "seasonal or year-round habitat outside of priority habitat."

These areas are displayed as they relate to the proposed project in Map 3-8. Although these are only preliminary designations at this time, none of the project alternatives cross preliminary priority or general habitats. The South Alternative is the closest to preliminary general habitat located south of the Blackfoot River.

Greater sage-grouse habitat loss is one of the biggest challenges to sage-grouse conservation. In 2010, USFWS identified 14 threats to sage-grouse. Infrastructure development was one of these threats, and associated roads and power lines were included in this category (USFWS 2010). In addition, predation is also considered a high threat because it has been documented as a high driver of juvenile sage-grouse mortality; one study attributes 33 percent of sage-grouse mortality to predation (Beck et al. 2006). This same study also concluded that power lines collisions were responsible for 33 percent of mortality; however, it is difficult to discern what type of power line was being examined. It was suggested that low-lying power lines were the cause of mortality, which are different from the transmission lines being proposed. Nest predation has also been documented as a large concern for sage-grouse populations. In some areas this is exacerbated by avian predator nesting and perching on power lines and poles. For example, Lammers and Collopy cite Worly 1984 in their determination that corvides (i.e., ravens) and raptors used transmission towers as elevated perches for hunting various prey (Lammers and Collopy 2007).

Discussions regarding sage-grouse management and addressing habitat and population concerns are occurring at the state and federal levels. BPA will continue to coordinate with its cooperating agencies as appropriate sage-grouse and sage-grouse habitat conservation guidance is developed.

Wolverine—The wolverine has a moderate potential for occurrence within the project area. A 2001-2008 research team tracked a dispersing male wolverine that crossed all of project alternatives (Inman et al. 2012). This wolverine was tracked making a big loop from the C-TNF southwest to the town of Wayan, southwest to the Fox Hills, along the southern shore of Blackfoot Reservoir, west to the town of Tyhee (north of Pocatello), then northeast back to the C-TNF (Inman et al. 2012). However, this study concluded that wolverines strongly select for areas greater than 8,530 feet in elevation, and typically avoided areas less than 7,054 feet in elevation, including during times with deep snow when other animals are driven to lower elevations (Inman et al. 2012). Other studies and surveys also conclude that wolverines have moderate potential for occurrence within the project area.

USFS aerial surveys conducted in 2002 reported wolverine trails in the snow in the mountains east of Soda Springs (IDFG 2011b). IDFG (2011b) documented historical observations of wolverines approximately 2 miles south of the area in drainages on C-TNF land northeast of Henry Peak In addition, an unconfirmed wolverine sighting was made near Enoch Valley (Green 2011, personal communication).

Surveys conducted within the project area in spring 2011 did not identify any wolverine tracks, suitable denning habitat, or signs of denning activity. Furthermore, forest carnivore winter tracking surveys conducted in 2013 also did not document the presence of this species within the vicinity of the project corridors.

In Idaho, wolverines select den sites above 8,200 feet in areas of stable snow at least 5 feet deep (USFWS 2013b). Den sites occur in north-facing boulder talus or subalpine cirques. None of the high-elevation subalpine habitats within the project area provide suitable conditions for wolverine denning, because most of the project corridor is below 8,200 feet. Areas above 8,200 feet are limited to portions of Henry's Peak south of the North Alternative. The project area also does not provide significant migratory habitat, because it is situated near the northern end of the Gray's Range, and does not provide habitat connectivity to the north. The area provides mainly dispersal habitat for wolverines, but could also provide potentially suitable winter and spring foraging habitat.

Bald eagle—The bald eagle is listed as sensitive by USFS, as a BLM Type 2 special status species, and as a protected non-game species by IDFG. They are also specifically protected by the BGEPA. In addition to ESA, BGEPA, and the various agency laws, the Migratory Bird Treaty Act (MBTA) offers additional protection to certain avian species (see Chapter 4, Consultation, Review, and Permit Requirements). Bald eagle habitat suitability within the project area is high. Suitable foraging habitat exists within the area in open water habitats, meadows, and roadways. Suitable nesting habitat also occurs throughout the forested habitats within the project area, due to the abundance of large snags and perch trees. Bald eagles were observed on several occasions foraging in the area, and are known to winter in several areas of the C-TNF (Tincup Creek, Diamond Creek, Blackfoot Narrows/Lanes Creek, and Crow Creek). No active nests were documented within 1 mile of the project corridors (IDFG 2011b), but a nest was identified approximately 1.5 miles east of the North and South alternative and Option 3A. This was an active nest, with a fledgling in the nest and an adult observed foraging in the vicinity. The nest is topographically blocked from the alternatives.

During aerial raptor nest surveys conducted in March 2013, two inactive bald eagle nests were observed within 1 mile of the project corridors. One of these nests, located in the southern portion of the project corridors for both the North and South alternatives and Option 3A, had been documented in 2011 as a potential active bald eagle nest. The second inactive bald eagle nest was documented in a large Douglas-fir snag overlooking the Blackfoot River east of the haul road, near the center of the South Alternative and Option 3A corridors. Several bald eagles were observed soaring and/or foraging during these aerial surveys.

Other Special Status Species

Several other special status species have the potential to occur in the project area. During field surveys along the corridor for the North Alternative in spring 2011 special status species observed in the immediate area included the three-toed woodpecker, flammulated owl, and northern goshawk. Vocalization surveys conducted at the same time on C-TNF lands within the North Alternative corridor documented one three-toed woodpecker, a USFS sensitive species and an IDFG protected non-game species, adjacent to a trail at the base of a mature Douglas-fir stand. The bird was observed foraging in a live aspen tree; however, there was no response to any of the vocalization calls. Vocalization surveys on C-TNF lands also documented one flammulated owl response within a dense stand of Douglas-fir. The flammulated owl is a USFS sensitive species, BLM Type 3 special status species, and an IDFG protected non-game species. Vocalization surveys documented one northern goshawk response within a dense stand of Douglas-fir. A northern goshawk was also heard during forest inventory surveys from a location approximately 3,500 feet south of the first response, in the same mixed aspen/conifer stand. The northern goshawk is a USFS sensitive species, an MIS for mature and old forest habitats, and an

IDFG-protected non-game species. Although potentially suitable nesting habitat exists, no nests have been documented within 2 miles of the project corridors. Follow-up surveys in the vicinity of the North Alternative in March 2013 did not record the presence of any special status species.

Special status species observed during field surveys along the corridor for the South Alternative during 2011 surveys include the northern goshawk and the three-toed woodpecker. Additional follow-up surveys were conducted along the South Alternative and Option 3A in 2013. These surveys recorded a flammulated owl near a ridge top of a mature aspen stand. While no response calls were heard during the plot survey, a flammulated owl call was heard several times calling from the location of the plot as surveyors were moving toward the next plot location. It is possible that the calls broadcast during the survey called the owl into the vicinity.

As shown in Table 3-20, and discussed in greater detail in Appendix G, in addition to the species with federal status discussed above, four birds have high potential for occurrence in the project area. These are the boreal owl, great gray owl, peregrine falcon (*Falco peregrinus*), and trumpeter swan. In addition, five birds (ferruginous hawk, loggerhead shrike, long-billed curlew, Brewer's sparrow, and sage sparrow) have a low potential for occurrence. All of these bird species are protected under the MBTA. Two mammals, the gray wolf and pygmy rabbit (*Brachylagus idahoensis*), have low potential for occurrence. Among special status reptiles and amphibians, the western boreal toad has a high potential for occurrence and the common garter snake has a moderate potential.

Alternative Route Options

North Alternative Route Options

Long Valley Road Option—The Long Valley Road Option includes wildlife habitat associated with grassland, sagebrush-dominated, and wetland habitat described above. Other portions of this option include cultivated and grazing lands, which do not provide substantial wildlife habitat.

North Highland Option—The North Highland Option includes wildlife habitat associated with grassland, sagebrush-dominated, aspen-dominated, and some conifer-dominated habitat.

South Alternative Route Options

Options 1 through 4—Options 1 through 4 include wildlife habitat similar to habitat described above for the South Alternative. Portions of Options 3, 3A, and 4 cross cultivated and grazing lands, which do not provide substantial wildlife habitat. Option 3A also crosses through approximately 20 acres of the Blackfoot River WMA along its southeastern boundary.

3.7.2 Environmental Consequences of the North Alternative

Impacts to wildlife would include short- and long-term habitat modification associated with vegetation clearing for project construction. Linear clearing such as utility corridor and road development and use can cause a number of issues for wildlife and their associated habitat (BLM and USFS 2001). Trombulak and Frissel (2000) identified a number of ways that road-like corridors can affect wildlife including habitat fragmentation, changes in animal behavior, construction-related mortality, and vehicle collision-related mortality, among others. Additional impacts would include short-term disturbance from noise and human activity during construction; increased risk of avian collisions with transmission line conductors, overhead ground wires (shield), and guy wires (to a lesser extent); and increased human access due to access road creation and improvement.

Wildlife Habitat Impacts

The majority of the North Alternative corridor would traverse grassland and sagebrush-dominated habitat with no tall-growing vegetation, and most low-growing vegetation in these areas would not be removed, and impacts to wildlife habitat would be ***low***. However, trees and tall-growing woody vegetation would be cleared within the transmission line ROW to prevent vegetation from coming close enough to the conductors to cause an electric arc or interfere with the conductors. Approximately 126.5 acres of wildlife habitat associated with aspen-dominated forest and 40.8 acres of habitat associated with conifer-dominated forest would be cleared as a result of construction. The majority of tree removal would occur in the C-TNF, although some would also occur on BLM parcels. While acres of impact are relatively small compared to overall forested habitat areas on BLM, C-TNF, and adjacent private lands, the impact to wildlife habitat where the North Alternative ROW crosses forested habitat would be ***moderate*** to ***high***. Approximately 125.3 acres of aspen-dominated forest and 39.4 acres of conifer-dominated forest would be permanently impacted as a result of construction of new permanent access roads and structure footings. The remaining 1.2 acres of aspen-dominated forest and 1.4 acres of conifer-dominated forest would experience short-term impacts during the construction of the Project.

Permanent tree removal in forested areas for the North Alternative corridor would result in habitat fragmentation and edge effects that can cause changes in the vegetation composition, increase potential for the spread of noxious weeds, and increase susceptibility to blowdown for trees located at the edge of a cut. Habitat fragmentation would reduce habitat suitability for species such as wolverine and gray wolf, which require large tracts of relatively undisturbed habitat for migration and foraging. Fragmentation could also reduce the ability for small and/or less mobile species to disperse and could serve to isolate populations. The impact from habitat fragmentation to wildlife species present in the North Alternative corridor would be ***moderate***.

Edge effects could reduce habitat suitability for species such as boreal owl, great gray owl, flammulated owl, northern goshawk, and three-toed woodpecker, which require old and mature forest habitat conditions. However, the North Alternative corridor would closely follow the boundary of the C-TNF and associated forest habitat, which would limit the effect of increasing habitat edges and fragmenting habitat. Conversion of forested habitat within the ROW and along access roads to low-growing vegetation could provide for increased foraging habitat for big game animals such as deer, elk, and moose, but would also provide reduced cover for these species. Raptors would likely have increased foraging habitat in areas where forested habitats are converted to low-growing vegetation. Also there may be more perching (but not nesting) opportunities with the addition of transmission line structures, especially wood H-frames.

Tree and snag removal along the North Alternative corridor within forested stands of Douglas-fir and quaking aspen would remove potential cavity nesting trees for boreal owl, great gray owl, flammulated owl, northern goshawk, and three-toed woodpecker. Removal of live trees within the ROW and along access roads would also reduce the overall number of trees that could become snags in the future. Also a potential increase in human activity (e.g., maintenance workers) in these forested habitats could negatively affect these species. These factors result in a ***low*** to ***moderate*** long-term impact to cavity nesting birds.

Within non-forested wildlife habitats, the North Alternative would have mostly short-term, ***low*** impacts as a result of vegetation clearing or crushing because temporarily affected vegetation would be expected to grow back within two growing seasons. The North Alternative's long-term impacts to wildlife habitat associated with non-forested vegetation communities would also be ***low*** because, although some wildlife species would be permanently displaced, only approximately 91.7 acres of habitat would be permanently lost due to vegetation removal for structures and permanent access roads. These habitat types are not particularly rare or limited within the project area or region.

Construction Noise Impacts

Human activity and noise levels would be elevated during construction of the North Alternative in the immediate vicinity of each structure site, at conductor pulling and tensioning sites, and during access road construction from construction equipment, vehicles, blasting, human presence, and helicopters. Construction noise and noise from other human activity can result in a variety of impacts to wildlife species, including displacement from occupied habitats, interference with hearing ability in songbirds and mating and alarm calls in amphibians and ground squirrels, and disruption of raptor foraging activities (Madsen 1985, Van der Zande et al. 1980, Fyfe and Olendorff 1976). Noise levels would be temporarily elevated within the North Alternative corridor during the construction, but the sound levels would decrease to ambient conditions within a relatively short distance from the construction area. Noise levels are expected to decrease to ambient levels within a half mile of routine construction activities; whereas, blasting and helicopter use would be audible a mile away, but short in duration. Increased noise levels would also only occur during the day, when construction is actively occurring. Some temporary displacement of wildlife from otherwise usable habitat would likely occur in the immediate vicinity of construction work areas during the construction period. The degree of displacement would generally be proportional to the change in noise levels and the type of activity. If wildlife species were temporarily displaced at a critical time, such as during the breeding season, it could result in impacts to reproductive success. For this reason, temporary construction-related noise impacts would be expected to have a short-term, ***moderate*** impact to wildlife species.

Incidental Mortality and Disturbance

Operation of heavy equipment and vegetation removal activities could result in incidental mortality of less mobile wildlife species present in the North Alternative corridor. Larger, more mobile species that can leave the area, such as birds and medium and large mammals would probably do so. Depending on the timing of tree clearing and construction activities, big game species could also be exposed to incidental mortality during fawning and calving periods, because young animals are less likely to move out of the area. This could have a disproportionate effect in aspen habitat compared with other habitat types. However, the inspection of areas as part of tree removal and site preparation prior to construction activity could limit this risk resulting in a short term ***low*** impact.

Small mammals, amphibians, and reptiles that typically retreat to shallow burrows or other hiding places to escape danger would be most likely to suffer incidental mortality related to construction equipment and tree-clearing activities. There is also a potential for mortality to nesting bird species as ROW trees and shrubs are cleared. To avoid the potential for incidental mortality of nesting migratory birds, pre-construction surveys and construction timing restrictions would be implemented as described in Section 3.7.4. With implementation of mitigation measures to reduce incidental mortality of eggs or fledgling birds, the impact would be ***low*** and short term.

There is also a potential for an increase in vehicle collisions from construction-related traffic on existing roads, and from vehicle traffic on new permanent access roads. Species using roadside habitat or attempting road crossing are most likely to be affected by vehicle collisions. In addition, there may be some minor benefits to scavenger species that feed on roadkill; however, increased presence on roads could have adverse effects on scavengers as well. The potential for these impacts would decrease after the construction period as traffic would be largely reduced. Big game species such as mule deer, elk, and moose could also be affected. New and improved access roads along the transmission line would improve public access within the North Alternative corridor, and could result in more human use of lands in the immediate vicinity, although all new access roads would be gated to reduce OHV use.

Potential indirect road-related impacts to wildlife include the increased spread of noxious weeds, resulting in reduced wildlife habitat suitability; increased erosion and siltation at stream crossings, resulting in reduced water quality for wildlife; increased illegal poaching of game animals (Cole et al. 1997) and target shooting of small animals (Ingles 1965); and intentional harassment or chasing of wildlife. Increased incidence of human caused-fires and removal of standing and down wood for firewood or other personal uses, which removes potential nesting trees and snags, are potential indirect road-related impacts to wildlife. These indirect impacts can result in habitat loss or modification. Implementation of the North Alternative would limit these types of impacts because noxious weed surveys and treatment would be conducted, erosion control plans would be implemented, and access roads would be gated to reduce illegal OHV use and any associated poaching, wildlife harassment, or illegal firewood collection. Recreational users would still be able to access roads by foot, but impacts from their presence would likely be minimal.

The increased presence of OHVs using new permanent access roads can result in disturbance and displacement of wildlife, including stress, disruption of normal foraging and reproductive habits, abandonment of unique habitat features, and increased energy expenditure (Trombulak and Frissell 2000). These factors can contribute to reduced over-winter survival for individuals, poor conditions entering the breeding season, reduced reproductive success and recruitment, and, depending on the extent, eventual local population declines (Trombulak and Frissell 2000, Wisdom et al. 2000). All permanent access roads on USFS, BLM, and BIA lands would be gated and closed to public use; therefore, the indirect impact of access roads associated with the North Alternative would be ***low***.

Avian Disturbance and Collisions

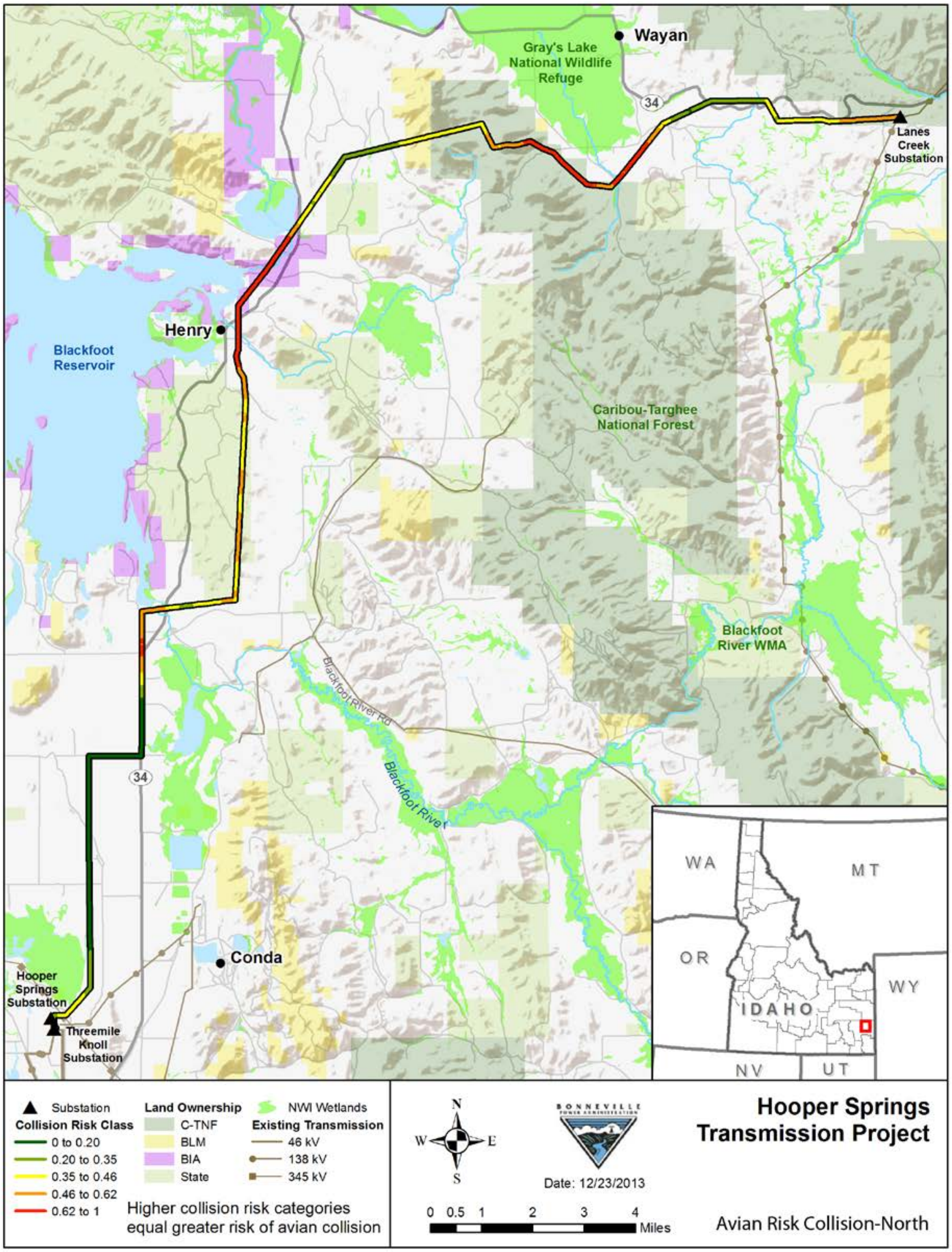
Typically high voltage transmission lines, such as the North Alternative, do not pose an electrocution risk to birds because the spacing between conductors is greater than the wingspan of birds (APLIC 2006, USFWS 2005). The presence of transmission structures, conductors, and most importantly overhead ground and guy wires could create collision hazards for flying birds, especially where the lines cross sensitive flyways or high use areas. Since the proposed structures would be large and visible to birds, it would be unlikely that the structures would be a large collision risk (APLIC 1994); however, the wires could still pose a risk, in particular the overhead ground and guy wires because they would be harder to see (APLIC 1994).

There are three factors that generally influence the risk of collision: the avian species in question including the age and health of the individual; environmental factors such as weather and time of day; and the configuration and placement of the transmission line itself (APLIC 1994, USFWS 2005). Raptors collisions are infrequently reported because their flight is slow, they are highly maneuverable, and they do not fly in large flocks. Large, heavy-bodied birds such as waterfowl and cranes are much more susceptible to transmission line collisions (APLIC 1994).

As part of the planning process, BPA has proposed to site the transmission line to reduce the potential for avian collisions. For example, on the northeast portion of the North Alternative (between line miles 24 and 26), BPA has sited the line along the C-TNF boundary heading south within the tree line. This siting was done to avoid bisecting the wet meadow complexes that are important bird areas for sandhill cranes, trumpeter swans, geese, and other species that use the Grays Lake National Wildlife Refuge and Goose Lake.

In order to analyze the potential for avian collisions with the North and South alternatives and Option 3A, an avian collision risk model was used (Heck 2007). The model considered productive bird areas, and surveyed wetland and stream locations and topography to develop a risk assessment along the alternative corridors (see Appendix H). In addition, one of the driving factors for collision risk is the number of overhead ground wires (because they are less visible). The results of the assessment indicate that there are a number of areas based on the collision factors described above that could present a high collision risk for avian species (see Figure 3-30). The outputs of the model indicate the higher the risk class number, the higher the risk for collision. These risk classes are shown on Figure 3-30 with red denoting the highest collision risk. For the North Alternative, many of these areas are associated with wetland and water features and the important flyways for swans and cranes from the nearby Grays Lake National Wildlife Refuge and Blackfoot Reservoir. As a result of the analysis, collision impacts to migratory birds could be long term and ***moderate*** to ***high***.

Figure 3-30. Avian Collision Risk Model for the North Alternative



Although potential avian collision impacts are moderate to high along the North Alternative corridor, BPA would minimize collision risk by installing visibility enhancement devices in the areas of highest collision risk. BPA would use the results of the avian model combined with expert opinion to determine the best locations to install markers. Visibility enhancement devices, such as bird flight diverters and other devices have been shown to greatly reduce the risk of collision on new transmission lines (APLIC 1994, USFWS 2005). According to APLIC (1994), bird flight diverters, which increase visibility to birds, have been shown to reduce collisions by 57 to 89 percent when installed on overhead ground wires. The installation of bird flight diverters on overhead ground wires in areas determined to represent the highest risk of avian interactions would reduce the potential for collisions and the overall risk of avian collisions to a ***low*** to ***moderate*** level.

Big Game Habitat

All habitat types identified within the North Alternative corridor represent suitable habitat for elk and mule deer during seasonal migrations. C-TNF and BLM lands represent suitable winter range habitat for mule deer, elk, and moose. Sagebrush and grassland habitats on state, BLM, and BIA lands provide suitable wintering habitat for mule deer. Wetland and riparian habitats provide water sources and forage during dry summer months.

Construction of the North Alternative would result in adverse impacts to C-TNF and BLM designated non-critical big game winter range habitat that intersects the alternative corridor. Short-term impacts would be limited to temporary vegetation removal or disturbance in non-forested habitats, which would be expected to recover quickly. Long-term impacts would result from forest clearing within the transmission line and access road ROWs and access road construction. These disturbances would further fragment the forested habitat within the project area and could affect movements of big game animals within the North Alternative corridor. However, the Henry Cutoff Road is a much more significant north–south barrier to movement within the area because of traffic and human activity. Any additional fragmentation that would be associated with the Project would not be expected to be a significant barrier to big game movement. Corridors of undisturbed habitat within the vicinity of the North Alternative corridor would remain as routes for individual big game animals to circumvent project disturbances. Route diversions to avoid the presence of the access roads or transmission line corridor, if longer than preferred routes in winter, may stress the energy reserves of some individuals. While some individual game animals could be affected, this likely would not result in any measurable impact to any big game species population. All construction-related activities would likely take place outside winter use periods (mid-November to mid-April). Overall, the impact to big game animals associated with the construction of the North Alternative would be ***low***.

Special-status Wildlife Species

Appendix G describes the specific impact and level of impact for all special-status species known or expected to occur in the project area and potentially impacted by the North Alternative. It also includes federally listed and candidate species, USFS MIS, and BLM and state sensitive species. Table 3-21 summarizes the North and South alternatives and Option 3A's potential level of impacts to special status wildlife species. The ESA-listed or ESA candidate species, USFS MIS, and BLM and state sensitive species that the Project could impact are described below.

Table 3-21. Summary of Impacts to Special Status Species

Species	Impact[1] North Alternative	Impact[1] South Alternative	Impact[1] Option 3A Alternative
Birds			
Yellow-billed cuckoo	No effect	No effect	No effect
Bald eagle	Low	Low	Low
Boreal owl	Low	Low	Low
Great gray owl	Low	Low	Low
Flammulated owl	Low	Low	Low
Northern goshawk	Low	Low	Low
Three-toed woodpecker	Low	Low	Low
Columbian sharp-tailed grouse	Low	Low	Low
Greater sage-grouse	Low	Low	Low
Peregrine falcon	Low	Low	Low
Trumpeter swan	Low	Low	Low
Harlequin duck	No effect	No effect	No effect
Ferruginous hawk	No effect	No effect	No effect
Loggerhead shrike	No effect	No effect	No effect
Long-billed curlew	Low	Low	Low
Brewer's sparrow	Low	Low	Low
Sage sparrow	Low	Low	Low
Mammals			
Canada lynx	No effect	No effect	No effect
Gray wolf	No effect	No effect	No effect
Wolverine	Low	Low	Low
Pygmy rabbit	No effect	No effect	No effect
Spotted bat	Low	Low	Low
Townsend's big-eared bat	Low	Low	Low
Amphibians			
Columbia spotted frog	No effect	No effect	No effect
Western (boreal) toad	Low	Low	Low
Reptiles			
Common garter snake	Low	Low	Low

[1] A description of the specific impact and impact level are described in detail in Appendix G.

Greater Sage-grouse—Construction of the North Alternative would result in short-term impacts to 3.6 acres of sagebrush habitat as a result of clearing efforts in areas where sagebrush is allowed to grow back. Given the slower growth rates of sagebrush compared to other species, the period for re-establishment would likely be longer (3 to 5 years until reproductive). Long-term (permanent) impacts to approximately 71.3 acres of sagebrush habitat would result from ROW clearing and management, structure placement, and access road development and maintenance. Impacts would not occur within areas defined by BLM as "preliminary general habitat" or "preliminary priority habitat" for the greater sage-grouse (BLM 2013). These long-term impacts would reduce the amount of available sagebrush habitat for greater sage-grouse. However, sufficient amounts of suitable sagebrush habitat would remain functional at both the local and range-wide levels to maintain the viability of this species. Any grouse within the immediate project vicinity may be displaced temporarily during construction due to temporarily elevated construction noise and increased human presence. The nearest documented active lek is more than 5 miles from the North Alternative corridor and separated both topographically and by industrial areas and Highway 34. One historic lek is within 0.5 mile of the alternative; however, surveys of this lek have not documented any activity. Any grouse within the immediate project vicinity may be displaced temporarily during construction due to temporarily elevated construction noise and increased human presence. Displacement of grouse could potentially increase predation temporarily as they seek out alternative suitable habitat. While some individual birds may be impacted, the impact to the southeast Idaho population would be ***low*** from the North Alternative.

Columbian Sharp-tailed Grouse—Like the sage-grouse, the sharp-tailed grouse uses sagebrush habitat, which would be impacted; however, sharp-tailed grouse are more habitat generalists. The sharp-tailed grouse is also known to occur in grasslands, mountain-shrub, aspen, and riparian dominated habitats (Marks and Marks 1987, Ulliman 1995, Apa 1998, Giesen and Connell 1993). Construction of the North Alternative would result in short-term impacts to 0.1 acre of grassland, 0 acres of mountain-shrub, 1.2 acres of aspen, and 0.4 acre of wetland habitat of which some would be riparian. The North Alternative would result in permanent impacts to 8.5 acre of mountain-shrub, 10.4 acres of grassland, 125.3 acres of aspen, and 1.5 acres of wetland habitat. Of the potential aspen acres to be affected, a portion is located on drier sites at higher elevations providing less suitable habitat for grouse. However, long-term impacts would reduce the amount of available habitat for the individual sharp-tailed grouse. Because the sharp-tailed grouse is a habitat generalist, sufficient amounts of suitable habitat would remain functional at both the local and range-wide levels to maintain the viability of this species. There are no documented sharp-tailed grouse leks within 2 miles of the North Alternative. In the event that grouse were within the immediate vicinity of construction activities, they would be displaced temporarily due to elevated construction noise and increased human presence. Displacement of grouse could potentially increase predation temporarily as they seek out alternative suitable habitat. While some individual birds may be impacted, the impact to the southeastern Idaho population of the species would be ***low*** from the North Alternative.

Wolverine—Documented sightings of the wolverine within the area indicate that the North Alternative corridor may provide suitable dispersal and/or foraging habitat. Impacts to forested habitats for project construction and operation would further fragment existing habitat, reducing its suitability for wolverine foraging. Since sufficient foraging habitat would remain functional at both the local and range-wide levels to maintain the viability of the species, project-related impacts would be ***low***. Impacts to wolverine resulting from construction noise and equipment could result in the temporary displacement and disturbance of the species. However, because construction activities would not occur during the winter months and would be limited during spring months, and since no suitable denning habitat has been identified in the area, ***no*** impacts are anticipated.

Bald Eagle—The bald eagle has been documented in the general area of the North Alternative corridor. Noise during project construction could disturb or displace nesting or roosting bald eagles temporarily, but no active nests have been documented within 1 mile of the North Alternative corridor. A nest was documented on private lands north of Soda Springs, about1.5 miles southeast of the southern end of the North Alternative. The nest would be within Zone III under the Bald Eagle Management Plan for the Greater Yellowstone Area (Greater Yellowstone Bald Eagle Working Team 1983). Zone III includes all potential foraging habitat within a 2.5 mile radius of the nest, and calls for all utility lines in this zone to be limited and restricted to locations where the potential for eagle collisions is minimal. The primary focus of this management zone is to maintain adequate foraging conditions and aid in maintaining the integrity of Zones I and II. As discussed above in the discussion of avian disturbance and collisions, the North Alternative would not pose an electrocution risk to bald eagles. Furthermore, the North Alternative does not bisect the nest from any prime foraging habitat or cross any prime foraging habitat. The avian collision risk model discussed above found the area within 2.5 miles of the bald eagle nest to have relatively low collision risk.

Clearing of forested vegetation could remove potentially suitable nesting or perching trees, but would not directly impact foraging habitat. During project construction, bald eagles would most likely avoid the immediate area, due to noise and human presence; therefore, incidental mortality is not likely to occur. Even though some potential bald eagle habitat may be impacted through forest clearing, sufficient habitat would remain functional at both the local and range-wide levels to maintain the viability of the species. Therefore, impacts under the North Alternative on bald eagles would be ***low***.

Operation and maintenance of the North Alternative would require regular vegetation maintenance to ensure that tall-growing woody vegetation does not grow in the ROW and that permanent access roads remain drivable. Maintenance could include mowing, herbicide application, and mechanical cutting. Personnel conducting transmission line repair and patrols would occasionally be present within the North Alternative ROW and on access roads. As such, project operation and maintenance would have a ***low*** impact to wildlife because routine maintenance could result in temporary disturbance of wildlife including nesting birds and wintering big game. Some bird nests may be lost or wintering big game disturbed depending on the time of year maintenance occurs, as some individuals may prefer less human activity and less fragmented habitat. Minimal impacts would be expected because the duration of maintenance activities would typically be short and would not typically occur on a frequent basis. Maintaining the ROW would ensure the continued availability of low-growing open habitats for foraging and nesting for open-habitat species.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would result in the removal of less sagebrush-dominated habitat and more cultivated habitat than the North Alternative. As such, the Long Valley Road Option would impact less habitat for wildlife species that use sagebrush-dominated habitat, such as Columbian sharp-tailed and greater sage-grouse than the portion of line it would replace. Since cultivated land does not provide native habitat to wildlife, this route option would have slightly less impact to wildlife than the North Alternative (impact would be ***low*** to ***none***). Impacts from incidental mortality, avian collisions, and noise disturbance would be similar to those described for the North Alternative.

North Highland Option

The North Highland Option would result in the removal of less sagebrush and grass-dominated habitat and more conifer and aspen-dominated habitat than the North Alternative. This route option would therefore impact less habitat for wildlife species that use sagebrush and grass-dominated habitat, such as the Columbian sharp-tailed and greater sage-grouse, than the portion of line it would replace. However, the North Highland Option would instead impact more habitat for wildlife species that use conifer and aspen-dominated habitat, such as the northern goshawk and boreal owl (impacts would be ***low***). Impacts from incidental mortality, avian collisions, and noise disturbance would be similar to those described for the North Alternative.

3.7.3 Environmental Consequences of the South Alternative

Similar to the North Alternative, the greatest source of potential impacts to wildlife from the South Alternative would be short- and long-term habitat modification associated with habitat clearing for project construction. Additional impacts would be the same as the North Alternative, and would include short-term disturbance from noise and human activity during construction; incidental mortality during construction; increased risk of avian collisions with transmission line conductors, overhead ground wires (shield), and guy wires (to a lesser extent); and increased human access due to access road creation and improvement.

Wildlife Habitat Impacts

The majority of the South Alternative corridor would traverse grassland and sagebrush-dominated habitat with no tall-growing vegetation; most low-growing vegetation in these areas would not be removed, and impacts to wildlife habitat would be ***low***. However, similar to the North Alternative, trees and tall-growing woody vegetation along the South Alternative would be cleared within the transmission line ROW to prevent an electric arc or interference from the proximity of vegetation to the conductors. Approximately 48.9 acres of wildlife habitat associated with aspen-dominated forest and 39.2 acres of habitat associated with conifer-dominated forest would be cleared during construction. The majority of the tree removal would occur on the C-TNF along the South Alternative, though some would also occur on BLM, state-owned, and private parcels. Although acres of impact would be relatively low compared to overall available habitat acreage in the project area, the impact to wildlife habitat where the South Alternative corridor crosses forested areas would be ***moderate*** to ***high***. Approximately

48.4 acres of aspen-dominated forest and 38.3 acres of conifer-dominated forest would be permanently lost due to construction of new permanent access roads and structure footings. Similar to the North Alternative, the remaining 0.5 acre of aspen-dominated forest and 0.9 acre of conifer-dominated forest would be converted from forested habitats to low-growing emergent and mountain shrub vegetation in the South Alternative corridor.

Permanent tree removal for the South Alternative corridor would result in habitat fragmentation and edge effects that could cause changes in the vegetation composition, increase the potential spread of noxious weeds, and increase susceptibility to blowdown for trees located at the edge of a cut. Habitat fragmentation would reduce habitat suitability for some species, reduce the ability for small and/or less mobile species to disperse, and could isolate some populations. The impact from habitat fragmentation to wildlife species would be ***moderate***.

Reduction of habitat suitability for species that require old and mature forest habitat conditions from edge effects would be similar to those described for the North Alternative. The South Alternative would convert a small amount of forest to non-forested vegetation relative to the amount of forested land within the project area. The effect of increasing habitat edges and fragmenting habitat would therefore be limited. Similar to the North Alternative, conversion of forested habitat to low-growing vegetation along portions of the South Alternative could provide increased foraging area for big game animals, but would also provide reduced cover for these species. Raptors would likely have increased foraging area in such converted habitat. Additional surveys of the South Alternative were conducted in 2013 to further assess the presence of old growth forest characteristics along this corridor. The results of the forest inventory surveys indicated that none of the stands surveyed that occur within the South Alternative corridor meet the criteria for old-growth forests.

Tree and snag removal would reduce potential nesting trees for cavity nesting birds. Removal of live trees within the South Alternative corridor and along access roads would also reduce the overall number of trees that could become snags in the future, resulting in a ***low*** to ***moderate*** long-term impact to cavity nesting birds.

The South Alternative would have the same short-term, ***low*** impacts as the North Alternative within non-forested wildlife habitats because crushed or cleared vegetation would be expected to grow back within two growing seasons, although sagebrush would likely take longer (3 to 5 years to be reproductive). The South Alternative’s long-term impacts to wildlife habitat associated with non-forested vegetation communities would be the same as those described for the North Alternative (***low***) because only approximately 58.6 acres of habitat would be permanently lost due to vegetation removal from structures and permanent access roads. Non-forested wildlife habitat types are abundant within the project area. Compared to the North Alternative, impacts to species like sandhill cranes, trumpeter swans, and other waterfowl would be less severe because the South Alternative would avoid high use areas such as the Blackfoot Reservoir and the wet meadow habitat around Gravel Creek.

Construction Noise Impacts

Human activity and noise levels would be elevated during the day while construction occurs within the South Alternative corridor, but would decrease to ambient levels within a half mile of routine construction activities. Impacts to wildlife from noise would be similar to those described for the North Alternative, and would include temporary displacement, interference with hearing mating and alarm calls, and disruption of foraging and breeding. If the disruption occurs during a critical time, such as the breeding season, reproductive success could be reduced. For this reason, temporary construction-related noise impacts would be expected to have a short-term, ***moderate*** impact to wildlife species.

Incidental Mortality and Disturbance

Operation of heavy equipment and vegetation removal activities in the South Alternative corridor could result in the same incidental mortality rates of less mobile species of wildlife as those described for the North Alternative. Depending on the timing of tree clearing and construction activities, big game species could also be exposed to incidental mortality during fawning and calving periods, because young animals are less likely to move out of the area. This could have a disproportionate effect in aspen habitat compared to other habitat types. However, the inspection of areas as part of tree removal and site preparation prior to construction activity could limit this risk. Construction timing restrictions would be implemented as described in Section 3.7.4 to avoid the potential for incidental mortality of nesting migratory birds. With implementation of mitigation measures, the impacts would be ***low*** and short term.

Potential indirect road-related impacts to wildlife from the South Alternative would be the same as those described for the North Alternative, and could result in wildlife mortality or habitat modification or loss. There also would be the potential for an increase in vehicle collisions with wildlife from construction-related traffic on existing roads, and from vehicle traffic on new permanent access roads. New and improved access roads along the transmission line would improve public access within the South Alternative corridor, and could result in more human use of lands in the immediate vicinity. The increased presence of OHVs using new permanent access roads could result in similar impacts to wildlife and habitat as those described for the North Alternative. All permanent access roads on USFS, BLM, and BIA lands would be gated and closed to public use; therefore, the indirect impact of access roads associated with the South Alternative would be ***low***.

Avian Disturbance and Collisions

High voltage transmission lines, transmission structures, overhead ground wire, and guy wires for the South Alternative would pose similar collision risk to birds as those described for the North Alternative, although the South Alternative conductors would be completely vertically oriented. This vertical orientation would result in a “fence effect” creating a somewhat larger obstacle for birds navigating over the lines. However, the size of conductors makes them visible to birds. The results of the avian collision risk model assessment for the South Alternative indicate that there are a number of areas based on the collision factors described above that could present a high collision risk for avian species (see Figure 3-31 and Appendix H). It is likely that collision impacts to migratory birds from the South Alternative would be similar to those described for the North Alternative, although slightly reduced because the South Alternative is approximately 10 miles shorter than the North Alternative and it is not adjacent to Grays Lake National Wildlife Refuge or the Blackfoot Reservoir. However, the South Alternative would cross flyways and riparian habitats associated with the Blackfoot River that are frequented by swans and cranes. Therefore it is expected that impacts could be long term and ***moderate***.

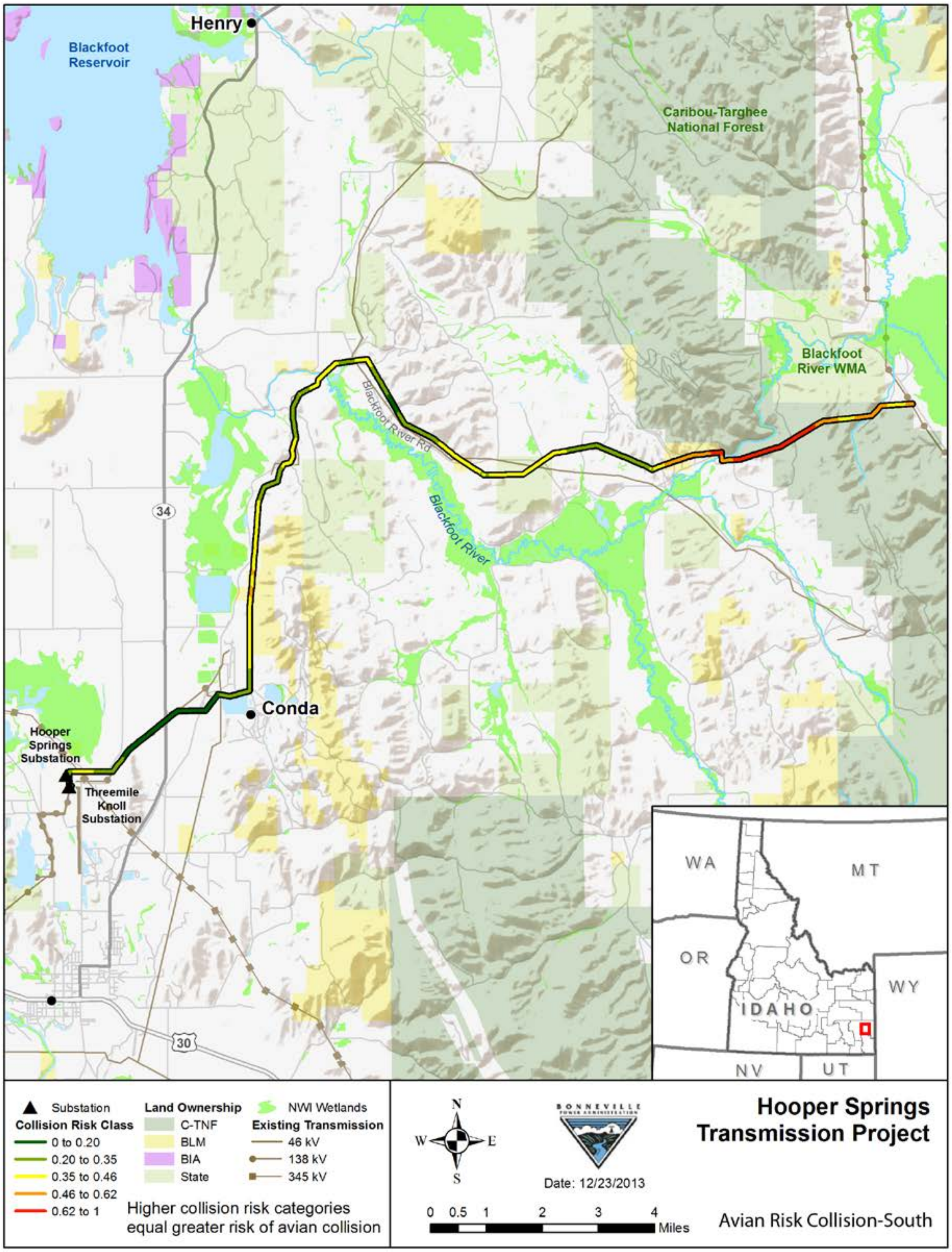
Although potential avian collision impacts are moderate, collision risk for the South Alternative would be minimized using the same methods described for the North Alternative, including the installation of visibility enhancement devices in the areas of highest collision risk. The results of the avian model and expert opinion would be used to determine the best locations to install markers. The installation of bird flight diverters on overhead ground wires in areas determined to represent the highest risk of avian interactions would reduce the potential for collisions and the overall risk of avian collisions to a ***low*** level.

Big Game Habitat

Like the North Alternative, all habitat types identified within the South Alternative corridor represent suitable habitat for elk and mule deer during seasonal migrations. C-TNF lands contain suitable winter range habitat for mule deer, elk, and moose. Sagebrush and grass-dominated habitat on state and BLM lands provide suitable wintering habitat for mule deer. Wetland and riparian habitats provide water sources and forage during dry summer months.

Similar to the North Alternative, construction of the South Alternative would result in adverse impacts to C-TNF- and BLM-designated, non-critical big game winter range habitat crossed by the alternative corridor. Short-term impacts would include temporary vegetation removal or disturbance in non-forested habitats, which would recover quickly. Long-term impacts would result from forest clearing within the transmission line and access road ROWs and access road construction. Forested habitat would be further fragmented by this disturbance and would affect the movement of big game animals within the South Alternative corridor. Similar to the North Alternative, undisturbed habitat within the South Alternative corridor would remain as routes to avoid the transmission line corridor, but such diversions, if longer than preferred routes in winter, may stress the energy reserves of some individuals. Construction of the South Alternative may affect individual game animals although this likely would not result in any measurable impact to big game species populations. All construction-related activities would likely take place outside winter use periods (mid-November to mid-April). In addition, there could be some incidental mortality associated with calving and fawning periods, as discussed above. Overall impacts would be ***low***.

Figure 3-31. Avian Collision Risk Model for the South Alternative



Special-status Wildlife Species

Appendix G describes the specific impact and level of impact for all species known or expected to occur in the project area potentially impacted by the South Alternative. Appendix G includes federally listed and candidate species, USFS MIS, and BLM and state sensitive species. Table 3-21 summarizes the South Alternative's potential level of impacts to special status wildlife species. Described below are the ESA-listed or ESA candidate species, USFS MIS, and BLM and state sensitive species that the Project could impact.

Greater Sage-grouse—Construction of the South Alternative would result in short-term impacts to 3.1 acres of sagebrush habitat as a result of clearing efforts in areas where sagebrush is allowed to grow back. Given the slower growth rates of sagebrush compared to other species, the period for re-establishment would likely be longer (3 to 5 years until reproductive). Long-term (permanent) impacts to approximately 33.2 acres of sagebrush habitat would result from ROW clearing and management, structure placement, and access road development and maintenance. Impacts would not occur within areas defined by BLM as "preliminary general habitat" or "preliminary priority habitat" for the greater sage-grouse (BLM 2011b). Although long-term impacts would reduce the amount of available sagebrush habitat for Greater sage-grouse, sufficient amounts of suitable sagebrush habitat would remain functional at both the local and range-wide scales to maintain the viability of this species. Temporarily elevated construction noise and human activity could cause temporary displacement, which could increase predation as individuals seek alternative habitat. The nearest documented active lek is a little more than 3 miles away from the project corridor. There are three documented historic leks within 1 mile of the South Alternative; however, recent surveys of these leks have shown them to be inactive. While some individual birds may be impacted, the impact to the southeast Idaho population would be ***low*** from the South Alternative.

Columbian Sharp-tailed Grouse—Construction of the South Alternative would result in short-term impacts to 6.9 acres of grassland, 0.6 acre of mountain-shrub, 0.5 acre of aspen, and no acres of wetland habitat. The South Alternative would result in permanent impacts to 7.6 acres of mountain-shrub, 17.8 acres of grassland, 48.4 acres of aspen, and no acres of wetland habitat. Of the potential aspen acres to be affected, a portion is located on drier sites at higher elevations providing less suitable habitat for grouse. Although these long-term impacts would reduce the amount of available habitat for the sharp-tailed grouse, sufficient amounts of suitable habitat would remain functional at both the local and range-wide scales to maintain the viability of this species. Temporary displacement of grouse from noise and human presence during construction could temporarily increase predation as they seek out alternative suitable habitat. While some individual birds may be impacted, the impact to the southeastern Idaho population would be ***low*** from the South Alternative.

Wolverine—Suitable foraging and dispersal habitat exists within the South Alternative corridor. Although project construction and operation would reduce suitability for wolverine foraging and dispersal within and adjacent to the project area, sufficient local and range-wide habitat would remain functional, resulting in ***low*** project-related impacts. Noise and equipment could cause wolverine to avoid the project area during construction. However, because construction activities would not occur during the winter months and would limited during spring months when subadult wolverines could potentially disperse into the project vicinity (Inman et al. 2012), and because no suitable denning habitat has been identified in the area, impacts are not anticipated.

Bald Eagle—The bald eagle has been documented in the general area of the South Alternative corridor. Noise during project construction could disturb or displace nesting or roosting bald eagles temporarily, but no nests have been documented within 1 mile of the South Alternative corridor. A nest was documented on private lands north of Soda Springs, about 1.5 miles southeast of the southern end of the South Alternative. The nest would be within Zone III under the Bald Eagle Management Plan for the Greater Yellowstone Area (Greater Yellowstone Bald Eagle Working Team 1983). Zone III includes all potential foraging habitat within a 2.5 mile radius of the nest, and calls for all utility lines in this zone to be limited and restricted to locations where the potential for eagle collisions is minimal. The primary focus of this management zone is to maintain adequate foraging conditions and aid in maintaining the integrity of Zones I and II. As discussed above, the South Alternative would not pose an electrocution risk to bald eagles, bisect a nest from any prime foraging habitat, or cross any prime foraging habitat. The avian collision risk model discussed above found the area within 2.5 miles of the bald eagle nest to have relatively low collision risk.

Similar to the North Alternative, foraging habitat would not be directly impacted by forest clearing, and incidental mortality would be unlikely because most bald eagles would avoid the construction area. Removal of forested vegetation could remove potentially suitable nesting or perching trees, but would not directly impact foraging habitat. Even though some potential bald eagle habitat may be impacted through forest clearing, sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species. Therefore, impacts from the South Alternative on bald eagles would be ***low***.

Operation and maintenance activities under the South Alternative would be the same as those described for the North Alternative. Because routine maintenance could result in temporary displacement of wildlife, project operation and maintenance would have a ***low*** impact to wildlife.

South Alternative Route Options

Option 1

Option 1 could impact slightly more wildlife habitat than the South Alternative, because the option would cross approximately 8.5 additional acres of habitat. Impacts to aspen, conifer, and mountain shrub habitat would be about the same as the South Alternative (***moderate*** to ***high***). Option 1 would impact about 14 fewer acres of sagebrush habitat than the South Alternative). The slightly different crossing location of the Blackfoot River would result in similar ***moderate*** impacts to those described for the South Alternative. Overall, impacts from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative (***low*** to ***moderate***).

Option 2

Option 2 could impact slightly more wildlife habitat than the South Alternative, because the option would cross approximately 4 acres more of habitat. Impacts to aspen, grass-dominated, and mountain shrub-dominated habitat would be the same as the South Alternative (***moderate*** to

high). Impacts to sagebrush-dominated habitat would be slightly greater under this route option than under the South Alternative. The location of the Blackfoot River Narrows crossing would result in impacts similar to those described for the South Alternative (***moderate***). Overall, impacts from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative (***low*** to ***moderate***).

Option 3

Option 3 would cross approximately 79 fewer acres of wildlife habitat than the South Alternative, which could impact less wildlife habitat. More basalt outcrops with native vegetation would be crossed, which could affect some species of wildlife. Option 3 travels north from the Hooper Springs Substation site through agricultural lands and avoids several sagebrush areas, which could result in fewer impacts to sagebrush-dominated habitat. In addition, about 31 fewer acres of aspen-dominated habitat and 12 fewer acres of conifer-dominated habitat would be impacted under Option 3 (along the base of treed slopes at the entrance of the C-TNF). Impacts would be ***low*** to ***moderate***, similar to the South Alternative. The location of the Blackfoot River Narrows crossing would result in impacts similar to the South Alternative (***moderate***). Overall, impacts from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative (***low*** to ***moderate***).

Option 3A

Option 3A would cross approximately 16 fewer acres of wildlife habitat than the South Alternative. Approximately 46.2 acres of wildlife habitat associated with aspen-dominated forest and 12.2 acres of habitat associated with conifer-dominated forest would be cleared during construction for the ROW. Similar to the South Alternative, impacts would be ***moderate*** to ***high***. The majority of the tree removal would occur on the C-TNF and the Blackfoot River WMA, although some tree removal would also occur on BLM and private parcels. Tree removal for Option 3A would include approximately 11 acres of aspen forest within the Blackfoot River WMA. Although the amount of habitat lost as a result of the construction of Option 3A would be relatively low compared to overall available habitat acreage in the project area, the impact to wildlife habitat within the corridor would be ***moderate*** to ***high*** especially on the WMA.

Approximately 45.5 acres of aspen-dominated forest and 11.6 acres of conifer-dominated forest would be permanently lost due to construction of new permanent access roads and structure footings. Similar to the South Alternative, the remaining 0.7 acre of aspen-dominated forest and 0.7 acre of conifer-dominated forest would be converted from forested habitats to low-growing emergent and mountain shrub vegetation in the ROW for Option 3A.

Unlike the South Alternative and other South Alternative route options, Option 3A would directly affect wildlife habitat in the Blackfoot River WMA. The management plan (IDFG 1999) for Blackfoot River WMA states that any manipulation of habitat in the area must be consistent with its mission to: maintain or improve vegetation type diversity for the benefit of wildlife and fish species; enhance cutthroat trout habitat; and provide opportunities for nonconsumptive and consumptive public use that is compatible with maintaining high quality and fish habitat. Option

3A would impact approximately 20 acres of wildlife habitat in the Blackfoot River WMA, including approximately equal parts of aspen and sagebrush habitat. When compared to the 1,720 acre WMA, sufficient amounts of vegetation diversity would remain to serve the mission of the WMA. The proposed ROW is located along the WMA southern border and is more than 0.5 mile from the Blackfoot River. Areas of the WMA consisting of cutthroat trout and high quality fish habitat would not be impacted.

The portion of Option 3A that crosses the southern portion of the Blackfoot River WMA represents suitable habitat for big game including elk and mule deer, and is designated as BLM non-critical big game winter range habitat. Habitat quality is similar to that on forested C-TNF lands to the south of the WMA. Short-term impacts to big game habitat on the WMA associated with Option 3A would include temporary vegetation removal or disturbance in non-forested habitats; however, these areas would be expected to recover quickly. Long-term impacts to big game habitat within the WMA would be associated with tree removal for the construction of access roads and transmission line ROW. Similar to the South and North alternatives, fragmentation of forested habitat would decrease cover for big game during sensitive wintering and calving periods, and would affect movement onto and through portions of the WMA. These impacts would be ***moderate***. Although there is abundant forested habitat on adjacent C-TNF lands, removal of big game habitat within the WMA would affect IDFG's ability to manage the WMA for wildlife. In particular, north–south movement between the C-TNF and the portion of the Blackfoot River that flows through the WMA would be affected. Additionally impacts to big game species could occur if construction or maintenance activities occur during calving or winter use periods; impacts would be ***moderate*** with implementation of timing restrictions (see Section 3.7.4, Mitigation).

As with the North and South Alternatives, an avian collision risk model assessment was conducted for Option 3A. This assessment indicates that there are a number of areas along Option 3A that could present a high collision risk for avian species (see Figure 3-32). It is likely that collision impacts to migratory birds from Option 3A would be similar to those described for the South Alternative, although because Option 3A is approximately 1 mile longer than the South Alternative, there could be more impacts. Therefore it is expected that impacts could be long term and ***moderate***.

Although potential avian collision impacts are moderate, collision risk for Option 3A would be minimized using the same methods described for the South Alternative, including installing visibility enhancement devices in the areas of highest collision risk. The installation of bird flight diverters on overhead ground wires in specific areas would reduce the potential for collisions and the overall risk of avian collisions to a ***low*** level.

Potential impacts to special-status wildlife species and their habitat from Option 3A would include the following:

Greater Sage-grouse—Construction of Option 3A would result in short-term impacts to 0.7 acre of sagebrush habitat and long-term impacts to approximately 30.9 acres of sagebrush habitat. Impacts would not occur within areas defined by USFS and BLM as "preliminary general habitat" or "preliminary priority habitat" for the greater sage-grouse (BLM 2011b). Although long-term impacts would reduce the amount of available sagebrush habitat for greater sage-grouse, sufficient amounts of suitable sagebrush habitat would remain functional at both local and range-wide scales to maintain species viability. Similar to the South Alternative, while some individual birds may be impacted, the impact to the species from Option 3A would be ***low***.

Columbian Sharp-tailed Grouse—Construction of Option 3A would result in short-term impacts to 0.7 acre of grassland, 0.7 acre of mountain-shrub, 0.7 acre of aspen, and no acres of wetland. Option 3A would result in permanent impacts to 14.2 acres of mountain-shrub, 15.2 acres of grassland, 45.5 acres of aspen, and 0.1 acre of wetland habitat. Similar to the impacts described for greater sage-grouse, sufficient amounts of suitable habitat would remain functional at both local and range-wide scales to maintain species viability if Option 3A is constructed. While some individual birds may be impacted, the impact to the species would be ***low***.

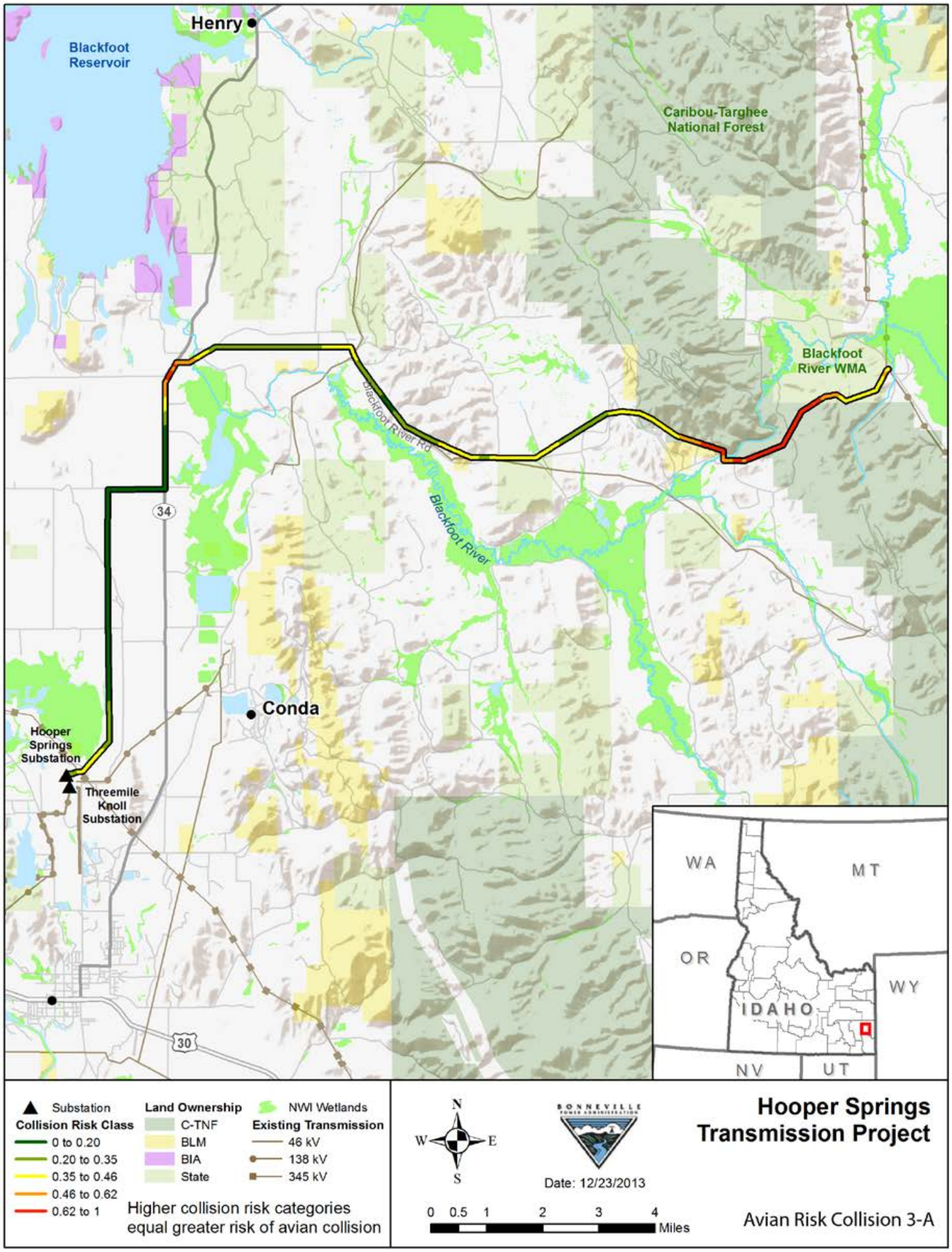
Wolverine—Suitable foraging habitat exists within the Option 3A corridor for wolverine. Although project construction and operation would reduce suitability for wolverine foraging, sufficient habitat would remain functional at both local and range-wide scales, which would result in ***low*** project-related impacts.

Bald Eagle—Noise during project construction could disturb or displace nesting or roosting bald eagles temporarily, but no nests have been documented within 1 mile of the corridor for Option 3A. A nest was documented on private lands north of Soda Springs, about 1.5 miles southeast of the southern end of Option 3A. This location is outside of the 660-foot buffer zone recommended in the National Bald Eagle Management Guidelines (USFWS 2005) for transmission lines. As discussed above, Option 3A would not pose an electrocution risk to bald eagles, bisect a nest from any prime foraging habitat, or cross any prime foraging habitat. The avian collision risk model discussed above found the area within 2.5 miles of the bald eagle nest to have relatively low collision risk.

Option 4

Option 4 would cross approximately 67 fewer acres than the South Alternative, which could impact less wildlife habitat. More basalt outcrops with native vegetation would be crossed, which could affect some species of wildlife, but no priority species are known to occur in this area. Option 4 travels north from the proposed substation through agricultural lands and avoids several sagebrush areas, which could result in fewer impacts to sagebrush-dominated habitat. Option 4 would cross an area in the vicinity of Woodall Springs, which could potentially result in greater impacts to birds and other wildlife utilizing this wetland/wet meadow complex habitat. Overall, impacts from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative (***low*** to ***moderate***).

Figure 3-32. Avian Collision Risk Model for Option 3A



3.7.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate wildlife impacts from the Project.

- Consult with the appropriate state or federal land management agency (C-TNF, BLM, or IDFG) concerning special status species that have already been identified or that may be identified during follow up surveys, and implement any mitigation measures (such as feasible and appropriate avoidance measures) identified as a result of these consultations.
- Minimize ground-disturbing activities, particularly in sensitive habitats.
- Install visibility enhancement devices, in compliance with the most recent APLIC and APP guidance, on the overhead ground wires to reduce the risk of collision in areas that have been determined by the avian risk model to bear a high risk of increased avian collisions (See Appendix H).
- Conduct nesting bird pre-construction surveys prior to tree removal.
- Conduct pre-construction surveys for sage and Columbian sharp-tailed grouse leks in sagebrush habitats.
- Prohibit construction activity within 10 miles of an active greater sage-grouse lek and within 2 miles of active Columbian sharp-tailed grouse leks between the end of March and mid-May, when possible.
- Avoid manipulating or altering sagebrush stands with tall, relatively thick sagebrush that are suitable as grouse nesting habitat during the nesting period (May to June).
- Consult with the C-TNF, BLM, and IDFG regarding construction and access within big game winter range habitat between November 15 and April 15. Within big game winter ranges, seed disturbed areas with preferred big game forage species, as recommended by the C-TNF, BLM, and IDFG.
- Limit construction between Dry Ridge and Upper Valley within the Blackfoot River WMA during the elk and mule deer calving and fawning period and avian breeding and nesting from April 15 to July 1.
- Identify wetlands and other sensitive areas prior to initiating construction so that construction workers avoid unintentional impacts to wildlife habitat.
- Minimize the amount of permanent access roads necessary for the Project to minimize the potential for wildlife collisions.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site (see Section 3.1.4, Land Use).
- Restrict public access to permanent access roads (see Section 3.1.4, Land Use).
- Leave plants shorter than 4 feet undisturbed within the 100-foot-wide ROW where they would not interfere with the safe operation of the transmission line (see Section 3.3.4, Visual Resources).

- Use appropriate seed mixes, application rates, methods, and timing to revegetate disturbed areas (see Section 3.4.4, Vegetation).
- Use BMPs to limit erosion and the spread of invasive and noxious weeds (see Section 3.4.4, Vegetation).
- Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities where possible (see Section 3.4.4, Vegetation).
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Avoid snag and large tree removal to the extent possible (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency (see Section 3.4.4, Vegetation).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Ensure that all equipment has standard sound-control devices (see Section 3.12.4, Noise).
- Conduct noise-generating construction activities only during normal daytime hours, i.e., between 7:00 a.m. and 7:00 p.m. to the extent possible (see Section 3.12.4, Noise).
- Initiate discussions with local fire districts and work with the districts and other appropriate entities to develop fire and emergency response plans (see Section 3.13.4, Public Health and Safety).

3.7.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable wildlife impacts would include short-term wildlife disturbance and individual mortality as a result of construction-related activities. In addition, long-term impacts could include additional disturbances during maintenance activities, potential avian collisions with the transmission lines, and the long-term loss of forested and sagebrush habitats where the ROW would be maintained with only low-growing vegetation. Overall, the unavoidable impacts to wildlife habitat or individuals would not limit or reduce the population viability of any species.

3.7.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to wildlife from the construction, operation, and maintenance of the transmission lines would not occur.

3.8 Fish

3.8.1 Affected Environment

Perennial Streams

Aquatic resources and habitat within the project area are limited to four fish bearing streams: the Blackfoot River, Little Blackfoot River, Meadow Creek, and Gravel Creek (see Section 3.6, Water Resources, Floodplains, and Wetlands for more information on project area streams). East Mill Creek, a perennial stream within the project corridor for the South Alternative and associated route options, is non-fish-bearing. Table 3-22 summarizes the native and non-native fishes known to occur in the four perennial streams.

Table 3-22. Native and Non-Native Fishes in Perennial Streams Identified in the Project Area

Perennial Stream	Native Species	Non-Native Species
Blackfoot River	Mountain whitefish, Yellowstone cutthroat trout, Utah chub, longnose dace, speckled dace, redside shiner, Utah sucker, mountain sucker, Paiute sculpin, and mottled sculpin	Rainbow trout, brook trout, common carp, and yellow perch
Little Blackfoot River	Longnose dace, speckled dace, redside shiner	Rainbow trout, smallmouth bass, largemouth bass
Meadow Creek	Longnose dace, speckled dace, redside shiner	None
Gravel Creek	None	Brook trout
East Mill Creek	None	None

Source: IDFG 2011b, 2011c; C-TNF 2002b

<u>Blackfoot River</u>

The reach of the Blackfoot River in the corridor of the North Alternative (line mile 10) is slow-moving glide habitat and is not high-quality spawning or rearing habitat for Yellowstone cutthroat trout (*Onchorhynchus clarki bouvieri*) (the species of primary management interest in the river), because of the high turbidity, excess depth (greater than 1 foot for spawning), lack of instream structure and cover (for rearing), and unsuitable substrate (based on substrate that was visible). The reach does serve as a migratory corridor for Yellowstone cutthroat traveling from Blackfoot Reservoir to access upstream spawning habitat outside of the project area.

The South Alternative crosses the Blackfoot River between line miles 10 and 11 and again at line mile 19, and closely parallels it between line mile 11 and the connection with the existing LVE transmission line at line mile 22. Habitat where the South Alternative crosses the Blackfoot River is similar to habitat crossed by the North Alternative (primarily a migratory corridor). No spawning habitat exists at the line mile 10 crossing, and the likelihood that spawning habitat exists at the Narrows in line mile 19 is low (Mende 2012, personal communication).

Habitat conditions are generally fair in the upper river basin and tributaries with a few exceptions due to livestock grazing and irrigation diversions. Only 51 percent of the streambanks are considered stable along the Blackfoot River just upstream of Angus Creek. Past research found a high percentage of fine sediment on the streambed surface, low number of riffles, and actively eroding streambanks within this reach. In the upper basin of the Diamond Creek section of state land (just upstream of Kendall Creek), fine sediment represented 34 percent of stream substrate and bank stability was 70 percent. Within this section of the stream, human activity (channel straightening, livestock grazing) has impacted the stream habitat resulting in few undercut banks, shallow pool depth, and a lack of cover (Northwest Power Planning Council 2002).

According to the Idaho fishing regulations, the Blackfoot River upstream of Blackfoot Reservoir is closed to fishing from December 1 through June 30. The river is open to trout fishing from July 1 to November 30, but no harvest of cutthroat trout is allowed.

Little Blackfoot River

The Little Blackfoot River is located between the Blackfoot River and Meadow Creek and shares similar native and non-native fish species (Table 3-22). The North Alternative corridor crosses the Little Blackfoot River between line miles 16 and 17. The South Alternative does not cross this river. Similar to the Blackfoot River, the Little Blackfoot River also does not provide high-quality spawning or rearing habitat for Yellowstone cutthroat trout in the corridor of the North Alternative (line mile 17). Similar to the Blackfoot River, fish also likely use the river as a migratory corridor to upstream spawning areas. In addition, the river is also open for trout fishing, but no harvest of cutthroat is allowed.

Meadow Creek

Meadow Creek is a tributary to the Blackfoot Reservoir that originates west of Grays Lake National Wildlife Refuge. The corridor for the North Alternative crosses Meadow Creek where a bridge provides access across. The Meadow Creek Bridge is located on BIA land, upstream of the North Reservoir Road Bridge (line mile 18). There is no riparian vegetation at the Meadow Creek crossing and this reach is not high-quality spawning or rearing habitat for Yellowstone cutthroat trout or other salmonids, because of the excess depth, limited instream structure and cover, and low-suitability substrate. Meadow Creek is not considered a stream of management interest by IDFG. Primary species reported in the creek include minnows and dace. The South Alternative does not cross Meadow Creek.

Gravel Creek

Gravel Creek is a low-gradient, meandering channel where the corridor for the North Alternative crosses at line mile 26. The riparian overstory is willow and the understory appears to be primarily irrigated pasture. Based on site observations, the substrate ranges from silt to gravel. A portion of the Gravel Creek flow is diverted to an irrigation ditch (which crosses the existing Gravel Creek Road/Forest Road 191) on private land. The South Alternative does not cross Gravel Creek.

In 2002, the fish collected in Gravel Creek were all non-native brook trout (USFS 2002), although all tributaries to Grays Lake and Willow Creek (which includes Gravel Creek) have coldwater management objectives to restore native cutthroat trout.

Fish Species

Common Fish Species

Native fish species found within the project area include mountain whitefish (*Prosopium williamsoni*), Yellowstone cutthroat trout, Utah chub (*Gila atraria*), longnose dace (*Rhinichthys cataractae*), speckled dace (*Rhinichthys osculus*), redside shiner (*Richardsonius balteatus*), Utah sucker (*Catostomus ardens*), mountain sucker (*Catostomus platyrhynchus*), Paiute sculpin (*Cottus beldingii*), mottled sculpin (*Cottus bairdi*), bluehead sucker (*Catostomus discobolus*), and leatherside chub (*Lepedomeda copei*). Non-native fish species include rainbow trout (*O. mykiss*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), black bullhead (*Ictalurus melas*), fathead minnow (*Pimephales promelas*), common carp (*Cyprinus carpio*), and yellow perch (IDFG 2011f, 2011g; C-TNF 2002b) (see Table 3-22).

Special Status Fish Species

There are no ESA listed or candidate fish, or USFS MIS fish in the alternative corridors. There are two species of special concern in the project area: Yellowstone cutthroat trout and northern leatherside chub (*Lepidomeda copei*), described below.

- Yellowstone cutthroat trout is a USFS Region 4 sensitive species, and a BLM and IDFG Type 2 species (IDFG 2011g). Yellowstone cutthroat trout is a subspecies of cutthroat trout and historically occurred in the Yellowstone River drainage in Montana and Wyoming and in the Snake River drainage in Wyoming, Idaho, Utah, Nevada, and probably Washington. Anthropogenic activities have resulted in substantial reductions in the historical distribution of this subspecies, and many unique local populations have been extirpated. Similar to other salmonids, the species requires clear, cold rivers and lakes with good water quality, with optimal water temperatures ranging from 4 to 15 degrees Celsius (°C), although it may tolerate temperatures up to 27°C.
- Northern leatherside chub is also a USFS Region 4 sensitive species, a BLM Type 3 imperiled species and an IDFG imperiled (S2) non-game species and may occur in southeastern Idaho (IDFG 2005, Nico and Fuller 2012), but has not been documented in the North or South alternative corridors. The historic range of the northern leatherside chub included headwater tributaries of the Bonneville Basin in Utah, Idaho, and Wyoming, and the headwaters of the Snake River Basin in Idaho. Recent data indicate that the species still occurs in the upper Salt River tributaries. The species occurs primarily in high-altitude streams (4,100 to 9,000 feet in elevation)

with an optimal water temperature range of 15 to 20°C, and optimal habitat with relatively slow water velocities (less than 2 feet per second), intermediate water depths (1 to 3 feet), and a substrate of course fines. The species is believed to be in decline, although limited information is available.

Alternative Route Options

North Alternative Route Options

Long Valley Road Option—The Long Valley Road Option crosses the Little Blackfoot River about 830 feet upstream of the North Alternative crossing location. Similar fish and aquatic habitat are present.

North Highland Option—The North Highland Option does not cross aquatic resources or fish habitat.

South Alternative Route Options

Option 1—Option 1 crosses the Blackfoot River approximately 1,200 feet upstream of the South Alternative crossing at the Narrows. All remaining Option 1 stream crossing locations are the same as the South Alternative. Similar aquatic resources and fish habitat are present.

Option 2—Option 2 crosses the Blackfoot River approximately 1,400 feet upstream of the South Alternative crossing of the Narrows. All remaining Option 2 stream crossing locations are the same as the South Alternative. Similar aquatic resources and fish habitat are present.

Option 3—Option 3 crosses the Blackfoot River where it flows under Blackfoot River Road, just east of the intersection with Highway 34. It crosses the Blackfoot River a second time near the Blackfoot River Narrows, approximately 1,200 feet downstream of the crossing of the South Alternative. Option 3 also crosses East Mill Creek in the same location as the South Alternative. Similar aquatic resources and fish habitat are present.

Option 3A—Option 3A crosses the Blackfoot River at approximately line mile 10 where the river flows under Blackfoot River Road, just east of the intersection with Highway 34. It also crosses the Blackfoot River at the Blackfoot River Narrows at approximately line mile 19.

Option 4—Option 4 crosses a wetland complex and open waterbodies associated with Woodall Springs, which contain habitat for fish and other aquatic wildlife. All remaining Option 4 stream crossing locations are the same as the South Alternative, with similar aquatic resources and fish habitat.

3.8.2 Environmental Consequences of the North Alternative

Construction of the North Alternative could impact fish and their habitat if sediment is introduced into waterbodies through soil erosion and transport. Although no work would occur in fish-bearing streams, construction activities, including vegetation clearing in the proposed ROW, and access road construction and improvement could remove vegetation allowing sedimentation and water temperatures to increase. Riparian vegetation, water temperature, and instream sediment influence fish spawning incubation success, rearing habitat quantity and quality, and macro invertebrate production (Bjornn et al. 1998, Bjornn and Reiser 1991). Loss of channel stability and riparian vegetation results in increased bank erosion and sediment delivery, shallower depth, decreased cover, and increased water temperature. During construction, stormwater and sedimentation, along with other potential contaminants, would be controlled by implementation of the SWPPP (see Section 3.5, Geology and Soils) and mitigation measures described in Section 3.8.4, Mitigation.

Impacts to fish and fish habitat from operation and maintenance activities could result from increased temporary turbidity from soil disturbance associated with road maintenance or ROW vegetation control. Limited project facilities would be placed near fish-bearing perennial streams; impacts from the North Alternative would be short term and ***low***.

Blackfoot River

The North Alternative would cross the Blackfoot River in one location where there is a population of Yellowstone cutthroat trout. Since riparian vegetation in the corridor of the North Alternative crossing is willow, clearing would not be required for the transmission line ROW. Additionally because no road work would occur at this crossing, there would be ***no*** impact to fish or fish habitat in the Blackfoot River.

Little Blackfoot River

The North Alternative would cross the Little Blackfoot River in one location. Similar to the Blackfoot River crossing, because vegetation clearing and instream work are not required, there would be ***no*** impact to fish or fish habitat in the Little Blackfoot River.

Meadow Creek

The North Alternative ROW would cross Meadow Creek in one location. ***No*** impact would occur to fish or fish habitat at the ROW crossing because no construction activities or riparian clearing would occur in this area.

Gravel Creek

The North Alternative would cross Gravel Creek in one location. Similar to the Blackfoot River and Little Blackfoot crossings, because vegetation clearing is not required, there would be ***no*** impact to fish or fish habitat in Gravel Creek.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would result in similar impacts to fish and fish habitat as those described for the North Alternative (***none*** to ***low***).

North Highland Option

The North Highland Option would not cross aquatic resources or fish habitat. Therefore, the North Highland Option would have ***no*** impact to fish or fish habitat.

3.8.3 Environmental Consequences of the South Alternative

Similar to the North Alternative, no work would occur in fish-bearings streams for the South Alternative. However, construction of the South Alternative could impact fish and their habitat if sediment is introduced into waterbodies through soil erosion and transport. Construction activities that remove vegetation would cause sedimentation and possible water temperature increases. Similar to the North Alternative, stormwater and sedimentation, along with other potential contaminants, would be controlled by implementation of the SWPPP during construction (see Section 3.5, Geology and Soils).

Impacts to fish and fish habitat from operation and maintenance activities could result from road maintenance or ROW vegetation control. Limited project facilities would be placed near fish-bearing perennial streams; impacts from the South Alternative would be short term and ***low***.

Blackfoot River

The South Alternative would span the Blackfoot River in two locations and span 14 intermittent tributaries and ephemeral drainages that convey water to the Blackfoot River. No work to construct the transmission line would occur within actively flowing channels. The construction of new access roads and new transmission structures would have the potential to temporarily increase sediment loading and temperature in the Blackfoot River and its tributaries. Removal of vegetation from riparian corridors, coupled with sediment delivery from ditches and road surfaces during construction activities, could affect aquatic resources and fish habitat. Sediment traps, water barring, and other proven BMPs would be implemented to prevent the flow of loose sediment into the streams and waterbodies (see Section 3.8.4, Mitigation). Due to the short duration of construction activities and the use of BMPs, impacts to fish and fish habitat are expected to be short term and ***low***.

South Alternative Route Options

Options 1, 2, 3 and 3A

Options 1, 2, and 3 would result in the same short-term, ***low*** impacts to fish and fish habitat as those described for the South Alternative’s crossing of the Blackfoot River and its tributaries.

Option 3A would span the Blackfoot River in two locations and span 21 intermittent tributaries and ephemeral drainages that convey water to the Blackfoot River. Within the Blackfoot River WMA, at its closest, the proposed transmission line would be approximately 0.5 mile from the Blackfoot River. No work to construct, operate, or maintain the proposed transmission line would occur within actively flowing channels on or off the Blackfoot WMA. Due to the short duration of construction activities and the use of BMPs, impacts to fish and fish habitat from Option 3A are expected to be short term and ***low***.

Option 4

Construction of Option 4 through the wetland complex and open waterbodies associated with Woodall Springs would cause impacts to fish and fish habitat. Construction of temporary access roads, transmission structures, and construction vehicle use would increase sediment loading, turbidity, and temperature in the Woodall Springs wetland complex, which drains to the fish-bearing Blackfoot River. Short-term impacts during construction would be ***moderate*** to ***high*** with the use of erosion control measures, appropriate time for in-water work, and other proven BMPs. Long-term impacts from the removal of fish habitat, and operation and maintenance of the line, would be ***moderate***.

3.8.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate fish and aquatic habitat impacts from the Project.

- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Retain existing low-growing vegetation where possible (see Section 3.4.4, Vegetation).
- Use erosion control BMPs and leave erosion and sediment control devices in place until disturbed sites are stabilized and erosion potential has returned to pre-project conditions (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency (see Section 3.4.4, Vegetation).
- Develop and implement a SWPPP (see Section 3.5.4, Geology and Soils).
- Design temporary and permanent access roads to control runoff and prevent erosion, and surface permanent roads with rock (see Section 3.5.4, Geology and Soils).
- Install sediment barriers and other suitable erosion and runoff control devices (see Section 3.5.4, Geology and Soils).
- Maintain erosion controls near waterbodies (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Minimize the number of access road stream crossings (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Minimize the ground-disturbance footprint of the Project, particularly in sensitive areas such as stream crossings and wetlands, and stream and wetland buffers and AIZs.
- Cease project construction near stream courses under high flow conditions (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).

- Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Consult with the appropriate state or federal land management agency (C-TNF, BLM, or IDFG) concerning any special status species (see Section 3.7.4, Wildlife).
- Limit road improvement disturbance width to the minimum amount necessary (see Section 3.11.4, Transportation).
- Improve existing roads on BLM, BIA, and C-TNF lands according to applicable agency standards (see Section 3.11.4, Transportation).
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).

3.8.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts to fish and their habitat from sedimentation or turbidity during construction of the South and North alternatives and route options (except for Option 4) would be limited because no work is proposed in fish bearing waters, and fish habitat would not be directly affected. Impacts associated with temporary soil disturbance during construction would be short term, and would result in only minor potential for effects. Long-term impacts from Option 4 could include disturbance or permanent removal of fish habitat.

3.8.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to fish and fish habitat from the construction, operation, and maintenance of the transmission lines would not occur.

3.9 Cultural Resources

Cultural Resources are those physical remains, objects, places, historic records, and traditional cultural practices or beliefs that connect people to their past. Historic properties, a subset of cultural resources, consist of any district, site, building, structure, artifact, or object, included in, or eligible for inclusion in, the National Register of Historic Place (NRHP). Historic properties include "prehistoric" resources that pre-date European settlement. Several investigations were conducted to determine the existence of cultural resources in the project area. See Chapter 4, Consultation, Review, and Permit Requirements, for a list of the various laws and regulations applicable to cultural resources.

Cultural resources are eligible for inclusion on the NRHP when they are determined to be significant, that is, when they meet at least one of four criteria listed in 36 C.F.R. 60, and when they retain sufficient integrity to convey the significance. The four NRHP criteria can be summarized as:

- Criterion A - association with events that made a contribution to the broad patterns of history;
- Criterion B - association with the lives of significant people;
- Criterion C - embody distinctive construction characteristics, represent the work of a master, or possess high artistic value; and
- Criterion D - has yielded or has the potential to yield additional information important to prehistory or history.

A historic property is considered to have integrity if it possesses several or more of the following aspects: location, design, setting, materials, workmanship, feeling, and association. Decision on the eligibility of historic properties for the NRHP is a decision reached by the lead federal agency in consultation with the Idaho State Historic Preservation Office (SHPO), and consulting parties.

3.9.1 Affected Environment

Prehistoric and Historic Context

Southeastern Idaho has been populated by various cultural groups for at least the past 12,500 years. The earliest excavated archaeological sites were primarily rockshelters and caves. The focus on highly stratified deposits in caves was primarily designed to ascertain the antiquity of Native American groups in Idaho, the antiquity of the Northern Shoshone in the region, and to explore the associations between the cultural groups of the Snake River Plain and the surrounding cultural areas, which include the Great Basin to the south, the Plains to the east, and the Plateau to the west. Historical data demonstrate continuous use of the area surrounding the project area from the time of the first Euro-American exploration through the present (Ahlman and Falkner 2011, CH2M Hill 2009). Human occupation in southeastern Idaho can be broken down into four geographically and temporally designated periods (Ahlman and Falkner 2011, CH2M Hill 2009):

- **Paleoindian Period (12,500-8,000 Before Present [B.P.])**—Human groups present in the region during the Paleoindian Period, beginning about 12,500 B.P., included big game hunters referred to as Clovis and Folsom cultures. Their nomadic lifestyle followed the migratory patterns of bison, mammoth, and elk, upon which they relied for food. These nomadic hunters are generally identified through their artifacts, which include the Clovis style spear point. The variety of early projectile point styles at sites in and around the Snake River in southeast Idaho suggests multiple occupations during the Paleoindian Period. Numerous Paleoindian points have been recovered from the Market Lake area located approximately 50 miles northwest of the project area. Paleoindian period artifacts are largely confined to undated surface sites on and near the Snake River Plain.
- **Archaic Period (8,000-1,200 B.P.)**—Due to changing environmental conditions, such as climate and resource availability, large game populations began to decline about 8,000 years ago. During this period, referred to as the Archaic Period, food supplies shifted from large game animals to an increased reliance on fish, mussels, and smaller game, in addition to the gathering of plant resources such as camas, bitterroot, and other natural crops and seeds. Increasing reliance on the gathering of floral resources changed the tool types associated with the people of this period.

  In the Great Basin, the Archaic Period was characterized by a shift from a highly mobile hunter-forager lifestyle to more sedentary living patterns, or at least multiple seasonal occupations of camps or villages, at about 3,800 B.P. Archaic sites exist in the uplands and canyons in what are now parts of the Caribou and Blackfoot ranges. In particular, numerous archaic sites have been recorded in the canyons and arroyos carved by Willow Creek and other drainages near the project area.
- **Late Prehistoric Period (1,300-200 B.P.)**—The late prehistoric period is distinguished by technological advances including pottery and the bow and arrow. The use of the Snake River terraces and nearby uplands by late prehistoric groups appears to be tied to both fishing and seasonal encampments. While numerous cultural groups traveled through or utilized the resources of the Snake River Plain, the Bannock and Shoshone were the principal inhabitants of eastern Idaho during the Late Prehistoric period. Near the project area, excavated sites that contain late Shoshonean components were recorded in 1958 and 1966. These sites include several rock shelters located in Willow Creek Canyon, north and east of the area near the confluence of Willow and Meadow creeks.
- **Historic Period (1800 to present)**—Southeastern Idaho was opportunistically used by trappers and exploration parties in the early 1800s. In 1806, Lewis and Clark’s journals became the first documents describing the inhabitants of the upper Great Basin. By the mid-1840s, emigrants, and, later, gold miners, were passing through the region, most on their way to Oregon and California. The opening of the Oregon Trail in 1842 brought thousands of emigrants through the region and Fort Hall served as a stopping point and river crossing. However, it was not until gold was discovered in Montana that the region attracted many settlers. Between 1840 and 1859, approximately 52,000 emigrants crossed the Oregon Trail bound for Oregon, and nearly five times that number made the trip to California or Utah.

  In 1857, Congress authorized funds to establish additional wagon roads, or cutoffs, along the Oregon Trail system. Frederick W. Lander, working for the Department of the Interior, surveyed and established a cutoff between South Pass and the Snake River country known as the Lander Trail (Hutchison and Jones 1993). The route of the Lander Trail crosses the project corridor. Maps of the trail system provided by Hutchison and Jones (1993) indicate that the portion of the Lander Trail through the project area is a possible route that is no longer visible.

The first permanent settlement, originally called Old Fort and later renamed Franklin, was started in Idaho in early 1860. In 1863, Franklin was included as part of Idaho Territory, much to the disappointment of its citizens who considered themselves Utahans (Crowder 1981). In the following years, Brigham Young encouraged Mormon settlement of Idaho Territory and by 1864, Mormons had settled Montpelier, Idaho, north of Bear Lake. In 1870, Soda Springs was settled as a Mormon community and soon developed into a resort area. In the early 1900s, a phosphate mine in southeast Idaho was located in Georgetown Canyon, just south of the project area, which added diversity to the local economy (Hutchison and Jones 1993). Today, many of the communities in eastern Idaho are predominantly Mormon.

Several railroads were established in Idaho as early as the late 1860s. The Utah & Northern was formed in 1870 and passed through Idaho Falls. Construction of a narrow gauge line began the following year at Brigham City, Utah. The gold boom established a need for goods and services, and towns were established to maintain the rail lines and serve as trade centers for mining districts. By the time the gold mines played out, settlers, including early Mormon pioneers, had already firmly established agriculture and stock raising as the primary industry in eastern Idaho.

An 1867 presidential executive order established the 1.8-million-acre Fort Hall Indian Reservation, and affirmed by the Fort Bridger treaty the following year (Treaty of July 3, 1868, 15 Stat. 673). The reservation was reduced to 1.2 million acres in 1872. In 1877, Chief Joseph and 800 Nez Perce were seeking freedom across the Canadian border while engaged in a running battle with 2,000 U.S. Military 2,000 soldiers. As a result, Bannock Indians were ordered to stay on the reservation at Fort Hall. As the fort was inadequately supplied and the Bannock could not hunt, by spring of 1878, many people were near starvation. The agent at Fort Hall agreed to allow Bannock Indians to go west to Camas Prairie near Fairfield, Idaho, to gather camas. When they arrived, hungry, they found hogs and other livestock eating the camas. A fight followed and two settlers were shot. This action led to a number of skirmishes between white settlers and the Bannock. The short-lived Bannock War would be the last major conflict between native groups and the U.S. Military in Idaho. Due to poor farming production, the Shoshone-Bannock continued to rely on subsistence hunting, fishing, and gathering. The twentieth century started with allotment of reservation lands to the Shoshone-Bannock and sale of some former reservation lands to non-Indians. However, reforms in federal Indian policies led to tribal self-government and self-improvement, and a healthier and more vigorous lifestyle that includes survival of tribal cultural heritage (Crowder 1981, Hutchison and Jones 1993). Idaho was admitted to statehood in 1890.

Ethnography

While numerous cultural groups traveled through or used the resources of the Snake River Plain, the Bannock and Shoshone were the principal inhabitants of eastern Idaho during the Late Prehistoric and Protohistoric periods. The history of the Bannock is not disputed and it is commonly accepted that they are recent arrivals to the region. The Bannock are speakers of Northern Paiute and have their roots in southwestern Idaho and southeastern Oregon. Evidence suggests that the Shoshone are the indigenous occupants of the Great Basin (Falkner 2003, Holmer 1986, 1990, Torgler 1993). Based on excavations at Wah'muza and Dagger Falls, Idaho, Holmer (1986, 1990) believes the Shoshone occupied the Northern Great Basin for the last 3,500 years or longer.

Steward (1938) described the subsistence activities for the Shoshone-Bannock (Sho-Ban) people of Fort Hall, Idaho. The Shoshone at Fort Hall distinguished themselves from the Western Shoshone by having some horses and a high degree of political solidarity. The Shoshone and Bannock wintered together in large groups in the vicinity of Fort Hall. In the spring the people would split into smaller groups of "perhaps six related families" (Steward 1938) and leave the Fort Hall vicinity for various regions depending on needs, prior plans, and commitments. These smaller groups would be led by a respected male elder who was a member of the particular family group. These activities were based on subsistence strategies, to the east (through the project area) for bison, to the south for piñon nuts and berries, and to the west for camas, salmon, and trading. The seasonal round could encompass well over a thousand mile round trip. Generally in the spring, family groups would travel west to the camas prairie south of Fairfield, Idaho. Others would travel south and west down the Snake River for salmon and trading between Twin Falls and Boise, Idaho. In late summer, groups would travel back east for buffalo (bison) hunting. Bison were present in Idaho until about 1840, after which groups had to hunt them in the plains of Wyoming and Montana.

Archival Research and Cultural Resource Surveys

Archival searches through Idaho SHPO records were conducted to identify cultural resource studies conducted in the project area as well as any cultural resources identified by these previous studies. A buffer area of 1 mile to either side of the proposed transmission line centerline, which included the proposed access roads, was used for the archival research. In addition, cultural resource surveys were conducted along the North and South alternatives and options to help identify potential cultural resource sites. For these surveys, the survey area includes a 200-foot wide corridor centered on the centerline of the 115-kV line and 138-kV lines, the proposed Hooper Springs Substation footprint, the connection facility footprint, a 50-foot-wide corridor along access roads, and staging areas for the North and South alternatives and all route options. The following sections describe the results of these archival searches and cultural surveys.

North Alternative

The archival search through the Idaho SHPO records identified 12 previous cultural resource studies conducted since 1990 and 16 cultural resource sites within the 2-mile wide buffer area of the North Alternative corridor. These sites include two historic roads, one historic pond, a historic trash scatter, nine prehistoric lithic scatters (the remains of stone tool manufacture), and three historic structures. All of the prehistoric lithic scatter sites were recorded in the late 1960s and early 1970s, and none have NRHP recommendation information.

One previously recorded archaeological site exists within the North Alternative corridor. This site, the Lander Road, is an emigrant-era trail that was the first emigrant trail segment funded, mapped, and constructed by the U.S. Government. The Lander Road is part of the Oregon and California National Historic Trails, and portions of it are listed in the NRHP. This portion of the road has not been evaluated for inclusion in the NRHP. Maps of the road system provided by Hutchison and Jones (1993) indicate that the portion of the Lander Trail through the North Alternative corridor is a possible route that is no longer visible. Information in the Archaeological Survey of Idaho database suggests the segment of the road crossed by the proposed transmission line has visible tracks, which may make it a NRHP-eligible segment. However, surveys were not conducted in this area because access was not provided by the landowners.

Two historic structures were identified near the North Alternative corridor. These structures are false-front commercial buildings in the town of Henry. Neither of the two structures has been evaluated for potential NRHP status. A third structure, a residential dwelling located approximately 1,500 feet from the North Alternative corridor along Highway 34, has been recommended as not eligible for the NRHP.

Background research also included a review of historic General Land Office plats, which found one historic house and numerous roads and trails in the vicinity of the North Alternative corridor. Four roads, the Caribou Road, the Tin Cup Wagon Road/Road to Soda Springs, and two unnamed roads are likely to be crossed by the proposed North Alternative corridor. One of the unnamed roads is likely the current route for Highway 34.

Cultural resource field surveys of the North Alternative and options' corridors were conducted in June, August, and October 2012 and July 2013. Some portions at the eastern end of the North Alternative corridor have not been surveyed because access to these portions has not been granted to BPA by the landowner. Ten archaeological sites and five archaeological isolate finds were identified during the surveys within the 200-foot wide study area of the North Alternative (see Table 3-23). All of the sites and three of the isolates are historic and the other two isolates are prehistoric. None of the sites are recommended as eligible for the NRHP.

Table 3-23. Cultural Resources along the North Alternative[1]

Site Number	Site Type	Age	NRHP Recommendation
1836-HI-1	Historic artifact scatter	Late 19th to Early 20th Century	Not eligible
1836-HI-2	Historic roadbed	Unknown	Not eligible
1836-HI-3	Historic artifact scatter/Prehistoric Isolate	Early 20th Century/ Unknown	Not eligible
1836-HI-4/ CB-569	Historic Road	Early 20th Century	Not eligible

Site Number	Site Type	Age	NRHP Recommendation
1836-HI-5/ CB-570	Historic Road	Late 19^{th} Century	Not Eligible
1836-HI-6	Historic Dump	Mid-20^{th} Century	Not eligible
1836-HI-7	Historic Dump	Mid-20^{th} Century	Not eligible
1836-HI-8	Historic Dump	Early to Mid-20th Century	Not eligible
1836-HI-9	Historic Scatter and Dump	Late 19th to Mid-20^{th} Century	Not eligible
1836-HI-10i/ CB-571	Arborglyph Isolate	Mid-20^{th} Century	Not eligible
1836-HI-11	Historic Scatter and Dump	Mid-20^{th} Century	Not eligible
1836-PR-1i	Prehistoric isolated artifact	Prehistoric	Not eligible
1836-PR-2i	Prehistoric isolated artifact	Prehistoric	Not eligible
1836-HI-12i	Historic isolated artifact	Historic	Not eligible
1836-HI-13i	Historic isolated artifacts	Historic	Not eligible

[1] No cultural resources were identified along the North Highland Option or the surveyed portion of Long Valley Road Option.

South Alternative

The archival search through the Idaho SHPO for the South Alternative corridor identified 22 previous cultural resource studies conducted since 1990 and 15 cultural resource sites within or near the 2-mile wide buffer area although none are located within the corridor. The sites include eight prehistoric sites, three historic homestead remains, one historic splash dam a historic era-cairn, a historic topographic survey marker, and the historic Slug Creek Road. The eight prehistoric sites are listed as lithic scatters and are primarily concentrated near the Blackfoot River and associated tributaries. Sites 10CU63 and 10CU107 are prehistoric sites that also contain a historic-era component.

Cultural resource field surveys of the 200-foot wide study area of the South Alternative and option's corridors were initially conducted in September 2007 and September 2008. Additional surveys of the corridors were conducted in July and September 2013, and a follow-up survey along two portions of Option 3A is planned for early 2014 on lands where access has recently been granted. Five new historic sites were identified during the 2007 and 2008 surveys (see Table 3-24). Five isolates were noted during those surveys, but not recorded. An additional 14 new historic sites were identified during the 2013 surveys, although these were all within or near the corridors for Options 3, 3A, and part of 4 (nine are the same sites as listed above for the North Alternative). None of the sites are recommended as eligible for the NRHP.

Table 3-24. Cultural Resources along the South Alternative and Options

Site Number	Site Type	Age	NRHP Recommendation
CH-1	Historic Unknown (agricultural or mining)	Unknown	Not eligible
CH-2	Mining	Unknown	Not eligible
CH-3	Agriculture, Settlement	Unknown	Not eligible
CH-4	Historic Farmstead	Unknown	Not eligible
CH-5	Historic Splash Dam	Unknown	Not eligible
1836-HI-1	Historic Debris	Late 19th to Early 20th Century	Not eligible
1836-HI-11	Historic Debris	Unknown	Not eligible
1836-HI-12i	Historic Debris	Early 20th Century/ Unknown	Not eligible
1836-HI-13i	Historic Debris	Early 20th Century	Not eligible
1836-HI-2	Historic Debris	Late 19th Century	Not eligible
1836-HI-6	Historic Debris	Mid-20th Century	Not eligible
1836-HI-7	Historic Debris	Mid-20th Century	Not eligible
1836-HI-8	Historic Debris	Early to Mid-20thCentury	Not eligible
1836-HI-9	Historic Debris	Late 19th to Mid-20th Century	Not eligible
JWM-1	Historic Debris	Mid-20th Century	Not eligible
JWM-5	Historic Debris	Mid-20th Century	Not eligible
JWM-6	Historic Debris	Unknown	Not eligible
JWM-7	Historic Debris	Unknown	Not eligible
JWM-8	Historic Debris	Historic	Not eligible

North Alternative Route Options

Long Valley Road Option—Based on background research, no known cultural resources are located within the Long Valley Road Option corridor. A cultural resource field survey of a portion of this option conducted in July 2013 indicates that no known cultural resources are present. Access has not been provided by the landowner for the remaining portion of the Long Valley Road Option.

North Highland Option—Based on background research, no known cultural resources are located within the North Highland Option corridor. A cultural resource field survey of the North Highland Option conducted in July 2013 indicates that no known cultural resources are present.

South Alternative Route Options

Options 1, 2, and part of 4—Based on background research, the same 15 cultural resource sites identified within the 2-mile wide buffer for the South Alternative corridor are also within the 2-mile wide buffer of Options 1, 2, and the portion of 4 from Conda east. None are within these route option corridors. Similar to the South Alternative, cultural resource field surveys of Options 1, 2, and a portion of 4 conducted in September 2007 and September 2008 indicate five historic sites are present within or near the corridors (see Table 3-24).

Options 3 and 3A—Along the southwest portions of Options 3 and 3A, previously recorded sites are the same as those along the North Alternative. Historic sites identified during cultural resource field surveys for the southwest portions of Options 3 and 3A include those described for the North Alternative (see Table 3-24). No cultural resources sites were identified east of line mile 10 for Options 3 or 3A.

3.9.2 Environmental Consequences of the North Alternative

Construction of structures, counterpoise installation, placement of pulling and tensioning sites, and access road construction, reconstruction and improvement can damage or destroy cultural resources. Visual elements that alter the character or setting of cultural resource sites are forms of disturbance, as are direct physical impacts to site integrity. Increased access to cultural resources due to project construction, operation, and maintenance can increase vandalism and looting.

BPA evaluates cultural resource sites under the National Historic Preservation Act (NHPA) to determine if project components would impact them. BPA also attempts to avoid known sites whenever possible and uses trained cultural resource monitors on large-scale projects to ensure unidentified sites are not inadvertently impacted. Sites have been and would continue to be identified by using a variety of methods. Archaeological sites would be delineated both by surface observations and subsurface testing before construction to avoid physically impacting sites during construction. Appropriate mitigation procedures would be in place to stop construction activities and determine protective measures (e.g., avoidance) if artifacts are found (see Section 3.9.4, Mitigation). Impacts should not occur to unknown sites with these procedures in place.

The nine prehistoric lithic scatter sites, one historic trash scatter, and one historic pond identified during previous cultural resource surveys are all outside of the North Alternative corridor so ***no*** impact to these cultural resources would occur.

Where possible, BPA has sited transmission structures and access roads to avoid known cultural resource sites. The Project would avoid the three historic structures identified in the town of Henry near the North Alternative corridor; therefore, ***no*** direct impacts to these cultural resources would occur. However, depending on the placement of the North Alternative within the Henry area, the transmission line would potentially have a ***low*** to ***moderate*** impact to the viewshed of these structures.

No impact would occur to the two prehistoric isolated artifact sites because they are located outside of the North Alternative corridor.

Impacts to the Lander Road viewshed and direct impacts to the physical road bed where it crosses the North Alternative corridor are unknown at this time. Maps of the historic road system indicate that the portion of the Lander Trail through the North Alternative corridor is no longer visible while other data suggests the segment of the road has visible tracks, which may make it a NRHP-eligible segment. As discussed above, surveys were not conducted in this area because access was not provided by the landowners.

Four other roads, the Caribou Road, the Tin Cup Wagon Road/Road to Soda Springs, and two unnamed roads may be in the area crossed by the proposed North Alternative corridor. As discussed above, depending on the placement of the North Alternative in the vicinity of these roads, the transmission line would potentially have a ***low*** to ***moderate*** impact to the viewshed of these roads. It is unknown whether there would be direct impacts to the physical road beds; one of the unnamed roads is likely the current route for Highway 34 which has been paved and two are outside of the North Alternative ROW.

Of the six historic isolated artifact and scatter sites identified during 2013 surveys, two are located outside of the North Alternative corridor, two are located just outside the proposed disturbance areas for an access road and a structure, and two are located at the edge of proposed access roads. The two sites located at the edge of the access roads could be disturbed during construction, although one consists of a single fragment, while the other site has been used for target practice. Given that both sites appear to have been disturbed, impacts to these cultural resources from the North Alternative would be ***low***. There would be ***no*** impact to the four remaining historic isolated artifact and scatter sites because they would not be disturbed during or after construction of the North Alternative.

Five historic debris/dumps were identified during the 2013 surveys. Three of these sites are located near proposed structures and an access road, although they are within basalt crevices and unlikely to be directly impacted. Impacts to these sites would be ***low*** if construction disturbance crosses over into the basalt crevices. The two remaining sites are within the proposed North Alternative ROW; however, impacts to these sites would be ***low*** because the quality of information that could be gathered to connect people to their past would be low.

The impact to an isolated arborglyph (tree carving) located at northern edge of the North Alternative ROW would be ***high*** if ROW or danger tree clearing occurs in this area. The isolate does not appear to be associated with events that made a contribution to history.

Operation and maintenance of the transmission lines and substations would not directly affect cultural resources as the area will have been surveyed before project construction and any impacts to the sites will have been previously determined and mitigated if needed. Maintenance of structures or access roads would not affect known resources. If any maintenance activities need to occur outside of structure locations or off access roads, a survey of these areas would be conducted to avoid disturbing cultural resources.

North Alternative Route Options

Long Valley Road Option

No known cultural resources are present along the portion of the Long Valley Road Option surveyed. If surveys of the remaining portions of the Long Valley Road Option identify cultural resources, BPA would consult with the SHPO and the landowner.

North Highland Option

No known cultural resources are present along the North Highland Road Option.

3.9.3 Environmental Consequences of the South Alternative

Similar to the North Alternative, construction of structures and access roads and installation of counterpoise and pulling and tensioning sites for the South Alternative could disturb unknown cultural sites. Increased access to these cultural resources increases the opportunity for vandalism and looting of cultural sites. Like siting of the North Alternative, BPA attempts to avoid known sites whenever possible and uses trained cultural resource monitors on large-scale projects to ensure unidentified sites are not inadvertently impacted. Appropriate mitigation procedures would be in place to stop construction activities and determine protective measures if site are identified (see Section 3.9.4, Mitigation).

One historic debris site, one historic agricultural or mining site, one historic farmstead, and one historic splash dam were identified during the 2013 surveys of the South Alternative corridor. The historic debris site is located on the South Alternative ROW; however, impacts to this site would be ***low*** because the quality of information that could be gathered from the site to connect people to their past would be low. The historic agricultural or mining site (a concrete building foundation) would not be disturbed because a structure or road would not constructed over the site; ***no*** impact would occur. The historic farmstead would be disturbed during construction of the South Alternative; however, the impact to this cultural resource would be ***low*** because the farmstead lacks the quantity of outbuildings and strong association with the landscape elements that are typically affiliated with farmsteads. There would be ***no*** impact to the historic splash dam because no structures along the South Alternative would be placed in East Mill Creek.

Like the North Alternative, operation and maintenance of the South Alternative would not directly affect cultural resources as the area will have been surveyed before project construction and any impacts to the sites will have been previously determined and mitigated if needed. If maintenance activities are required outside of structure locations or off access roads, a cultural survey of these areas would be conducted to avoid disturbing cultural resources.

South Alternative Route Options

Options 1, 2 and 4

Options 1, 2, and the portion of 4 east of Conda would have the same impacts to cultural resources as those described for the South Alternative because they would cross the same sites (***none*** to ***low***). One agricultural/settlement site and one area of industrial/mining-related buildings also were identified during the 2013 surveys of the Option 1 within the Conda area. The agricultural/settlement site would likely be disturbed during construction of Option 1 although similar to the historic farmstead discussed above, the impact would be ***low*** because the site lacks the quantity of outbuildings and strong association with the landscape elements that are typically affiliated with these types of sites. Option 1 would cross through and potentially disturb the industrial mining site; however, impacts would be ***low*** to this cultural resource because the site has partially demolished and the remaining few buildings are used for purposes other than their original intended use.

Options 3, 3A, and 4

The southwest portions of Options 3, 3A, and 4 (west of Conda) parallel to Highway 34, would have the same impacts to cultural resources as those described for the southwest portion of the North Alternative because they would cross the same sites (***none*** to ***low***). Two additional historic debris/dumps were identified during the 2013 surveys along Options 3 and 4. Impacts to these sites would be ***low*** because the quality of information that could be gathered from the sites to connect people to their past would be low. No sites were identified along the eastern portions of Options 3 or 3A.

3.9.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate adverse impacts on cultural resources from the Project.

- Site transmission structures and access roads to avoid known cultural resource sites and limit ground disturbance.
- Complete cultural resource surveys for portions of the alternatives or route options if BPA decides to construct a route for which cultural resource surveys have not been conducted along the entire route. Consult with Idaho SHPO concerning appropriate actions prior to any ground-disturbing activities.
- Prepare an Inadvertent Discovery Plan that details crew member responsibilities for reporting if cultural resources are encountered during construction. This plan should include directives to stop work immediately and notify interested parties including appropriate BPA personnel; affected tribes, C-TNF, BIA, BLM, and USFS staff (if appropriate); the Idaho SHPO, and local law enforcement officials (if appropriate).
- Prepare a mitigation plan to protect sites if final placement of project facilities results in unavoidable adverse impacts to a significant cultural resource.

- Provide cultural resource monitors, as necessary, to observe ground-disturbing activities in areas of previously documented cultural sites.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation sites (see Section 3.1.4, Land Use).

3.9.5 Unavoidable Impacts Remaining after Mitigation

With appropriate procedures in place to determine protective measures (e.g., avoidance) and stopping construction activities if previously unknown cultural resources are located, it is expected that there would be few impacts to cultural resources. There remains, however, the potential for BPA to unavoidably disturb previously unknown cultural resources. Continuing consultation and follow-up cultural resources field studies would help identify resources and minimize potential impacts.

3.9.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to cultural resources from the construction, operation, and maintenance of the transmission lines would not occur.

3.10 Socioeconomics

3.10.1 Affected Environment

All alternatives of the proposed project are located in Caribou County, Idaho and therefore it serves as the primary area for the socioeconomic analysis. However information about Bannock County is also included for those socioeconomic indicators where the Project's impact could extend beyond Caribou County.

The city of Soda Springs, the county seat of Caribou County, is the closest major community to the North and South alternative corridors. The Hooper Springs Substation site is approximately 5 miles north of Soda Springs. Other communities in close proximity to the alternative corridors include Henry, Conda, and Wayan. Communities further from Soda Springs and the alternative corridors, but still within the general project area, include Grace (11 miles from Soda Springs), Bancroft (16 miles from Soda Springs), Lava Hot Springs (22 miles from Soda Springs), and Pocatello, the county seat of Bannock County (57 miles from Soda Springs).

Demographic and Economic Characteristics

Population

The total population of Caribou and Bannock counties for 2010 was 89,802, with a majority (92 percent) of the population located in Bannock County. In 2010, Caribou County had a population of 6,963 and Bannock County had a population of 82,839. Between 2000 and 2010, Caribou County had a decrease in population of 5 percent, while Bannock County's population increased by 10 percent over the same time period. These two counties are sparsely populated with a majority (65 percent) of Bannock County's population residing in the Pocatello census collection district and a majority (56 percent) of the population in Caribou County residing in the Soda Springs census collection district. Table 3-25 summarizes the population figures and trends for Caribou and Bannock counties.

In 2010, Caribou County's population density was 3.9 people per square mile, while Bannock County had a population density of 67.9 people per square mile. In comparison, Ada County, which holds the state capital, had a population density of 372 people per square mile (U.S. Census Bureau 2011a; NetState 2011).

Hotels and Rentals

Approximately seven hotels and four RV parks are located in or around Soda Springs (Webster 2011, Wadman 2011, and Chamberlain 2011, personal communications). Hotel and RV park availability in the area is low during the summer, which is the peak season for construction and mining workers using the area hotels (Webster 2011, personal communication). Additionally, Grace has at least two motels and Lava Hot Springs has one RV park and at least six hotels. The city of Pocatello has numerous RV parks and hotels.

Table 3-25. Idaho, Bannock County, and Caribou County Population Trends

Geography	1990	2000	2010	1990 to 2000 Absolute Change	1990 to 2000 Percent Change	2000 to 2010 Absolute Change	2000 to 2010 Percent Change
Idaho	1,006,749	1,293,953	1,567,582	287,204	29%	273,629	21%
Bannock County	66,026	75,565	82,839	9,539	14%	7,274	10%
Pocatello CCD	46,080	64,766	71,772	18,686	41%	7,006	11%
Caribou County	6,963	7,304	6,963	341	5%	−341	−5%
Soda Springs CCD	3,111	4,176	3,907	1,065	34%	−269	−6%
Wayan CCD	265	284	238	19	7%	−46	−16%
Bannock and Caribou counties	72,989	82,869	89,802	9,880	14%	6,933	8%

Source: U.S. Census Bureau 2011a, 2011b, 2011c

CCD = Census Collection District.

A census collection district is a subdivision of the county and includes population data from the town or city under which it is named as well as the surrounding lands.

Labor Force and Unemployment

In 2012, the total labor force (including unemployed) in the two-county area was 44,189, with an unemployment rate of 6.9 percent (see Table 3-26). Unemployment rates in the two-county area are slightly lower than the 2010 Idaho unemployment rate of 7.1 percent. Much of Bannock County's workforce resides in Pocatello. The city of Pocatello had a slightly lower unemployment rate at 6.9 percent in 2012, up from 4.2 percent in 2008.

Table 3-26. Labor Force and Unemployment

Geographic Area	2012 Labor Force: Labor Force	2012 Labor Force: Employed	2012 Labor Force: Unemployed	Unemployment Rate: 2008 Annual	Unemployment Rate: 2012 Annual
Idaho	773,310	718,683	54,627	4.7%	7.1%
Bannock County	40,171	37,359	2,812	4.4%	7.0%
Pocatello	27,419	25,527	1,892	4.2%	6.9%
Caribou County	4,018	3,785	233	5.8%	5.8%
Soda Springs	N/A	N/A	N/A	N/A	N/A

Source: Bureau of Labor Statistics 2013

N/A = not available

Employment by Industry

In 2011, employment in federal, state, and local government; retail trade; farming and ranching related sectors; mining; and healthcare accounted for a majority of employment in Bannock and Caribou counties. However, some industry employment data is not available due to the proprietary nature of the information.

The construction industry in Bannock County accounted for 5.8 percent of total employment, or 2,533 jobs, in 2011. Caribou County's construction industry employment numbers for 2011 were not available due to issues with the disclosure of confidential information. However, in 2006 this industry had a workforce of 349, representing 7.3 percent of the county's total workforce (Bureau of Economic Analysis 2011, 2013). Bannock and Caribou counties had an estimated combined 864 construction workers that were unemployed in 2011 (Cravens 2011, personal communication). In southeastern Idaho, employment in the construction industry as a percentage of total employment is projected to decline only slightly (a 0.2 percent decrease), between 2010 and 2020 (Idaho Department of Labor 2011a) while the occupation of electrical power-line installers and repairers is expected to increase slightly from 93 jobs in 2010 to 107 jobs in 2020 (Idaho Department of Labor 2011b).

Property and Resource Values

Agricultural (cultivated and grazing) and forested lands (primarily on the C-TNF) comprise the majority of Caribou County. However, a number of areas are also important to the mining industry. A brief discussion of property and resource values provided by agriculture, timber, and mining is provided below.

Agriculture

The 2007 Census of Agriculture identified 454 farms in Caribou County. Approximately 75 of these farms (20 percent) are dedicated to wheat farming while 171 farms (38 percent) raise livestock. The majority of the land north of Soda Springs is non-irrigated cropland, comprising mainly wheat, barley, and some oilseed crops (Bybee 2011, personal communication). Crops in Caribou County accounted for nearly 63 percent of the total market value of agricultural products sold in 2007, while livestock products accounted for the remaining total market value (USDA 2007a). Grains, oilseeds, dry beans, and dry pea crops had a market value of $15,585,000 in 2007 (USDA 2007b). Table 3-27 shows a summary of agriculture statistics for Caribou County.

The total value of all taxable, assessed agricultural land in Caribou County in 2010 was $74,770,887. Average agricultural land values in Caribou County vary from $10 to $625 per acre, depending on a variety of factors, including irrigation. Grazing land ranges in value from $10 to $78 per acre, non-irrigated crop lands range in value from $106 to $230 per acre, and irrigated crop lands range from $406 to $625 per acre (Call 2011, personal communication).

Table 3-27. Summary of Caribou County Agriculture in 2007

Summary Item	Caribou County
Number of farms	454
Land in farms (acres)	426,973
Farm acreage as a percentage of county lands	37.3%
Total market value of agricultural products sold ($)	55,012
Crops—wheat (number of farms)	75
Crops—wheat (acres)	41,059
Livestock and poultry (number of farms)	171
Livestock and poultry (number)	24,292

Source: USDA 2007b; U.S. Census Bureau 2011f

Timber Lands and Harvest

The portions of the North and South alternatives located on the C-TNF contain stands of lodgepole pine, aspen/conifer, grass/shrub, mixed conifer, Douglas-fir, and aspen (USFS 2003b). During the first quarter of 2013, various types of timber in the C-TNF, including lodgepole pine, subalpine fir, Douglas-fir, Engelmann spruce, lodgepole pine, and softwoods, were cut and sold. The total value of cut sawtimber in the C-TNF during this time was approximately $68,352 while the total value of fuelwood was $48,981. The total value of all cut and sold timber was $123,826 for this period (USFS 2013).

Mining

Mining is an important industry in the state of Idaho, particularly in southeastern Idaho. In 2004, Idaho ranked third in phosphate rock production in the United States. In 2010, mining companies associated with the Idaho Mining Association supported $857 million in economic contribution within the state. Approximately 65 percent of this economic activity, $558 million in economic contribution, occurred in southeastern Idaho, which includes Caribou, Bannock, and Power counties (Idaho Mining Association 2011). In 2011 in Caribou County, mining employment was 361, a slight increase from the 2010 figure of 333 (Idaho Department of Labor 2013).

Agrium U.S., Inc. (also called Nu-West) is located in Soda Springs, Idaho, and is the largest employer in Caribou County (Idaho Department of Labor 2013). Degerstrom-Dravo is a mining contract company in Caribou County and is the third largest employer in the county (Idaho Department of Labor 2013), whereas J.R. Simplot Co., Smoky Mine is the fourth largest employer in the county (Idaho Mining Association 2013). Monsanto is the seventh largest employer in the county and operates the South Rasmussen Ridge Mine outside Soda Springs, Idaho (Idaho Mining Association 2013).

Public Services

USFS, the state of Idaho, Caribou County, Soda Springs, and Pocatello, along with a number of hospitals, institutions, and companies provide services that could be used or affected by the

Project. The towns of Henry, Conda, and Wayan are all unincorporated and do not provide public services.

Electric Utilities

Within Caribou County, Rocky Mountain Power, a division of PacifiCorp, provides electrical power. However, within the city limits of Soda Springs, Soda Springs Municipal Light and Power supplies power. Within Bannock County, Idaho Power Company services the cities and surrounding areas of Pocatello and Blackfoot. Rocky Mountain Power services the remaining portions of Bannock County. Several electric utility companies have transmission lines and substations in Bannock and Caribou counties. PacifiCorp has several transmission lines and substations located in and near Soda Springs and Wayan. These transmission lines are lower than 230 kV and connect several businesses and municipalities in the area to the electric grid. Additionally, Idaho Power Company has a 226-mile-long, 345-kV transmission line that runs north of Soda Springs through Caribou County. Many of PacifiCorp's transmission lines connect to this line.

Law Enforcement

Law enforcement in the Caribou County falls under the jurisdiction of the Caribou County Sheriff's Department, Soda Springs Police Department, and Idaho State Police. The sheriff's department actively patrols C-TNF land and works with the C-TNF and other law enforcement agencies on a regular basis (Watkins 2011, personal communication). Areas within the North and South alternative corridors are also under the jurisdiction of the Idaho State Police (Dayley 2011, personal communication).

Fire Protection

The North and South alternative corridors cross through three fire department jurisdictions, including the Caribou County Volunteer Fire Department, USFS Fire Service, and BLM Fire Service. The Soda Springs Volunteer Fire Department operates within the city limits of Soda Springs and, under an agreement with the county, can also operate within a 5-mile radius of the fire station outside the city of Soda Springs. The Caribou County Volunteer Fire Department is based in Soda Springs. The department has mutual aid agreements with BLM and USFS. The USFS Fire Service serves USFS lands (Beck 2011, personal communication).

Medical Facilities

The closest hospital to the Project is Caribou Memorial Hospital in Soda Springs. This hospital is capable of accepting and transporting patients using air ambulance services provided by Life Flight; however, no Life Flight helicopters are stationed at this hospital (Peterson 2011, personal communication). The closest medical center with an air ambulance available is Portneuf Medical Center, located in Pocatello, Idaho.

There are two medical clinics located in Caribou County. Lakeview Medical Clinic in Soda Springs, Idaho is a federally designated Rural Health Clinic (Caribou Memorial Hospital 2011). Rural Health Clinics provide access to primary care services (Department of Health and Human

Services 2010). Health West Lava Clinic is located in Lava Hot Springs, Idaho (HealthWest 2007).

Education

The Project is located in the Soda Springs School District. There were 836 students enrolled in the district during the 2011-2012 academic year (Hemmert 2011, personal communication). Two additional school districts, Grace School District and North Gem School District, are also in the general area. In the 2011-2012 academic year, these schools districts had 413 students and 206 students enrolled, respectively (National Center for Education Statistics 2013).

Taxes

Total tax revenues for Bannock and Caribou counties for 2010 were $47,848,995 and $8,620,730, respectively. In Caribou County, total tax revenues were almost $9 million, with over half of the revenues provided by property tax receipts, whereas sales and use taxes accounted for 4 percent of county tax revenues. Bannock County has total revenues of almost $48 million, of which 44 percent come from property tax receipts and 7 percent from sales and use taxes (Klauser 2011, Mascarenas 2011, personal communications).

Local taxing jurisdictions in Idaho collect property taxes; they are not collected by the state (Idaho State Tax Commission 2010).

Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Executive Order 12898 provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations."

CEQ has oversight of the federal government's compliance with Executive Order 12898. In 1997, CEQ published a guidance document on environmental justice for federal agencies entitled Environmental Justice Guidance under the National Environmental Policy Act to help ensure that agencies fully understand the extent to which environmental justice should be considered in their decision-making process and what defines a minority or low-income population (CEQ 1997a). Additionally, Executive Order 12898 directs all federal agencies to establish internal directives to ensure that the spirit of the order is reflected in the full range of their activities.

Executive Order 12898 defines a minority as any person who identifies themselves as being of a race other than Non-Hispanic White alone. The minority population of an affected area is present when either the minority population of the affected area exceeds 50 percent or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997a).

Low-income populations are identified using the U.S. Census Bureau's statistical poverty threshold, which is based on income and family size. The U.S. Census Bureau defines a "poverty area" as an area with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level (U.S. Census Bureau 2010).

For this environmental justice analysis, Bannock and Caribou counties as well as municipalities within proximity to the North and South alternative corridors are compared to the minority percentage for the state of Idaho to identify high concentrations of minority residents. In 2010, the majority of the population (84 percent) in Idaho identified themselves as white. Both Bannock and Caribou counties had higher concentrations of those who identify themselves as white than that of the state, 93 percent and 87 percent, respectively. Ninety-three and 100 percent of the Soda Springs and Wayan populations identified themselves as white, respectively. In 2010, 11 percent of Idaho's population identified themselves as Hispanic or Latino as compared to 6 percent and 4 percent for Bannock and Caribou counties, respectively. Hispanic populations represent the largest minority group in the two county area in 2010 (U.S. Census Bureau 2011d).

In 2010, the median household income in Bannock and Caribou counties was $44,848 and $44,958, respectively. This is approximately 3 percent lower than the state's median household income (U.S. Census Bureau 2011e). At $47,480 the city of Soda Springs had a median household income that was approximately 2 percent higher than that of the state of Idaho. Both the state of Idaho and Bannock County reported approximately 14 percent of their population living below poverty. In Caribou County, approximately 8 percent of the population reported living below poverty. Approximately 7 percent of the Soda Springs population was estimated to live below the poverty level in 2010 (U.S. Census Bureau 2011e).

Because the percentage of minority and/or low-income populations in Caribou County and Soda Springs and Wayan is very low, no further detailed analysis of smaller geographic areas within close proximity to the North and South alternative corridors was undertaken. The data presented above do not indicate the presence of environmental justice communities. Therefore impacts to environmental justice are not considered further.

Alternative Route Options

North Alternative Route Options

The socioeconomic resources described above are the same as those under the Long Valley Road and North Highland options.

South Alternative Route Options

The socioeconomic resources described above are the same as those under Options 1 through 4.

3.10.2 Environmental Consequences of the North Alternative

Demographic and Economic Characteristics

Employment and Income

Construction of the North Alternative would employ approximately 50 people, a portion of whom, an estimated 10 workers, would be filled with workers from the local construction workforce. The temporary construction workforce would introduce new income to the area as construction workers spend their money in the local area, resulting in revenues for some local businesses, such as hotels, restaurants, gas stations, and grocery stores. However, non-local construction workers are likely to send a portion of their income to their home area where they may have family, own property, and/or have other expenses. It is anticipated that workers retained from the local area already purchase goods and services in the project area. Local expenditures would support jobs and incomes for these businesses and their employees. These employees would in turn spend their money in the local economy creating a multiplier effect.

Overall spending from the construction of the North Alternative would be short term (over 16 months of the 2 year construction period) and is likely to have ***low*** socioeconomic impacts to the overall area. No adverse impacts are expected, although there may be some beneficial impacts as a result of increased spending in the local community during construction.

No new employment from the operation of the transmission line or substations is anticipated.

Population

Approximately 40 jobs are expected to be filled by workers who would likely temporarily relocate to communities near the North Alternative corridor to support construction activities. The operation of the transmission line is not anticipated to generate new employment, and therefore, no change in population would result. Population changes in the area are expected to be short term and ***low***.

Hotels and Rentals

While lodging options can reach capacity in the spring and summer months in Soda Springs and other small towns in Caribou County, there are ample rental housing units available in Bannock and Caribou counties near the North Alternative corridor. Additionally, construction workers have been known to commute up to 2 hours each day to construction sites (Electric Power Research Institute 1982). Lodging options in Pocatello, which would be located in this commuting distance, would likely be able to accommodate construction workers.

Because permanent employees would not be required to support the operation of the transmission line, no additional housing would be necessary within the North Alternative corridor area following completion of construction activities. As a result, short-term but likely beneficial, ***low*** impacts to lodging options would occur.

Public Services

Impacts to public facilities and services (law enforcement, fire protection, medical services, schools, and utilities) would be ***low*** and would occur over the short term given the temporary increase in the local population as a result of the construction employees. The North Alternative would not result in a long-term increase in the local population that would require changes in demand for public facilities or services.

During construction of the North Alternative there would be ***low,*** adverse impacts to nearby communities from temporary lane closures and/or traffic delays (see Section 3.11, Transportation). There also would be increased roadside parking hazards during this time. However, access to all properties, including public facilities and social service agencies, would be maintained during construction, and local agencies and residents would be notified of upcoming construction activities and potential disruptions to transportation resources. The North Alternative would not displace or otherwise negatively affect agencies or organizations that provide public services to communities near the transmission line corridor. In addition, there would be ***no*** impacts to the public service infrastructure from the North Alternative.

Property and Resource Impacts

Property Values

The North Alternative is not expected to have long-term impacts to property values. Whenever land uses change, the concern is often raised about the effect the change may have on property values nearby. Zoning is the primary means by which most local governments protect property values. By allowing some uses and disallowing others, or permitting them only as conditional uses, conflicting uses are avoided. Some residents consider transmission lines to be an incompatible use adjacent to residential areas. The question of whether nearby transmission lines can affect residential property values has been studied extensively in the United States and Canada over the last 20 years or so, with mixed results.

In the 1990s, BPA contributed to this research when it examined the sale of 296 pairs of residential properties in the Portland/Vancouver metropolitan area of Oregon and Washington and King County, Washington. The study evaluated properties adjoining 16 BPA high-voltage transmission lines (subjects) and compared them with similar property sales located away from transmission lines (comps). All of the sales were in 1990 and 1991 and adjustments were made for time and other factors. Study results showed that the subjects in King County were worth about 1 percent less than their matched comps while the Portland/Vancouver subjects were worth almost 1.5 percent more (Cowger et al. 1996).

BPA updated this study in 2000 using 1994 and 1995 sales data and again in 2013 using sales occurring in 2005 through 2007. The sales of 260 pairs of residential properties in King County and Portland/Vancouver metropolitan area were reviewed in the 2000 study. The residential sales analysis identified a small but negative impact ranging from 0 to 2 percent for those properties adjacent to the transmission lines as compared to those where no transmission lines were present. Although the 2000 study identified a negative effect, the results are similar to the earlier study and the differences are relatively small (Bottemiller et al. 2000). The 2013 study further confirmed the findings of the previous studies and provided a new perspective by revisiting the market under different conditions (during a sellers' market) and supports the idea that not all housing markets and home price-points react the same way to high-voltage transmission line proximity. The 2013 study found that there was a negative price effect between proximity to high-voltage lines and higher-priced homes in the urban area of Seattle. However, this Project would not be located in a suburban area; therefore, impacts are not anticipated to be similar to those found in the Seattle area (Bottemiller and Wolverton 2013).

A recent literature review points to small or no effects on sale price due to the presence of electric transmission lines. Some studies found an effect on sale price but the effect generally dissipated with time and distance. The effects ranged from approximately 2 to 9 percent (Jackson and Pitts 2010). A more recent study of sales of rural land parcels in central Wisconsin between 2002 and 2008 found small, but no statistically significant negative price effects on the sale of properties encumbered by a transmission line easement (Jackson 2010).

The majority of studies have concluded that other factors (e.g., general location, size of property or structure, improvements, irrigation potential, condition, amenities, and supply and demand) are greater contributors to property values than the presence or absence of transmission lines (Chalmers and Voorvaart 2009, Wolverton and Bottemiller 2003).

The operation of the transmission line is not expected to cause long-term negative impacts to property values along the North Alternative corridor or the project area. Non-project-related impacts, along with other general market factors, are already reflected in the market value of properties in the area. These conditions are not expected to change appreciably. As a result, adverse impacts from the North Alternative are expected to be short term and ***low***.

Agricultural Production

Construction of the proposed Hooper Springs Substation would fence in 8.3 acres of agricultural land removing it from production. No impacts to agriculture are anticipated at the site of Lanes Creek Substation. During construction of the transmission line, potential impacts to agricultural production may include crop damage (depending on the time of year construction activities cross specific fields), soil disturbance, and/or loss of production for one or two growing seasons due to planting restrictions within or adjacent to the North Alternative corridor due to ROW clearing, structure and counterpoise installation, pulling sites, and access road development.

Agricultural practices would be allowed to resume within the ROW as long as farming activities do not interfere or jeopardize the operation of the transmission line. Indirect impacts to agriculture as a result of the North Alternative may include interference with certain agricultural activities, such as the movement of machinery, obstacles for aerial spraying, and/or the movement of cattle or other livestock for grazing.

The majority of these agricultural lands would be temporarily disturbed during construction activities, but not affected in the long term. Overall, impacts to agriculture production from the North Alternative would be ***low*** and would primarily occur during construction.

Few acres of grazing lands would be impacted by construction-related activities when compared to available forage for cattle. Once construction is complete, grazing would return to conditions similar to existing conditions. The overall impact from the North Alternative on grazing and grazing leases would be short term and ***low***.

Forest Lands and Timber Resources

The North Alternative would require approximately 166.7 acres of forest clearing. Additional danger trees located outside of the ROW would also require clearing. The vast majority of this timber is located on C-TNF lands, although a small amount of clearing may be required on BLM parcels and private lands. All tall-growing vegetation would be cut to prevent vegetation from coming close enough to the conductor to cause an electric arc. Additional tree removal may be necessary on privately held lands and in areas where trees need to be cleared from falling onto the ROW.

There would be some positive economic effects resulting from the timber harvest associated with ROW clearing for the North Alternative. However, it is anticipated that this effect would be ***low*** and short term.

Mining

The North Alternative would not cross any past, present, or potential future mining areas or leases and therefore would have ***no*** impact on mining activities.

Taxes

BPA would acquire land rights (easements) from private property owners for the construction, operation, and maintenance of the North Alternative transmission line and access roads. The property owner would retain ownership of the property and continue to pay property tax on the entire parcel, including the land within BPA's easement. BPA would purchase property for its substation (and possibly substation access roads). Because BPA is a federal agency and exempt from paying local property taxes, Caribou County would not collect property taxes on the property acquired in fee for the substation and substation access roads in the long term. However, in the short term, Project and construction worker spending would slightly increase sales and use tax receipts to municipal and county governments. Therefore, tax impacts under the North Alternative in both the short term and long term would be ***low***.

Because the substation and transmission line for the North Alternative would be managed remotely, the only potential impact from operation of the line would include potential overnight stays and limited spending in the local communities during maintenance activities. Overall impact of operation and maintenance throughout the life of the transmission line would be ***low***.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would remove approximately 4.2 miles of ROW from state lands and place approximately 4.8 additional miles of ROW on private land that is currently in agricultural use. The additional private land acreage is currently in active grazing and crop cultivation, so there could be additional impacts to agricultural production and farm income;

however, impacts to agricultural use would remain ***low.*** Impacts to all other socioeconomic resources would be the same as those described above.

North Highland Option

The North Highland Option would remove approximately 1.5 miles of ROW from private grazing lands and place approximately 1.2 additional miles of ROW on C-TNF lands. The additional C-TNF land acreage is currently forested, and would require an additional area of approximately 10 acres of forest to be cleared when compared to the North Alternative. Although all tall-growing vegetation would be cut on the ROW, there would be some positive economic effects associated with the timber harvest. However, it is likely that this effect would be ***low*** and short term.

Impacts to all other socioeconomic resources would be the same as those described above.

3.10.3 Environmental Consequences of the South Alternative

Demographic and Economic Characteristics

Employment and Income

Construction of the South Alternative would employ the same number of people (approximately 50 people) as the North Alternative, some of whom would be local residents (about 10 workers). The temporary construction workforce would introduce new income to the region as construction workers spend their money in the local area, resulting in revenues for some local businesses, such as hotels, restaurants, gas stations, and grocery stores. However, non-local construction workers are likely to send a portion of their income to their home area where they may have family, own property, and/or have other expenses. It is anticipated that workers retained from the local area already purchase goods and services in the project area. Similar to the North Alternative, local expenditures would support jobs and incomes for these businesses and their employees. These employees would in turn spend their money in the local economy creating a multiplier effect. However, spending from construction of the South Alternative would be short term (over 16 months of the 2 year construction period) and is likely to have ***low*** but beneficial socioeconomic impacts to the overall area.

No new employment from the operation of the transmission line or substations is anticipated.

Population

Similar to the construction of the North Alternative, about 40 jobs are expected to be filled by workers from outside the region who would likely temporarily relocate to communities near the South Alternative corridor. Additionally, new employment is not anticipated during operation of the South Alternative and as a result, population changes in the area are expected to be short term and ***low***.

Hotels and Rentals

Similar to the North Alternative, there are ample rental housing units available in Bannock and Caribou counties to support workers brought to the area for construction of the South Alternative. Additional rental housing options in Pocatello would likely be able to support the introduction of temporary workers.

It is not anticipated that housing would be necessary to support the operation of the South Alternative. As a result, short-term but likely beneficial, ***low*** impacts to local motel and rental units would occur under the South Alternative.

Public Services

Impacts to public facilities and services under the South Alternative (law enforcement, fire protection, medical services, schools, and utilities) would be the same as the North Alternative (***low*** and short term).

During construction of the South Alternative, impacts from temporary lane closures and traffic delays would be same as those under the North Alternative (***low)***, although there could be increased roadside parking hazards during this time. Similar to the North Alternative, access to all properties along the South Alternative would be maintained during construction. Local agencies and residents would be notified of upcoming construction activities and potential delays. The South Alternative would not displace or otherwise negatively affect any agencies or organizations that provide public services to communities near the transmission line corridor. Additionally, there would be ***no*** impacts to the public service infrastructure from the South Alternative.

Property and Resource Impacts

Property Values

Similar to the North Alternative, the South Alternative is not expected to have long-term impacts to property values in the project area. Negative impacts from the South Alternative are expected to be short term and ***low***.

Agricultural Production

Construction of the Hooper Springs Substation for the South Alternative would remove the same acres from agricultural production as the North Alternative. Crop damage, soil disturbance, and loss of production may occur during transmission line construction associated with clearing, structure and counterpoise installation, pulling sites, and/or access road development. Similar to the North Alternative, agricultural practices would be allowed within the South Alternative ROW as long as farming activities do not interfere or jeopardize the operation of the transmission line. Indirect impacts to agriculture from the South Alternative would be the same as the North Alternative; interference with certain agricultural activities could occur. The majority of the agricultural lands along the South Alternative would only be temporarily disturbed during construction activities, and would not be affected over the long term. Impacts to agricultural production from the South Alternative would the same as those for the North Alternative (***low*** and short term).

Similar to the North Alternative, C-TNF and state land grazing leases could be affected during construction if work areas are closed. After construction, grazing would return to existing conditions. Impacts from the South Alternative on grazing and grazing leases would be ***low***.

Forest Lands and Timber Resources

The South Alternative would require approximately 86.3 acres of forest clearing. Similar to the North Alternative, danger trees located outside of the ROW also would be cleared. Almost all of this timber is located on C-TNF lands, although a small amount of clearing may be required on BLM parcels and private lands as well. There would be some positive economic effects associated with timber harvest; however, it is anticipated that this effect would be ***low*** and short term.

Mining

The South Alternative corridor would cross several past, present, and future potential mining sites, as described in Section 3.1, Land Use, and Section 3.13, Public Health and Safety. Construction activities in these areas could cause minor delays to mining activities although they would not interfere in the long term.

Taxes

Similar to the North Alternative, BPA would acquire land rights (easements) from private property owners for the South Alternative transmission line and access roads. Property owners would retain ownership and continue to pay property tax on the entire parcel, including the land within BPA's easement. For the South Alternative, BPA would purchase the same property for the Hooper Springs Substation (and possibly the substation access roads) as the North Alternative. As discussed above for the North Alternative, because BPA is a federal agency, Caribou County would not collect property taxes on fee-owned property in the long term. Similar to the North Alternative, in the short term, Project and construction worker spending for the South Alternative would slightly increase sales and use tax receipts to municipal and county governments; tax impacts would be ***low***.

Similar to the North Alternative, maintenance of the South Alternative may require overnight stays and limited spending in the local communities resulting in a ***low*** but positive impact to local taxes.

South Alternative Route Options

Options 1 and 2

Option 1 and 2 would remove the same amount of land from agricultural use as the South Alternative (impacts to agricultural use would remain ***low***). Impacts to all other socioeconomic resources during construction and operation of Options 1 and 2 would be the same as those described for the South Alternative (***none*** to ***low***).

Option 3

Option 3 would remove more agricultural land from production than the South Alternative and Options 1 and 2, possibly resulting in crop damage and soil disturbance during transmission line construction, although these options would be less affected by mining activities. Agricultural practices would still be allowed within the ROWs for this option so impacts would be ***low***. Impacts to all other socioeconomic resources during construction and operation of Option 3 would be the same as those described for the South Alternative (***none*** to ***low***).

Option 3A

Similar to Option 3, Option 3A would remove more agricultural land from production than the South Alternative and Options 1 and 2. However, agricultural practices would still be allowed within the ROWs for this option so impacts would be ***low***. Impacts to all other socioeconomic resources during construction and operation of Option 3A would be the same as those described for the South Alternative (***none*** to ***low***).

Option 4

Option 4 would remove slightly more agricultural land from production than the South Alternative although agricultural practices would still be allowed: impacts would be ***low***. Impacts to all other socioeconomic resources during construction and operation of Option 4 would be the same as those described for the South Alternative (***none*** to ***low***).

3.10.4 Mitigation

The following mitigation measures have been identified to reduce or avoid socioeconomic impacts from the Project.

- Plan and conduct construction activities to minimize interference with agricultural activities (see Section 3.1.4, Land Use).
- Compensate landowners for any damage to crops or property during construction or operation and maintenance activities, as appropriate.
- Compensate landowners for reconfiguration of irrigation systems due to placement of project facilities.
- Compensate landowners at fair market value for any new land rights acquired for ROW or access road easements.
- Use local rock sources for road construction where practicable (see Section 3.14.4, Air Quality).

3.10.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable impacts to socioeconomic resources would include the loss of farm production or grazing lands due to structure placement. Although landowners would be compensated for the easements, a loss in production would still occur. Modest economic benefits could include increased employment in the area, local purchase of goods and services, and increased tax revenues.

3.10.6 No-Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to socioeconomic from the construction, operation, and maintenance of the transmission lines would not occur.

3.11 Transportation

3.11.1 Affected Environment

The project area is served by a well-developed regional road system. The principal artery in the area is Highway 34, which is classified as a major rural collector highway and operated by ITD. State Highway 34 is a federally and ITD-designated scenic byway known as the Pioneer Historic Byway (ITD 2011). It diverges from State Highway 36 near Preston in Franklin County, Idaho and crosses U.S. Route 30 at Soda Springs before continuing north through the C-TNF, Soda Springs Ranger District and crossing into the state of Wyoming. Highway 34 provides access to the Blackfoot Reservoir, located immediately west of the North Alternative corridor, and Gray's Lake National Wildlife Refuge, which is located approximately 3.5 miles north of the North Alternative corridor at its closest point. It serves as a two-lane arterial roadway with an approximately 60-foot-wide ROW in the project area.

The segment of Highway 34 within the North Alternative corridor extends from mile point (MP) 62.7, north of Soda Springs near the proposed Hooper Springs Substation, to MP 100.5, where the North Alternative corridor connects with the Lanes Creek Substation. Over the length of the North Alternative corridor, it crosses Highway 34 seven times. The South Alternative corridor crosses over Highway 34 once near MP 64 and travels along Blackfoot River Road to the Narrows.

Based on IDT's 2012 annual average daily traffic (AADT) counts on Highway 34, AADT between Soda Springs and Conda ranges from between 2,200 and 6,700 (see Table 3-28). North of Conda, traffic volumes on Highway 34 decrease with AADT ranging from between 610 and 290.

Table 3-28. 2012 Annual Average Daily Traffic Counts on State Highway 34

Segment	Beginning MP	Ending MP	Passenger	Commercial	AADT
Between Soda Springs and Conda	57.8	58.1	6,350	350	6,700
	58.1	58.6	5,450	350	5,800
	58.6	59.8	2,750	350	3,100
	59.8	59.8	2,500	350	2,850
	59.8	63.5	1,900	300	2,200
Between Conda and Wyoming Border	63.5	64.8	460	150	610
	64.8	69.9	380	150	530
	69.9	91.9	240	70	310
	91.9	93.9	270	30	300
	93.9	100.5	270	20	290
	100.5	112.6	310	20	330
	112.6	113.6	330	30	360

Source: Krantz 2013, personal communication

To standardize an approach to analyze roadway conditions, the Transportation Research Board's 2010 Highway Capacity Manual applies a level of service (LOS) for categorizing traffic flow. LOS A for an unsignalized roadway is defined as "little or no delay (less than10 seconds)" and

LOS B for an unsignalized roadway as "short traffic delays (10.1 to 15 seconds)." Overall, traffic conditions along Highway 34 have a LOS B between Soda Springs and Conda and a LOS A between Conda and Freedom (Wyoming). Current traffic conditions along Highway 34 allow motorists freedom of travel at comfortable speeds with few restrictions.

Other local roads within the North and South alternative corridors are rural roads (often unpaved), maintained either by ITD or Caribou County, including:

- Primary (minor collector) rural roads
  - Conda Road, which provides the sole access to Conda from Highway 34
  - Blackfoot River Road, which serves as the main corridor for entry into C-TNF lands within the South Alternative corridor
  - China Cap Road and North Reservoir Road, which provide, respectively, south and north accesses to Blackfoot Reservoir and its campgrounds
  - Grays Lake Road, which provides access to the Grays Lake National Wildlife Refuge
  - Diamond Creek Road, which provides access to the South Alternative corridor at the eastern terminus at the proposed connection facility
- Secondary rural roads and trails
  - Hooper Road and Threemile Knoll Road, which provide access to the proposed Hooper Springs Substation near the existing PacifiCorp Threemile Knoll Substation
  - Haul Road, which is a private hauling road to the Agrium Conda Phosphate Plant and related industrial mining operations
  - Long Valley Road, Henry Cutoff Road, Wayan Loop West, Wayan Loop South, Lanes Creek Road, Gravel Creek Road, and Cutoff Road, which provide access to the various private and state/federal lands within the North Alternative corridor

Many of the secondary rural roads along with other USFS designated trails (including those for motorized and non-motorized uses) are located throughout C-TNF and serve as access roads for recreation, special uses, timber management, range management, minerals development, and fire protection (USFS 2003a).

The North and South alternative corridors are located more than 4 miles from the nearest airport. The Union Pacific Dry Valley Branch Railroad, a 24-mile phosphate mining rail line running from Soda Springs to the North Maybe Mine, is located in the project area (Idaho Public Utilities Commission 2005). Portions of the South Alternative corridor travel along the Dry Valley Branch Railroad as it moves east from the Blackfoot River crossing to west of the Narrows.

Alternative Route Options

North Alternative Route Options

The same roads described above are also in the general vicinity of the Long Valley Road and North Highland options.

South Alternative Route Options

The same roads described above are also in the general vicinity of Options 1 through 4. Option 3 crosses Highway 34 near MP 69.9, Option 3A crosses Highway 34 near MP 67.5, and Option 4 crosses Highway 34 near MP 66.5.

3.11.2 Environmental Consequences of the North Alternative

During the construction period (estimated at 16 months over a 2 year period), temporary impacts from construction activities associated with the North Alternative would result from roadway closures, minor travel delays due to the introduction of construction-related vehicles to the roadway network, and possible damage to public roadways in areas where construction-related vehicles (e.g., overhead line cranes, concrete trucks, logging trucks, construction equipment, and delivery trucks) are present. Roadway improvements would include the upgrading of existing USFS, BLM, BIA, county, and private roadways, as necessary, to allow access for construction vehicles and equipment; construction of new access roads; and construction and subsequent removal of temporary access roads.

Traffic Conditions

From the North Alternative staging areas, access to work sites or assembly yards would occur via Highway 34, county roads (mainly Hooper Road, Threemile Knoll Road, Conda Road, Blackfoot River Road, Wayan Loop and Lanes Creek Road), and/or new or existing access roads (private or public). The Hooper Springs Substation site, located approximately 1.5 miles east of Highway 34, would be accessed via Highway 34, Hooper Road, and Threemile Knoll Road. Access to the Lanes Creek Substation site would be via Highway 34 and Lanes Creek Cutoff Road.

Highway 34 is the primary roadway in the area, and it is anticipated that construction-related vehicles would use it during ongoing construction activities associated with the North Alternative. During periods when construction-related vehicles are using public roadways, some traffic delays would occur, but they would be short term and limited to specific times of day (e.g., early morning deliveries and employee shift periods). Movement of construction-related vehicles between staging areas and work sites, particularly during peak construction periods, would reduce the speed of travel because these vehicles move slower than those used by area residents and employees.

The North Alternative staging areas would be sited away from major rural collector highways, particularly Highway 34, to the extent feasible, to reduce the potential for construction-related traffic to congregate around staging areas. Depending on the location along the North Alternative, construction-related vehicles may be required to cross Highway 34 and subsequently result in timed and short-term closures to Highway 34 in limited areas. It is anticipated that closures would be less than 1 hour and appropriately timed to avoid peak travel periods in the seven areas where the North Alternative would cross Highway 34.

The use of all other county and local roadways to support the movement of construction-related vehicles would be limited to those necessary to access the North Alternative staging areas and work sites. Based on the relatively low AADT on these roadways and anticipated short-term use of identified roadways, temporary traffic delays are likely to occur in localized areas when construction is ongoing in adjacent or nearby areas. If construction activities cause temporary traffic blockages on local roadways, it is not anticipated that they would last more than a few hours and traffic would be routed around affected intersections.

Overall, construction of the North Alternative (including ROW clearing, structure installation, and access road development) would be expected to have a short-term, ***low*** impact to traffic conditions within the corridor. Traffic impacts related to substation construction would be similar to those described for transmission line construction; impacts would be localized and limited to roadways used to access substation sites and intersections used to enter and exit Highway 34. Residential areas near the proposed Hooper Springs Substation could also experience a change in travel patterns as a result of the introduction of construction-related vehicles using local roads to access the site. Substation construction is expected to have a ***low*** impact to traffic conditions along the North Alternative corridor.

Public Roadway Conditions

The movement of construction-related vehicles used for the North Alternative (e.g., overhead line cranes, concrete trucks, logging trucks, construction equipment, and delivery trucks) could crack and/or rut roadways and bridges and subsequently shorten the life of paved and unpaved roadway surfaces. Heavy loads transported on state and county roadways are expected to be within legal size and load limits. Where compliance with size and load limits is not possible, valid oversize and/or overweight permits would be required. These permits may stipulate that it is the responsibility of the construction contractor(s) to rehabilitate or reconstruct deteriorated roadways and structures during and after use. Overall, short-term construction-related impacts to roadway conditions from the North Alternative would be ***low***.

Operation and maintenance activities over the life of the North Alternative would include helicopter inspections every 2 years, and intermittent and brief access by small maintenance vehicles for vegetation control and minor repair work within the corridor. Large construction vehicles would only be required when major repairs are identified. Traffic associated with the operation and maintenance of the substations would be limited to intermittent access by maintenance vehicles because both substations would be unmanned. As a result, operation and maintenance of the North Alternative would result in ***low*** to ***no*** long-term impacts to transportation resources.

Unauthorized Public Access and Use

BPA would place gates at the entrances to access roads to prevent public access to these lands and the project corridor. However, there is the potential that even with gates, unauthorized access and use of the project corridor and adjacent properties, could occur. Because transmission line corridors are linear facilities that typically can be accessed fairly easily by the general public, the presence of these corridors can contribute to unauthorized use and damage to public and private lands. In general, potential impacts from unauthorized public access and use include increased soil erosion, fire danger, and introduction of noxious weeds, as well as disturbance of vegetation, wildlife and their habitat, and cultural resources. Increased soil erosion can occur from unauthorized uses such as off-road vehicles accessing areas and disturbing the soils, which can lead to erosion of these soils from rainfall and other events. Over time, unauthorized uses of gravel or dirt roads in the vicinity of the project corridor also could lead to accelerated deterioration of these roads through disturbance and erosion. Increased fire danger can result from activities by unauthorized users on or near the project corridor from a variety of means, such as campfires, unextinguished cigarettes, and vehicle exhaust systems coming into contact with vegetation. Potential impacts associated with soil erosion and increased fire danger are discussed in Sections 3.5 and 3.13, respectively, of this EIS.

The potential introduction of noxious weeds from unauthorized public access and use can primarily occur from unauthorized vehicles inadvertently transporting and spreading seeds of noxious weeds into the project corridor and adjacent lands. Soil disturbance from these vehicles increases the potential for the introduced noxious weeds to become established in these disturbed areas. Impacts associated with noxious weeds are discussed in Section 3.4 of this EIS.

Unauthorized access and use also can potentially disturb vegetation, wildlife and their habitat, and cultural resources. Vegetation and wildlife habitat can be disturbed by unauthorized vehicles driving over and crushing or uprooting plants, as well as by any vegetation clearance associated with an unauthorized use. Wildlife can be disturbed or displaced by the presence of and noise from unauthorized uses, and these uses can increase stress, disruption of normal foraging and reproductive habits, abandonment of unique habitat features, and energy expenditure of wildlife species in the area. Cultural resources can be disturbed by the damaging of known or previously undiscovered cultural resource sites or the unauthorized collection of artifacts or other cultural resources. Potential impacts associated with disturbance of vegetation, wildlife and their habitat, and cultural resources are discussed in Sections 3.4, 3.7, and 3.9, respectively, of this EIS.

Because mitigation measures would be taken to decrease the potential for unauthorized public access and use and occurrences of this type of activity would generally be expected to be infrequent, impacts from unauthorized public access and use would be ***low***.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would result in a negligible increase in construction-related traffic on Blackfoot River Road and Long Valley Road when compared to the North Alternative. It is not anticipated that this increase would result in any change to the overall resource impact in terms of intensity or duration as described above. The Long Valley Road Option would have a ***low*** impact to transportation during the construction phase of the proposed transmission line and substations, and ***low*** to ***no*** impacts during operation and maintenance.

North Highland Option

When construction activities are ongoing, the North Highland Option would result in minor traffic delays along Highway 34 where the corridor crosses the highway. However, impacts to transportation would be the same as under the North Alternative (***low***) because there would also be a Highway 34 crossing for that alternative in this area. The North Highland Option would have ***low*** to ***no*** impacts during operation and maintenance.

3.11.3 Environmental Consequences of the South Alternative

Similar to the North Alternative, temporary impacts would occur during the construction period (estimated at 16 months over a 2 year period) for the South Alternative. Temporary impacts from construction activities associated with the South Alternative would result from roadway closures, minor travel delays due to the introduction of construction-related vehicles to the roadway network, and possible damage to public roadways in areas used by construction-related vehicles. Similar to the North Alternative, under the South Alternative existing roads would be upgraded and new access roads developed to support construction activities. All temporary access roads would be removed once construction activities are complete.

Traffic Conditions

From the South Alternative staging areas, access to work sites or assembly yards would include Highway 34, Blackfoot River Road, Diamond Creek Road, and/or new or existing access roads (private or public). Access to the proposed Hooper Springs Substation site would be the same as for the North Alternative.

Construction-related vehicles would primarily travel on Blackfoot River Road and Highway 34 during construction. Similar to the North Alternative, during periods when construction-related vehicles are using public roadways, some traffic delays would occur, but they would be short term and limited to specific times of day (e.g., early morning deliveries and employee shift periods). Movement of construction-related vehicles, particularly during peak construction periods, between staging areas and work sites would reduce the speed of travel because these vehicles move slower than those used by area residents and employees.

Similar to the North Alternative, South Alternative staging areas would be sited away from major rural collector highways, particularly Highway 34, to the extent feasible, to reduce the potential for construction-related traffic to congregate around staging areas. Depending on the location along the South Alternative, construction-related vehicles may be required to cross Highway 34 and subsequently result in timed and short-term closures to Highway 34 in limited areas. It is anticipated that closures would be less than 1 hour and appropriately timed to avoid peak travel periods in the areas where the South Alternative would cross over Highway 34. The South Alternative only crosses Highway 34 once at milepost 64, so traffic interruptions would be fewer than those anticipated for the North Alterative, which crosses Highway 34 seven times. Timed and short-term delays may also occur in the vicinity of Blackfoot River Road, where the South Alternative crosses.

Construction within the corridor for the South Alternative (including ROW clearing, structure installation, access road development, and substation construction) would have similar impacts to traffic conditions described for the North Alternative (short term and ***low***).

Public Roadway Conditions

Similar to the North Alternative, the movement of construction-related vehicles could crack and/or rut Blackfoot River Road and other roadways and bridges. Heavy loads transported on state and county roadways are expected to be within legal size and load limits. Where compliance with size and load limits is not possible, valid oversize and/or overweight permits would be required. These permits may stipulate that it is the responsibility of the construction contractor(s) to rehabilitate or reconstruct deteriorated roadways and structures during and after use. Overall, short-term construction-related impacts to roadway conditions from the South Alternative would be the same as those described for the North Alternative (***low***).

Operational and maintenance activities under the South Alternative would be the same as those described for the North Alternative. As a result, operation and maintenance of the South Alternative would result in ***low*** to ***no*** long-term impacts to transportation resources.

South Alternative Route Options

<u>Options 1 through 4</u>

Impacts to traffic conditions and public roadway conditions under Options 1, 2, 3, 3A, and 4 would be the same as those described for the South Alternative (short term and ***low***).

3.11.4 Mitigation

The following mitigation measures have been identified to reduce or avoid impacts to transportation resources during construction, operation, and maintenance activities associated with the Project.

- Install barriers, gates, and postings at appropriate access points, and at the landowner’s request, to minimize or eliminate unauthorized use of access roads.
- Limit road improvements to the minimum amount necessary to safely move equipment, materials, and personnel to and from of construction areas.
- Improve existing roads on BLM, BIA, and C-TNF lands according to applicable agency standards.
- Develop a traffic control plan (which includes circulation, safety, management, signage, and detours, if necessary) that considers roadway conditions, wear on roads and bridges, stream crossings, traffic control, post-construction repair, reclamation, and access control.
- Comply with all county, state, and federal traffic management and road design requirements.
- Limit the use of local, county, USFS, BIA, and BLM roads for construction traffic to roads necessary for access to staging areas and work sites.

- Schedule heavy and over-sized truck trips outside of peak periods.
- Store construction materials only in designated staging areas.
- Restore public roadways to preconstruction conditions upon completion of project construction activities.
- Surface all permanent access roads with rock (see Section 3.5.4, Geology and Soils).

3.11.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts to transportation resources during the construction phase would include short-term traffic delays due to construction-related vehicle travel. During operation and maintenance of the transmission line, occasional traffic delays would be possible.

3.11.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to transportation resources from the construction, operation, and maintenance of the transmission lines would not occur.

3.12 Noise

3.12.1 Affected Environment

Noise

Noise is commonly defined as unwanted sound that disrupts normal human activities or diminishes the quality of the human environment. Transient noise sources, such as passing aircraft or motor vehicles, produce noise that is usually of short duration and excluded from regulation. Stationary sources such as substations or mining operations can emit noise over a longer period. Ambient noise is all noise generated in the vicinity of a site by typical noise sources, including traffic, wind, neighboring industries, and aircraft. The total ambient noise level is a typical mix of noise from distant and nearby sources, with no particular dominant sound (BPA 2010a).

Sources of temporary construction-related noise associated with electrical transmission systems include structure installation activities involving the use of heavy equipment, helicopters, and blasting; high levels of human activity around construction sites; construction of substations and access roads; clearing of the ROW; and pulling of conductors. Transmission operating-related noise includes noise associated with maintenance equipment, use of helicopters twice yearly to inspect the line, transmission line corona, and electrical transformer "hum."

Environmental noise, including transmission line noise, is usually measured in decibels on the A-weighted scale (dBA). This scale models sound as it corresponds to human perception. Table 3-29 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Table 3-29. Common Noise Levels

Sound Level (dBA)	Noise Source or Effect
110	Rock-and-roll band
80	Truck at 50 feet
70	Gas lawnmower at 100 feet
60	Normal conversation indoors
50	Moderate rainfall on foliage
40	Refrigerator
25	Bedroom at night

Source: Adapted from BPA 1986, 1996

Corona is the partial electrical breakdown of the insulating properties of air around the conductors of a transmission line. Corona-generated noise can be characterized as a hissing, crackling sound that is accompanied by a 120 Hertz hum under certain conditions. Corona noise from transmission lines generally occurs during foul or wet weather.

Noise levels and corona-generated noise in particular vary over time. To account for fluctuating sound levels, statistical descriptors have been developed for environmental noise. Exceedance levels (L levels) refer to the A-weighted sound level that is exceeded for a specified percentage of the time during a specified period. Thus, L_{50} refers to a particular sound level that is exceeded 50 percent of the time. L_5 refers to the sound level exceeded 5 percent of the time. Sound-level measurements and predictions for transmission lines are expressed in terms of exceedance levels, with the L_5 level representing the maximum level and the L_{50} level representing a median level.

EPA has established a guideline of 55 dBA for the average day-night noise level (Ldn) in outdoor areas (EPA 1974, EPA 1978). In computing this value, a 10 dBA correction (penalty) is added to night-time noise between the hours of 10:00 p.m. and 7:00 a.m. BPA has established a design criterion for corona-generated audible noise from transmission lines of 50 dBA for L_{50} (foul weather) at the edge of the ROW (BPA 2006). Likewise, BPA's design criterion for substation noise is 50 dBA at a substation property line.

Sources of Existing Noise within the Project Area

Along the North and South alternative corridors, existing noise levels vary with the proximity to agricultural activities, roadway traffic, mining activities, and urban development. The majority of the alternative corridors cross sparsely developed, rural agricultural lands and undeveloped public lands (USFS, BLM, BIA, and state of Idaho). Agricultural activities associated with ranching and the cultivation and harvesting of crops are seasonal, and can be considered intermittent sources of background noise. The nearest residential structure is located about 300 feet from the ROWs of the North and South alternatives.

In the more developed areas, traffic and noise associated with human activity are the primary contributors to background noise. The PacifiCorp Threemile Knoll Substation contributes to existing noise impacts in the vicinity of the proposed Hooper Springs Substation. Operations of the Union Pacific Dry Valley Branch railroad and vehicular traffic on Highway 34 are sources of intermittent noise along the project corridor for the North and South alternatives, and vary based on proximity to the noise source. For example, the North Alternative follows Highway 34 more closely than the South Alternative; whereas the South Alternative more closely follows the Union Pacific Dry Valley Branch railroad. The Monsanto Chemical Company Soda Springs Plant, located approximately 1.3 miles southeast of the proposed Hooper Springs Substation site, is also a source of noise related to the processing of phosphate ore. Vehicular traffic, mining operations, and manufacturing activities associated with the Simplot Conda/Woodall Mountain Mine and adjacent Agrium fertilizer plant in Conda are sources of noise along the project corridors for the South Alternative. Noise from ongoing phosphate mining activity is also prevalent within Caribou County, but tends to be localized and attenuated by vegetation and topography to levels that are not discernible for long distances to people. Overall, noise levels in and near the project corridors for the North and South alternatives are generally low.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option and North Highland Option each have noise levels similar to other comparable areas within the North Alternative corridor as described previously.

South Alternative Route Options

Options 1 through 4 including 3A have noise levels similar to other comparable areas within the South Alternative corridor as previously described.

3.12.2 Environmental Consequences of the North Alternative

Construction of the North Alternative would generate noise in the project area. Noise levels also may periodically increase above ambient levels during operation and maintenance activities. This noise would have the potential to affect nearby noise sensitive areas or receptors, such as residences or area visitors. See Appendix I, Electric Fields, Magnetic Fields, Audible Noise, and Radio Noise, Figures 7 and 8, for more information on audible noise from the North Alternative.

Construction activities would create noise that would be intermittent and limited to when these activities occur. Potential sources of noise may include ROW tree clearing; construction and improvement of access roads; structure and substation site preparation (vegetation clearing and grading); erection of steel or wood structures; helicopter assistance; and potential blasting.

Construction of the Hooper Springs Substation would create intermittent, short-term noise associated with land clearing and grading, construction and installation of substation infrastructure, and construction-related traffic. Substation construction is expected to be completed using typical construction equipment and would not require the use of helicopters or blasting (see Section 2.2.7, Construction Schedule and Work Crews, for a list of typical construction equipment). Because the BPA Lanes Creek Substation would be constructed within the boundaries of the existing LVE Lanes Creek Substation, no grading or vegetation clearing would be necessary. Construction noise would be attributable to pneumatic tools and smaller conventional construction equipment along with construction-related traffic.

Similar to substation construction, access roads and transmission line structure site preparation would use conventional construction equipment. Table 3-30 summarizes noise levels produced by typical construction equipment that would likely be used for the North Alternative.

Table 3-30. Noise Levels Produced by Typical Construction Equipment

Type of Equipment	Maximum Level (dBA) at 50 Feet
Road Grader	85
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Crane	85
Combined Equipment	89

Source: Thalheimer 1996

To account for fluctuating sound levels, statistical descriptors have been developed for environmental noise. The equivalent sound level (L_{eq}) is generally accepted as the average sound level. Noise that would be generated by the operation of conventional equipment anticipated to be used during construction is estimated to be 89 decibel L_{eq} at a reference distance of 50 feet. Noise produced by the operation of construction equipment would decrease with distance at a rate of about 6 decibel per doubling of distance from the site. Based on that assumed attenuation rate, Table 3-31 shows the estimated construction noise levels at various distances from the construction activities.

Table 3-31. Construction Noise in the Vicinity of a Representative Construction Site[1]

Distance from Construction Site (feet)	Hourly L_{eq} (dBA)
50	89
100	83
200	77
400	71
800	65
1,600	59

Source: BPA 2010b

[1] Calculation Assumptions: Equipment used: (1) grader, bulldozer, heavy truck, backhoe, pneumatic tools, concrete pump, and crane.
Reference noise level: 89 dBA (L_{eq}).
Distance for the reference noise level: 50 feet.
Noise attenuation rate: 6 dBA/doubling.
This calculation does not include the effects, if any, of local shielding or atmospheric attenuation.

Although daytime construction activities are excluded from noise regulations, these regulations can serve as a useful guideline for assessing noise impacts to individuals or residences located in the vicinity of the North Alternative corridor. For the purposes of this evaluation, it was assumed that construction noise levels equal to or less than 50 dBA would be a ***low*** impact. If construction noise levels exceed 50 dBA, this would be a ***moderate*** to ***high***, although temporary, impact.

Residential land use within the project area is low. The corridor for the North Alternative consists mainly of open range, undeveloped land, and agricultural land with few residences that could be affected by noise from ground level construction activity. The single residence within 300 feet of the ROW may experience ***moderate*** to ***high*** temporary, elevated noise levels associated with construction activities and the movement of construction-related vehicles.

BPA's construction contractor may elect to use a helicopter to assist with the stringing of conductors. Noise associated with helicopter use would be temporary and intermittent. It would generally take less than 10 minutes to string the conductor at each structure, and BPA estimates that helicopters would not be in any given line mile for more than 3 hours. A loaded cargo helicopter flying 250 feet away from a given location produces noise that is roughly 95 dBA, which is the same amount of noise produced by a diesel locomotive 100 feet away (Helicopter Association International 1993). Homes within approximately 1 mile of areas where helicopters are used to support construction activities would be exposed to temporary noise levels above 65 dBA. In these areas, helicopter noise would result in a ***moderate*** to ***high*** impact that would be short in duration (hours and within a designated timeframe (see Section 3.12.4, Mitigation).

Possible occasional midday blasting may be required at some structure sites in rocky areas where conventional excavation of structure footings would not be feasible. Blasting would produce a short noise like a thunderclap that could be audible for 0.5 mile or more from the site. If bedrock blasting is required, it could produce a high temporary noise impact to residents or visitors within 1 mile, and a lesser temporary impact to residents and visitors within 1 to 2 miles of the substation. Overall, blasting would result in a temporary ***moderate* to *high*** impact.

Noise generated by maintenance activities would be occasional and temporary under the North Alternative. Approximately twice annually, a helicopter would fly the line to look for any problems or repair needs. When and if maintenance needs arise, field vehicles would be used to access trouble spots. Noise levels generated by maintenance activities would be similar to anticipated construction noise levels presented in Table 3-31, depending on the nature of the repair activity. Given the short duration and infrequent occurrence of maintenance activities, noise impacts would typically be ***low***.

During operation, the proposed line would result in 26 dBA of corona-generated foul weather audible noise at the edge of the ROW. BPA design criteria for new transmission line construction require that noise levels at the edge of the ROW under typical conditions of foul weather, altitude, and system voltage are below the EPA outdoor activity noise guideline of 55 dBA (EPA 1974; EPA 1978). Corona generated noise is of concern primarily for transmission lines operating at voltages of 345 kV and above (BPA 2006). Moreover, audible noise would decrease the farther away from the proposed ROW. As described in Chapter 2, the North Alternative would operate at a lower voltage (115 and 138 kV); therefore, actual audible noise levels from corona activity would be ***low*** and decrease with distance.

At the proposed Hooper Springs Substation site, noise from substation equipment (primarily transformers) and nearby transmission lines would be the primary long-term source of noise. However, the Hooper Springs Substation would be separated from areas of residential development to the east by Threemile Knoll, a ridgeline that would further buffer any noise impacts associated with both the construction and operation of the substation. Noise from existing substation equipment and transmission lines would also remain the primary source of environmental noise at the existing Lanes Creek Substation site. BPA design criteria require audible noise levels for substations to meet a maximum level of 50 dBA at the substation property line (BPA 2006). Long-term noise impacts from the operation of the proposed substations would be ***low.***

North Alternative Route Options

<u>Long Valley Road Option</u>

The Long Valley Road Option would move a portion of the proposed ROW onto private land that is currently in agricultural use. Because this land is currently in active grazing and crop cultivation, there are few nearby residences. Therefore, it is unlikely that the Long Valley Road Option would result in a change in overall noise impact levels compared to those described above. Helicopter use and blasting during construction would result in ***moderate*** to ***high*** noise impacts to sensitive receptors in residential areas within 1 mile from helicopter use and up to 2 miles from blasting activities. Impacts from the operation and maintenance of the transmission line would be ***low***.

North Highland Option

The North Highland Option would move a 1.5-mile portion of the proposed ROW from private grazing land so that it would instead cross 1.2 miles of C-TNF lands and a small amount of forested private land. One residence would be approximately 750 feet from the proposed ROW as a result of this reroute. Residents or visitors here would experience ***moderate*** to ***high*** temporary, elevated noise levels associated with construction activities, equipment, and traffic. Impacts from the operation and maintenance of the proposed transmission line would be the same as described for the North Alternative (***low***).

3.12.3 Environmental Consequences of the South Alternative

Construction of the South Alternative would generate noise similar to the North Alternative in the vicinity of the project corridor. However, given the reduced length of the alternative, noise disturbances could be slightly shorter in duration. Noise levels also may periodically increase above ambient levels during operation and maintenance. This noise would have the potential to affect nearby noise sensitive receptors, such as residences and visitors to recreational areas. See Appendix I, Electric Fields, Magnetic Fields, and Audible Noise for calculations of electric and magnetic fields (EMF) and audible noise from the South Alternative.

Construction activities would create intermittent noise, limited to when these activities occur. Potential sources of noise would be the same as those listed for the North Alternative.

Construction of the Hooper Springs Substation, access roads, and transmission line structures for the South Alternative would generate the same noise impacts resulting from similar sources as described for the North Alternative. Table 3-30 summarizes noise levels produced by construction equipment that would likely be used for the South Alternative.

Regulations used as a guideline for assessing noise impacts from daytime construction activities to individuals or residences located in the vicinity of the North Alternative corridor can also be applied to the South Alternative. Construction noise levels in the South Alternative equal to or less than 50 dBA would be a low impact. If construction noise levels exceed 50 dBA, this would be a moderate to high, although temporary impact.

Similar to the North Alternative, the South Alternative corridor consists mainly of open range, undeveloped land, and agricultural land with few residences that could be affected by noise from ground level construction activity. There are three residential structures within approximately 500 feet of the ROW that may experience a ***moderate*** to ***high*** impact from temporary, elevated noise levels associated with construction activities and the movement of construction-related vehicles.

Should helicopters be used during construction of the South Alternative, homes within approximately 1 mile of the helicopters would be exposed to noise levels that would temporarily exceed 65 dBA, similar to the North Alternative. Helicopter noise would result in a ***moderate*** to ***high*** impact that would be limited in duration.

Blasting, if used for the construction of the South Alternative, would occur in a manner similar to that described for the North Alternative. Blasting would result in a temporary ***moderate* to *high*** impact.

Noise associated with the maintenance of the South Alternative would be generated from the same sources and result in similar impacts as those described for the North Alternative. Noise impacts from maintenance would typically be ***low*** due to the short duration and infrequent occurrence of these activities.

During operation, the South Alternative transmission line would result in 18 dBA of corona-generated foul weather audible noise at the edge of the ROW. This is well below the EPA outdoor activity noise guideline of 55 dBA (EPA 1974; EPA 1978). Similar to the North Alternative, corona generated noise is of concern primarily for transmission lines operating at voltages of 345 kV and above (BPA 2006). As described in Chapter 2, the South Alternative would operate at a lower voltage (115 and 138 kV); therefore, actual audible noise levels from corona activity would be ***low*** and decrease with distance.

At the proposed Hooper Springs Substation site, noise from substation equipment (primarily transformers) and nearby transmission lines would be the primary long-term source of noise. The Hooper Springs Substation would be separated from areas of residential development to the east by Threemile Knoll, a ridgeline that would further buffer any noise impacts associated with both construction and operation of the substation. Long-term noise impacts from the operation of the proposed substation would be ***low.***

South Alternative Route Options

<u>Options 1, 2, 3, and 4</u>

Options 1, 2, 3, and 4 would traverse areas similar to those that would be crossed by the South Alternative. Construction activities, helicopter use, and blasting would yield the same temporary, elevated noise levels as the South Alternative (***moderate*** to ***high*** impact). Impacts from the operation and maintenance of these proposed transmission line route options would be the same as described for the South Alternative (***low***).

<u>Option 3A</u>

Potential noise-related impacts during the construction of Option 3A would be similar to those described under the South Alternative and its other options, but would also include noise-related impacts to the Blackfoot River WMA from construction because of Option 3A’s alignment across the southern portion of the Blackfoot River WMA. The Blackfoot River WMA attracts recreationists for pursuits such as hunting, fishing, bird watching, and hiking, among others (see Section 3.2, Recreation). Although the ROW for Option 3A would be along the southernmost edge of the Blackfoot River WMA and would not be near the main areas used by recreationists, those people on the WMA within 1 to 2 miles from construction activities may experience an increase in noise levels. This area would include those sections of the Blackfoot River where angling could occur. The increased noise levels from construction in this area would result in temporary ***moderate*** to ***high*** noise impacts. Impacts from the operation and maintenance of the proposed transmission line would be the same as described for the South Alternative (***low***).

3.12.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate noise impacts from the Project.

- Provide a schedule of construction activities, including blasting, to all landowners who could be affected by construction.
- Ensure that all equipment has standard sound-control devices.
- Use blasting mats to reduce noise levels.
- Conduct noise-generating construction activities only during normal daytime hours, i.e., between 7:00 a.m. and 7:00 p.m., to the extent possible.
- Schedule heavy and over-sized truck trips outside of peak morning and evening commute hours (see Section 3.11.4, Transportation).

3.12.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable noise impacts would include short-term increases in sound levels experienced by area residents up to 2 miles from construction activities associated with the North and South alternatives and their options including the portion of Option 3A that crosses the Blackfoot River WMA. Some corona noise may also be heard along the line, especially in wet or foggy weather. Substation operations would create long-term noise impacts that are expected to be minimal due to BPA design criteria.

3.12.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so existing background noise levels in the project area would continue without the influence of the transmission lines.

3.13 Public Health and Safety

3.13.1 Affected Environment

Transmission facilities provide electricity for heating, lighting, and other services essential for public health and safety. A variety of existing sources in everyday life can pose public health and safety issues. This section describes public health and safety concerns, such as shocks, fires, EMF, hazardous waste generated during construction, and contamination (due to the presence of mines in the project area) related to transmission facilities or construction activities.

Electric and Magnetic Fields

All electric devices produce EMF. Current, the flow of electric charge in a wire, produces the magnetic field. Voltage, the force that drives the current, is the source of the electric field. The strength of EMF depends on the design of an electrical line and distance from it. EMF is found around any electrical wiring, including household wiring, electrical appliances, and equipment.

Electric fields are measured in volts per meter (V/m) or kilovolts per meter (kV/m). In a home, the average electric field strength from wiring and appliances is typically less than 0.01 kV/m. Electric field levels in public buildings such as shops, offices, and malls are comparable with residential levels. Outdoor electric fields in publicly accessible places can vary widely from less than 0.01 kV/m to 12.0 kV/m; the higher fields are present only in limited areas along high-voltage transmission line ROWs (see Appendix I). Electric field strength is reduced by intervening objects such as walls and vegetation.

The International Committee on Electromagnetic Safety (ICES) has established public exposure guidelines of 5 kV/m for electric fields, except on power line ROWs where the limit is 10 kV/m. However, there are no national guidelines or standards for electric fields from transmission lines, and the state of Idaho has no electric field limit. BPA has guidelines for its transmission lines and designs new transmission lines to meet its electric-field guideline of 9 kV/m maximum on the ROW, 5 kV/m maximum at the edge of the ROW, 5 kV/m for road crossings, and 2.5 to 3.5 kV/m in parking lots.

Magnetic fields are measured in units of gauss (G) or milligauss (mG). Average magnetic field strength in most homes (away from electrical appliances and wiring) is typically less than 2 mG. However, appliances carrying high current or with high-torque motors, such as microwave ovens, vacuum cleaners, or hair dryers, may generate fields of tens or hundreds of mG directly around them (see Table 3-32). Office workers operating electric equipment and machine workers are exposed to similar or higher magnetic fields. Outdoor magnetic fields in publicly accessible places can range from less than a few mG to 300 mG or more, depending on proximity to power lines and the power line voltage (see Appendix I).

Table 3-32. Typical Magnetic Field Levels

Appliance[1]	Magnetic Field Range (mG)[1,2]
Can Opener	40–300
Vacuum Cleaner	20–200
Microwave Oven	1–200
Hairdryer	0.1–70
Power Drill	20–40
Television	0–20
Computer Monitor	2–6

Source: NIEHS and National Institute of Health 2002

[1] Applies to plug-in devices.

[2] At a distance of 1 foot.

Like electric fields, magnetic fields fall off with distance from the source. Unlike electric fields, however, magnetic field strength is not reduced by intervening objects such as walls. Consequently, while appliances can produce the highest localized magnetic fields, power lines serving neighborhoods and distribution lines and transformers serving individual homes or businesses can be a common source of longer-term magnetic field exposure.

There are no national guidelines or standards for magnetic fields, and Idaho and BPA do not have magnetic field limits for transmission lines. Guidelines that do exist for public and occupational magnetic field exposures are based on demonstrated responses to short-term exposures and include appropriate safety factors. For example, ICES has established public exposure guidelines of 9,040 mG for magnetic fields (ICES 2002). Some studies have been conducted on longer-term exposure, but have been inconclusive (see Appendix J).

Hazardous Waste

Several common construction materials (e.g., concrete, paint and wood-pole preservatives) and petroleum products (e.g., fuels, lubricants, and hydraulic fluids) would be used during construction.

Contamination

Southeast Idaho has been a major phosphate-producing region since the mid-20th century (Petrun 1999). Phosphate mining near Soda Springs has left behind disposal sites from which selenium and other contaminants including heavy metals have been released. Past studies, including mining company investigations and area-wide investigations, have identified these disposal sites as sources of contamination that may pose a risk to human health and the environment (IDEQ 2004). These contaminants are known or suspected to be present in groundwater, surface water, sediment, soils, and plants within the mining areas and may be transported beyond the mining areas.

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Section 9601 et seq., is a statutory scheme for addressing sites with significant contamination that threatens human health and the environment. It is especially useful where the contamination is significant and there are several owners or operators who are potentially liable (see Section 4.13.6 for more information on CERCLA). The statutory scheme imposes joint and several liability and therefore BPA would work closely with the USFS and the mining companies to identify a potential pathway for its transmission facilities through the phosphate mining areas to avoid known contamination and minimize its environmental liability.

Sites with known and potential contamination located near the North and South alternative and Option 3A corridors were researched by reviewing federal and state environmental databases (EPA 2011a; Southeast Idaho Selenium Information Center 2011). There is one existing CERCLA site (the Henry Mine) located within 1 mile of the North Alternative corridor and the northern portion of the Long Valley Road Option. There are four mining areas (the Conda/Woodall Mountain Mine, Ballard Mine, Wooley Valley Mine, and North Maybe Mine) in the vicinity of the South Alternative corridor and its options that are currently undergoing investigation under CERCLA. Option 3A attempts to avoid mining areas, but does pass within the vicinity of the North Maybe Investigation Area and through several mineral leases, as well as the far northern portion of the proposed Husky-North Dry Ridge mine area located on the Bigfoot River WMA. This section describes these mine sites and existing hazardous waste and contamination issues associated with them, and also provides information about two other mines (the Blackfoot Bridge and Husky-North Dry Ridge mines) located in the project area (see Map 3-5 in Section 3.1, Land Use, for the location of mining areas near the project corridors).

<u>Henry Mine</u>

The Henry Mine, operated by the Monsanto Company (now known as P4 Production, LLC) from 1969 to 1989, is located 1 mile southeast of the town of Henry, Idaho, and approximately 3,500 feet (0.7 mile) east of the North Alternative and Long Valley Road Option corridors (see Map 3-5). The footprint of the mining disturbance is about 5 miles long and 0.5 mile wide. The site comprises five mine pits, waste rock dumps, haul roads, and sedimentation ponds (MWH Americas, Inc. 2004). The site was reclaimed by backfilling most of the pits, and grading, shaping, and revegetating disturbed areas (EPA 2010a).

In 2009, the Henry Mine was designated as a Superfund site. This site is currently under review to determine the nature and extent of contamination. P4 Production, LLC, is under an EPA Agreed Order for a Remedial Investigation and Feasibility Study (RI/FS) of the Henry Mine and two other mine sites (Ballard Mine and Enoch Mine). The contaminants of potential concern (COPC) for soil, groundwater, surface water, and sediment at the Henry Mine include one or more of the following: cadmium, chromium, copper, molybdenum, nickel, selenium (the contaminant known to be released and considered of most concern), vanadium, zinc, and uranium.

The summary below of contamination at the Henry Mine Superfund Site contains information obtained from the 2011 Ballard, Henry, and Enoch Mines Final RI/FS Study Work Plan by MWH Americas, Inc. (MWH Americas, Inc. 2011). Three factors related to contamination presence—soils; surface water and sediment, and groundwater—are discussed.

Soil—Surface soil characterization at the Henry Mine has been performed for upland and riparian soils during several investigations by MWH Americas, Inc., since 2004. These investigations determined that there are isolated areas in the mine dumps with concentrations of cadmium, manganese, and vanadium greater than 2009 EPA regional screening levels. In addition, selenium concentrations have been detected greater than background concentrations, but less than EPA screening levels, primarily on the mine waste dumps and a haul road. Studies also indicate that total uranium concentrations do not exceed screening levels based on chemical risks; however, radiogenic risks may be present but that data has not yet been collected. Finally, arsenic and manganese concentrations were detected at concentrations greater than EPA screening levels.

Surface Water and Sediment—Surface water monitoring has occurred primarily in the spring and the fall at the Henry Mine area since 1997 with 31 stations used to evaluate potential impacts on surface water and sediment. Monitoring of selenium and other substances has detected concentrations at downstream locations that are generally less than EPA surface water screening levels and preliminary background levels. For example, selenium has been detected at concentrations less than the EPA screening level in sediment samples collected from the Little Blackfoot River. However, COPCs that were detected in the sediment of the Little Blackfoot River at concentrations greater than the EPA screening level, but less than preliminary background concentrations, include cadmium, chromium, nickel, vanadium, and zinc.

Dump seeps, springs, and ponds located at the mine exhibited a greater number of monitored substances in surface water at concentrations greater than the applicable EPA screening levels compared to downstream locations.

Groundwater—Groundwater flow direction in alluvial groundwater systems generally follows topography and is closely related to stream discharges. Based on topography, alluvial groundwater from the western portion of the Henry Mine likely flows west toward the North Alternative corridor. According to the RI/FS Work Plan (MHA Americas, Inc. 2011), groundwater flow from the pits and waste dumps at the Henry Mine tend to flow toward the northeast, away from the North Alternative and Long Valley Road Option corridors.

Between 2007 and 2009, groundwater monitoring occurred at the Henry Mine at 16 wells. Monitoring at the well located in the vicinity of the North Alternative and Long Valley Road Option corridors detected concentrations of COPCs in groundwater, but the samples did not exceed EPA screening levels. Groundwater exceedances of the EPA screening level were only detected in wells located adjacent to waste rock within the mine boundaries.

Conda/Woodall Mountain Mine

The Conda/Woodall Mountain Mine, operated by Simplot from 1960 until its closure in 1984, is located within a portion of the corridors for the South Alternative and Options 1 and 2 just east of the Hooper Springs Substation site (IDEQ 2010b, Newfields 2008) (see Map 3-5). Option 4 joins the same route as the South Alternative between line miles 6 and 7 within the Conda/Woodall Mountain Mine study area. Mining operations disturbed approximately 1,700 acres of land, of which approximately 580 acres of the disturbed lands have been reclaimed (Newfields 2008). A majority of the disturbance occurred on Simplot-owned property with fewer activities occurring on privately owned lands and BLM lands (Newfields 2008, IDEQ 2010b, Causey and Moyle 2001).

The Conda/Woodall Mountain Mine is currently undergoing investigation under CERCLA. Simplot entered into a Consent Order/Administrative Order of Consent in 2008 with Idaho Department of Environmental Quality (IDEQ), U.S. Department of the Interior, and BLM to investigate contamination originating from the mining activities (IDEQ no date). Under the order, Simplot will conduct a remedial investigation (RI) through the development of a baseline risk assessment for the Conda/Woodall Mountain Mine, which will assess contamination from past mining activities and determine any resultant threats from these actions to environmental and human health. If, as a result of the RI, it is determined that the mine poses an unacceptable risk, then Simplot would identify potential clean-up alternatives in a Feasibility Study (FS). The RI/FS work plan was finalized in 2008 and the RI/FS was anticipated to be completed in 2013 (Newfields 2008, IDEQ 2011a).

Options 1 and 2 corridors cross approximately 3,500 linear feet of the Conda site (i.e., lands where contaminate source areas may be located). The mine lands crossed by Option 1 are classified as Overburden, Miscellaneous, and Haul Road. Option 1 does not cross either the new or old tailings pond, although it does come within 100 feet of the old tailings pond. The approximate 125-acre Old Tailings Pond was constructed for tailings disposal (Newfields 2008). The area is currently sparsely vegetated with shrubs and grasses. The approximately 138-acre New Tailings Pond was constructed in 1979 to replace the Old Tailings Pond. The New Tailings Pond is currently used as a water reservoir. Both the Old and New Tailings Ponds have been identified as potential contaminant source areas.

The remainder of the South Alternative and Options 1 and 2 corridors west of the Blackfoot River crossing are more than 3,000 linear feet west of the Conda site boundary. However, these portions of the corridors cross approximately 5 miles of the Conda/Woodall Mountain Mine study area. Option 4 also crosses about 1.5 miles of the study area. The study area consists of lands located outside of the mine boundaries to which COPCs may have been transported by pathways such as surface water or groundwater flow (Newfields 2008).

The COPCs for soil, groundwater, surface water, and sediment at the Conda/Woodall Mountain Mine have been identified as cadmium, chromium, nickel, selenium, vanadium, zinc, and uranium (Newfields 2008). Preliminary characterization of COPCs at the site has focused on selenium as the indicator to conservatively delineate the release and extent of site COPC contamination. The following is BPA’s summary of the site sampling results that were reported in the site’s 2008 RI/FS work plan (Newfields 2008) and the 2009 data summary report (Formation Environmental 2010).

Soil—Surface and subsurface soil characterization at the Conda/Woodall Mountain Mine has been conducted during several investigations since 2003. Soil samples were taken from within the mine disturbance area and in the study area east of the mine footprint. Generally, sampling found that the overburden disposal areas (ODAs), compared to tailing ponds and waste-rock piles, contained the greatest selenium concentrations (Formation Environmental 2010). The average selenium concentration measured at 10 sampling locations in the Old Tailings Pond exceeded screening levels. Other constituents that exceeded screening levels in the Old Tailings

Pond soils included antimony, barium, cadmium, chromium, uranium, vanadium, and zinc (Newfields 2008). A subsurface and surface soil sample collected at the New Tailings Pond did not have selenium concentrations that exceeded screening levels. No additional soil samples have been collected at the New Tailings Pond (Formation Environmental 2010). The western portion of the study area, near the South Alternative and options crossing, was not sampled for soil contamination.

Surface Water and Sediment—Within the Conda site boundaries, the South Alternative and Options 1 and 2 corridors cross the French Drain Subbasin and abut the Old Tailings Pond Subbasin (Newfields 2008). The South Alternative and Options 1 and 2 also cross the Western Woodall Mountain Subbasin within the mine's study area. Surface water samples from small seasonal pools were collected between 2003 and 2009 in the Old Tailings Pond Subbasin. Selenium concentrations in the seasonal ponds exceeded water quality screening levels. The average water selenium concentration in the New Tailings Pond was below the screening levels, though sediment selenium concentrations exceeded thresholds (Formation Environmental 2010, Newfields 2008).

Review of topographic, aerial, and RI/FS work plan mapping indicates that the South Alternative and Options 1 and 2 corridors cross Woodall Mountain Creek #6, which is an intermittent waterbody that drains from Woodall Mountain. Within the Conda study area, the South Alternative and Options 1 and 2 corridors cross Woodall Mountain Creeks #1, #2, #3, #4, and #5 (Newfields 2008). All of these Woodall Mountain waterbodies were dry during snowmelt sampling events during 2003, 2004, 2007, and 2008 (Formation Environmental 2010). Sediment samples in Woodall Mountain Waterbody #6 exceeded the screening level benchmark. Sediment samples in Woodall Mountain Creeks exceeded the screening level benchmark in some locations, but sediment data showed that the average selenium concentrations within the drainages decreased with distance from the ODAs.

Groundwater—Groundwater at the Conda site occurs in the shallow, unconsolidated sediments and in deeper, consolidated bedrock. Groundwater data are available for four wells and one spring in the Western Woodall Subbasin. Sampling found selenium and other COPC levels below the federal drinking water standard (Newfields 2008, Formation Environmental 2010). Sampling of unconsolidated groundwater formations in the Old Tailings Pond Subbasin in 2009 found that total selenium and multiple other COPCs (arsenic, cadmium, chromium, lead, nickel, uranium, and vanadium) exceeded the federal drinking water standard (Formation Environmental 2010). One of the two consolidated groundwater formations was found to have COPCs (selenium and arsenic) that exceeded the federal drinking water standard. Sampling of unconsolidated groundwater formations in the French Drain Subbasin found selenium exceeding federal drinking water standard concentrations at one groundwater well, while a different well exceeded arsenic, cadmium, chromium, and lead drinking water standards (Formation Environmental 2010). In consolidated deposits, cadmium, arsenic, selenium, and vanadium concentrations exceeded federal drinking water standards.

Blackfoot Bridge Mine

The Blackfoot Bridge Mine, owned by P4 Production, is located within the western portion of the corridors of the South Alternative and Options 1, 2, and 4 north of the Conda/Woodall

Mountain Mine (see Map 3-5). Lands leased to P4 for the Blackfoot Bridge Mine are located primarily on BLM lands, with some private lands. BLM Pocatello Field Office prepared an EIS that analyzed the potential impacts of the proposed mine and reclamation plan for the federal phosphate leases owned by P4 about 10 miles northeast of Soda Springs in Caribou County, Idaho. Idaho Department of Lands also participated as a Cooperating Agency in the preparation of the EIS because of its responsibility for mining and reclamation on non-federal lands within the state of Idaho. BLM signed a Record of Decision in June 2011 allowing implementation of the 2008 Revised Blackfoot Bridge Mine and Reclamation Plan.

P4 is currently operating an open-pit phosphate mine using external overburden piles, a haul road, a water management plan, and other provisions to address environmental impacts. Ore processing is being conducted off-site. The phosphate ore is being mined and hauled via truck on an existing haul road approximately 8 miles to P4's Soda Springs elemental phosphorus plant for processing. No processing facilities other than typical crushing and screening operations are occurring on the mine site. All chemical processing activities occur at the Soda Springs plant. The ore mined is expected to be physically and chemically similar to that produced at other P4 mine properties in the area.

Surface disturbance resulting from the Blackfoot Bridge Mine will total about 738.9 acres, including 361.4 acres from pits, 185.8 acres from overburden piles, 86.8 acres from roads and related facilities, 66.9 acres from sediment control structures, and 38 acres from topsoil stockpiles. Reclamation would take place over the life of the mine, with about 674 total acres being reclaimed. The remaining 65 acres would be highwalls and similar areas with steep slopes where it would be impractical to place soil or revegetate and would not be reclaimed.

Ballard Mine

In addition to the Henry Mine, P4 Production, LLC also owns the Ballard Mine. The southwestern boundary of the Ballard Mine is about 1,300 feet northeast of the South Alternative corridor and all five route options (see Map 3-5). This mine is located on private, state, and BLM lands and comprises six open mine pits (191 acres), six waste rock dumps (317 acres), various sedimentation ponds, haul roads, shop building, and other facilities (96 acres). The portion of the Ballard Mine nearest to the South Alternative and its options is identified as a waste rock dump location.

The Ballard Mine is currently undergoing investigation under CERCLA. P4 Production, LLC, is under an EPA Agreed Order for a RI/FS of the Ballard Mine, as well as two other mine sites (Henry Mine and Enoch Mine). Site specific investigation sampling activities have occurred in the area since 1998 (MWH Americas 2011). The COPCs for soil, groundwater, surface water, and sediment at the Ballard Mine include one or more of the following: cadmium, chromium, copper, molybdenum, nickel, selenium, vanadium, zinc, and uranium. The following is BPA's summary of information obtained from the Ballard Mine 2011 Final RI/FS Work Plan.

Soil—Upland and riparian surface soils have been characterized for the Ballard Mine during several investigations since 2004. The soil samples were collected throughout the site and extended to some locations outside of the site boundaries, such as along the Monsanto Haul Road. Sampling found isolated areas with elevated concentrations of cadmium, cobalt, nickel, manganese, and vanadium. Arsenic concentrations exceeded screening levels primarily at mine waste dumps, mine pit areas, and the haul road. Selenium concentrations were found below the screening level, but at levels that exceeded background levels at mine waste dumps, pit areas, and the haul road.

Surface Water and Sediment—The Ballard Mine is located within three major drainages: Long Valley Creek, Wooley Valley Creek, and the Blackfoot River (MWH Americas 2011). Several intermittent and ephemeral drainages originate from or cross the Ballard Mine and are tributaries to the Blackfoot River, located south of the mine. The South Alternative and all five route options cross several of these intermittent and ephemeral drainages.

Surface water monitoring has occurred primarily in the spring and fall since 1997. Selenium, as well as other COPCs such as cadmium, nickel, zinc, and vanadium, periodically exceeds screening criteria in surface waterbodies around the Ballard Mine. Mine waste dump seeps, springs, and ponds contained a greater number of constituents elevated above screening levels compared to streams. Total selenium concentrations in surface waters were generally higher than background levels and often exceeded the IDEQ standard in seeps, springs, and ponds within the site, as well as at a few downstream locations. Sediment data identified isolated instances of screening level exceedances for vanadium and frequent screening level exceedances for cadmium, chromium, nickel, and selenium in seeps, springs, ponds, and downstream locations.

Groundwater—Groundwater monitoring occurred primarily between 2007 and 2009 (MWH Americas 2011). Isolated monitoring wells reported concentrations of arsenic and cadmium in groundwater above screening levels. Selenium, sulfate, and total dissolved solids also exceeded their groundwater screening levels in several monitoring wells. The monitoring wells with elevated concentrations were located in the interior of the mine, while monitoring wells on the perimeter of the mine had selenium concentrations in groundwater below screening levels. On the east side of the mine, impacted alluvial groundwater is associated with two waste rock dumps and has resulted in three distinct plumes with elevated concentrations of contaminants. On the west side of the mine, impacted alluvial groundwater is associated with two waste rock dumps and has resulted in two distinct plumes.

Wooley Valley Mine

Rhodia, Inc. is the current lease holder of the Wooley Valley Mine (Moyle and Causey 2001). The South Alternative and Options 1, 2, 3, and 4 cross approximately 160 feet of the southern portion of the Wooley Valley Mine on BLM land in an area that was used as a mine pit and rock waste dump (see Map 3-5). From west to east, Option 3A crosses through the Wooley Valley Mine area just south of an ore stockpile and sediment catchment area and just north of the former mine pit and rock waste dump area mentioned above. The disturbance footprint associated with mining activities totals approximately 808 acres with the majority (approximately 75 percent) of the mine site located on USFS lands with fewer portions on private (20 percent) and BLM (5 percent) lands.

The Wooley Valley Mine is currently undergoing investigation under CERCLA. USFS has conducted a Preliminary Assessment (PA) for the portions of the Wooley Valley Mine that are located within the CNF (USFS 2000). A PA is designed to determine whether a site poses little or no threat to human health and the environment, or if it does pose a threat, whether the threat requires further investigation. In the future, USFS will extend its authority to the entire Wooley Valley site and will address the entire site in future USFS actions (USFS 2000). As of January 2014, additional site investigation assessments or work plans for the Wooley Valley site had not been developed (Larson 2012, personal communication). In the PA, USFS identified the following COPCs: selenium, cadmium, zinc, vanadium, and manganese (USFS 2000). Of these COPCs, selenium was identified as having the greatest potential for concern. In 1997 and 1998, investigations were conducted at the site. The following is BPA's summary of the findings for USFS lands as described in the PA.

Soil—Surface soil sampling identified concentrations of selenium, cadmium, manganese, nickel, and vanadium (USFS 2000). No waste rock soil sampling had been conducted for the site at the time of the PA. Waste rock dumps at similar mines in the area suggest that the waste rock dumps in the Wooley Valley Mine would likely contain elevated concentrations of selenium, vanadium, manganese, cadmium, and zinc.

Surface Water and Sediment—The South Alternative and Options 1, 2, 3, and 4 cross between the mine and the Blackfoot River, and also a wetland at the southernmost tip of the mine's waste dump. Based on review of topographic and aerial mapping, the wetland feeds an intermittent waterbody, which flows approximately 1,900 feet into the Blackfoot River. This unnamed tributary was identified as a contaminant probable point of entry in the PA (USFS 2000). Option 3A does not cross through this wetland area but does cross over the unnamed intermittent waterbody.

Surface water sampling conducted at various locations in the Wooley Valley site during the late 1990s indicated elevated concentrations of selenium from overburden dump seeps, though sampling on the Blackfoot River did not exceed water quality criteria (USFS 2000). Surface sediment samples were similar (within three times of background levels) to selenium concentrations collected in other streams in the area. Selenium concentrations in seep samples and pit ponds exceeded background levels.

Groundwater—At the time of the PA, limited groundwater monitoring data was available. Twelve wells located within a 4-mile-radius of the mine area indicated that selenium concentrations were under federal drinking water standards (USFS 2000).

North Maybe Mine

Lands leased to the Nu-West Mining, Inc. (Nu-West) for the North Maybe Mine (also called the North Maybe Mine Investigation Area) are located primarily on C-TNF lands, with some mining lands located on BLM and privately held lands (see Map 3-5). The North Maybe Mine has been divided into two operable units: East Mill Operable Unit, which includes the mine pit and the area east of the pit; and the West Ridge Operable Unit, which is the area west of the mine pit (Ecology and Environment 2011). The South Alternative and all four route options are located more than 1 mile north of the East Mill Operable Unit's East Mill Dump, and approximately 4,800 feet north of the East Mill Operable Unit's Investigation Area 1 and also cross East Mill Creek downgradient of the East Mill Dump area. Option 3A does not cross East Mill Creek. However a portion of the South Alternative and all five route options cross the Investigation

Area. Investigation Area 1 has been delineated as either containing mine-related contamination or as an area where there is a potential for contaminated soil, surface water, groundwater, sediment, or vegetation (Ecology and Environment 2011).

Through a consent agreement with Nu-West, the North Maybe Mine is currently undergoing investigation under CERCLA. The draft final RI/FS Work Plan to address contamination at the East Mill Operable Unit was completed in September 2011 (Ecology and Environment 2011). Six COPCs associated with the mine were identified, including cadmium, chromium, nickel, selenium, vanadium, and zinc (Ecology and Environment 2011). Site sampling was performed on behalf of Nu-West during the 2005, 2006, and 2007 field seasons. The RI for the East Mill Creek Operable Unit began in spring 2013. Additional groundwater monitoring wells were completed during the summer of 2013. Following completion of the RI (an estimated 2 year process) the FS would commence, followed by the completion of any recommended removal or remediation, if needed. BPA's summary of the sampling of soil, surface and groundwater, and sediment, as described in the draft final RI/FS Work Plan (Ecology and Environment 2011), are included below.

Soil—Soil sampling has been conducted in the East Mill Operable Unit to characterize waste dump material, determine the effects of surface water transport of East Mill Dump waste, evaluate whether COPCs eroded off of the East Mill Dump into the upper reaches of Kendall Creek, and to identify riparian soils that may have been contaminated by East Mill Creek or Spring Creek flooding (Ecology and Environment 2011). All six COPCs were detected at concentrations above standards in the majority of samples collected from the East Mill Dump soils and all six COPCs were elevated in surface waste rock soils and in the riparian soils along East Mill Creek, including areas a considerable distance downstream of the waste dump. The majority of the exceedances were at or near the headwaters of East Mill Creek, in the top 2 inches of soil.

Surface Water and Sediment—Surface water sampling was conducted to assess the possible release of contaminants from waste rock to East Mill Creek, Kendall Creek, Mosquito Creek, and downstream waterbodies; characterize the extent of any such releases; and evaluate seasonal variations in surface water flow and quality (Ecology and Environment 2011). Within Investigation Area 1, sampling during the 2005, 2006, and 2007 field seasons occurred at 47 locations, including creek water, springs, and ponds in and along East Mill Creek, North Branch Kendall Creek, South Branch Kendall Creek, and Mosquito Creek. The majority of the sediment samples were collected from identified sediment accumulation areas in Investigation Area 1 downstream of the East Mill Dump.

Selenium, cadmium, and vanadium were detected in the East Mill Operable Unit's surface water samples at concentrations above screening levels. The concentrations of all six COPCs were generally above the removal action levels in all of the upper East Mill Creek sediment samples and the Mine Pit pond sediments. COPC concentrations in East Mill Creek sediment were generally higher in samples from the surface deposits compared to deeper samples. COPC concentrations exceeded screening criteria in almost all of the East Mill Creek sediment samples from Investigation Area 8, which is downstream of Investigation Area 1 and the South Alternative and its option corridors. East Mill Creek sediment concentrations decreased downstream and, except for selenium, were below the screening levels in the samples collected from the sediment near the confluence with the Blackfoot River (downstream of the South Alternative and its option corridors). Sediment samples from Spring Creek and the Blackfoot River, near its confluence with East Mill Creek waters, exceeded screening levels for cadmium and selenium.

Groundwater—From 2005 to 2006, monitoring wells were constructed in and near the East Mill Operable Unit (Ecology and Environment 2011). Groundwater sampling was conducted to evaluate shallow and deep aquifer characteristics, determine the potential for groundwater contamination resulting from waste rock, and evaluate seasonal variations in groundwater elevations and quality. In addition to monitoring wells located on the west and south of the mine site, groundwater wells were located near the East Mill Dump site at the head waters of East Mill Creek and two groundwater sampling wells were located near the mouth of East Mill Creek in Investigation Area 8, which is downgradient of the South Alternative and its option corridors.

Selenium, cadmium, chromium, and vanadium were detected in East Mill Operable Unit groundwater samples at concentrations above the screening levels. Groundwater sampling at the mouth of East Mill Creek (downstream of the South Alternative and its option corridors) exceeded drinking water screening levels and removal action levels for total and dissolved selenium. Samples from groundwater wells in the East Mill Creek Alluvial Fan (downgradient of the South Alternative and its option corridors) exceeded drinking water screening levels for selenium; however, only the maximum detected selenium concentrations in one well exceeded the drinking federal drinking water standard. None of the other COPCs exceeded their screening levels in any of the samples from the wells.

Husky-North Dry Ridge Mine

The proposed Husky-North Dry Ridge Mine, owned by Nu-West, is located within a portion of the corridors of the South Alternative and Options 1, 2, 3, and 4 near the eastern end of the corridors just south of the Blackfoot River WMA (see Map 3-5). Lands leased to Nu-West for the Husky-North Dry Ridge Mine are on C-TNF lands, with some state of Idaho and private lands. Nu-West has proposed to construct, operate, and reclaim an open-pit phosphate mine with associated facilities on the Husky 1, North Dry Ridge, and Maybe Canyon federal phosphate leases. The total proposed new disturbance is approximately 1,051 acres. Most of the disturbance would take place on C-TNF lands, and the remainder, about 10 acres, would take place on private lands. Nu-West has not proposed mining facilities be located on state of Idaho lands or the Blackfoot River WMA, although BLM may require they include an alternative that provides for maximum ore extraction. The proposal includes enlargements to both the Husky 1 and North Dry Ridge leases and includes a request for special use permits to accommodate off-lease disturbance on C-TNF lands.

BLM Pocatello Field Office and the C-TNF, in cooperation with IDEQ, are jointly preparing an EIS to analyze the potential impacts of a proposed mine and reclamation plan for the three federal phosphate leases in the Dry Valley area of Caribou County, Idaho about 19 miles north east of Soda Springs, Idaho.

The proposed Husky 1-North Dry Ridge Phosphate Mine and Reclamation Plan describes Nu-West's plans for open pit mining phosphate ore in two different areas (Husky 1 and North Dry

Ridge). These areas are separated by the historically operated, now inactive, North Maybe Mine. Portions of the North Maybe Mine are currently undergoing investigation and remediation under the CERCLA program.

It is anticipated that mining of the North Dry Ridge area would occur for the first 2.6 years, followed by approximately 11 years of mining on the Husky 1 deposit. Overburden (soil and rock overlying the phosphate deposits) must be removed in order to gain access to the phosphate ore. Initially, overburden from North Dry Ridge would be placed in the existing North Maybe Mine pit as backfill, followed by overburden placement in the North Dry Ridge pit as mining progresses and room is made available. Overburden from Husky 1 would be placed in an external waste dump and into the existing South Maybe Canyon southern pit as backfill. As mining progresses through the Husky 1 deposit, overburden would be backfilled into the South Maybe Canyon pits, and backfilled into the Husky 1 pits. Phosphate ore mined from the pits would be transported in trucks via new haul roads to an existing haul road leading to the Maybe Canyon tipple, where it would be loaded onto rail cars for transport to Nu-West's Conda Phosphate Operations Plant in Conda, Idaho.

Nu-West proposes building new facilities to support the project, including a staging area, fuel storage area, dust suppression water wells, storm water retention ponds, haul roads, stockpile areas, and a train load-out facility (tipple). It also proposes to use the existing shop and office facilities at the Dry Valley Mine. The Mine and Reclamation Plan describes concurrent reclamation practices for the project, including backfilling pits as mining progresses, grading slopes, capping overburden disposal areas, re-establishing drainages, surface stabilization, and revegetation.

Approximately 1,051 acres on C-TNF and private lands could be impacted by the mining activities. Potential impacts that would be analyzed in the EIS include: impacts on groundwater and surface water quality from dissolved selenium and other metals (some of the overburden has naturally high levels of selenium); changes to groundwater and surface water quantity; uptake of contaminants by vegetation; loss of soil resources; changes to air quality; loss of wildlife (and fisheries) and their habitats; displacement of livestock grazing; impacts on wetlands; reduced opportunity for recreation; impacts on roadless areas; changes in socioeconomics such as employment; reduced opportunity to implement Native American rights, treaties, and land uses; and changes to visual resources.

3.13.2 Environmental Consequences of the North Alternative

General Safety Issues

During construction and installation of the structures and conductor/ground wires for the North Alternative, there is a risk of fire and injury associated with the use of heavy equipment, hazardous materials (fuels, cranes, helicopters, potential bedrock blasting for structures), and other risks associated with working near high-voltage lines. There is potential for fire during refueling of hot equipment, such as trackhoes and bulldozers, which cannot be taken off-site for refueling. In addition, there are potential safety issues with more traffic on the highways and roads near the North Alternative during construction. Impacts from operation and maintenance of the North Alternative are expected to be ***none*** to ***low***, but would include additional risk for fire and injuries as maintenance workers and vehicles travel along the corridor to perform required maintenance.

Electrical Safety

Power lines, like electrical wiring, can cause serious electric shocks if certain precautions are not taken. These precautions include building the lines to minimize shock hazard. All BPA lines are designed and constructed in accordance with the NESC. NESC specifies the minimum allowable distance between the lines and the ground or other objects. These requirements, in addition to BPA standards, determine the edge of the ROW and the height of the line, that is, the closest point that houses, other buildings, and vehicles are allowed to the line.

People must also take certain precautions when working or playing near power lines. It is extremely important that a person not bring anything, such as a TV antenna, irrigation pipes, or water streams from an irrigation sprinkler too close to the lines. BPA provides a free booklet that describes safety precautions for people who live or work near transmission lines (see Appendix L, Living and Working Safely Around High Voltage Power Lines).

Electric and Magnetic Fields

The possible effects of EMF on people near a transmission line ROW fall into two categories: short-term electric field effects that can cause shocks and possible long-term health effects associated with magnetic fields. In addition, transmission lines can cause electromagnetic interference. Each of these impacts is discussed below.

Electric Fields

Power lines, like electrical wiring, can cause serious electric shocks if certain precautions are not taken. All BPA transmission lines are designed and built to meet the NESC. The NESC specifies the minimum allowable distance between conductors and the ground or other objects. These requirements determine the edge of the ROW and the height of the line, that is, the closest point that houses, other buildings, and vehicles are allowed to the line. These clearances are specified to prevent harmful shocks to workers and the public.

BPA does not permit any uses within ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities. These restrictions are part of the legal rights BPA acquires for its transmission line easements. However, people working or living near transmission lines must also take certain precautions. For example, it is important never to bring conductive materials—including TV antennas, irrigation pipes, or water streams from an irrigation sprinkler—too close to the conductors. Also, vehicles should not be refueled under or near the conductors.

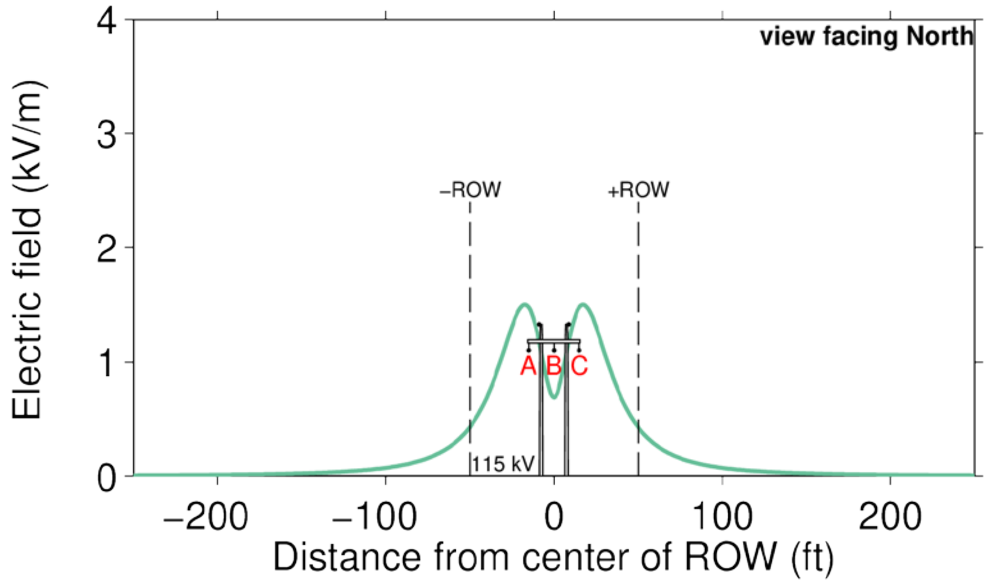
Besides serious shocks, transmission lines can also cause nuisance shocks when a grounded person touches an ungrounded object under or near a line or when an ungrounded person touches a grounded object. BPA takes additional precautions to prevent nuisance shocks. Fences and other metal structures on and near the North Alternative corridor would be grounded during construction. After construction, BPA would respond to any complaints and install or repair grounding as needed. Nuisance shocks from mobile objects that cannot be grounded permanently are minimized by conductor clearance codes and design practices, such as BPA's electric field requirements. BPA would ground stationary objects and implement conductor clearance standards to prevent nuisance shocks, so the impacts under the North Alternative would be ***low.***

Shock risks for nearby residents and passers-by would be minimal. Motorists passing near or under the lines would be exposed only briefly to electric fields. Electric fields would be required to meet BPA standards at street crossings; therefore, impacts from electric fields at street crossings under the North Alternative would be ***low***.

The electric field analysis for the North Alternative is discussed in more detail in Appendix I. Along the portion of the ROW where H-frame structures are proposed, the highest calculated electric field level would be 1.5 kV/m and would drop to 0.4 kV/m at the edge of the ROW. Along the portion of the North Alternative ROW where steel single-pole structures are proposed, the highest calculated electric field level would be 1.5 kV/m, which would decrease to 0.3 kV/m or less at the edge of the ROW. Figures 3-33 and 3-34 show the electric field profile as a function of distance from the center of the transmission line ROW. Both the maximum and average values expected at the edge of the ROW would be under BPA's guideline of 5 kV/m. These electric field levels would be comparable to or less than those from existing transmission lines in the area and elsewhere. Overall, electric field level impacts under the North Alternative would be ***low.***

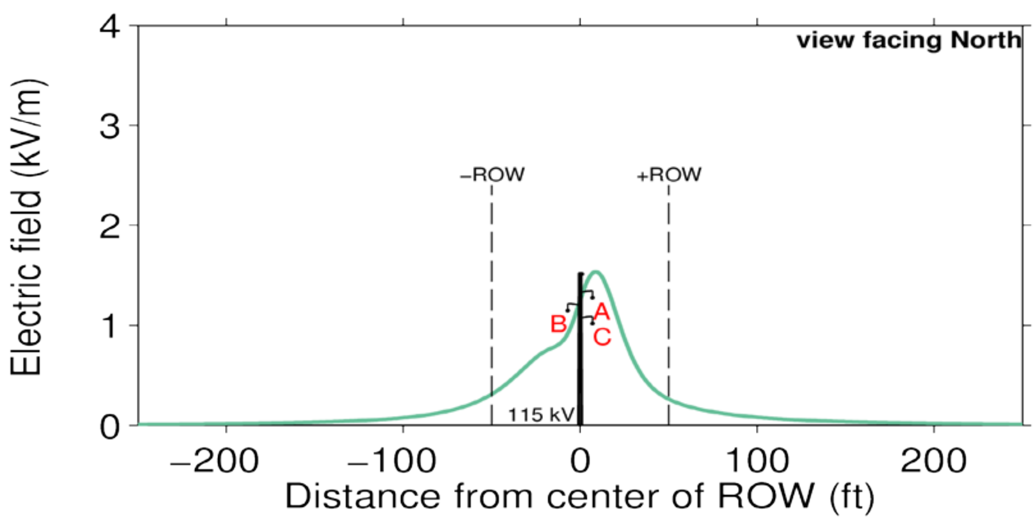
Electric fields would remain essentially the same at Lanes Creek Substation since facilities added to accommodate the North Alternative would not incrementally increase electric fields already present. Electric fields at the perimeter of the proposed Hooper Springs Substation would reflect fields generated by the new 115-kV and 138-kV transmission lines and would dissipate to ambient levels within a few hundred feet. Since there are no residences near either substation site, there would be ***no*** impact from electric fields at the substations.

Figure 3-33. Electric Fields around H-Frame Configuration for the North Alternative



Source: Appendix I

Figure 3-34. Electric Fields around Steel Single Pole Configuration for the North Alternative



Source: Appendix I

Magnetic Fields

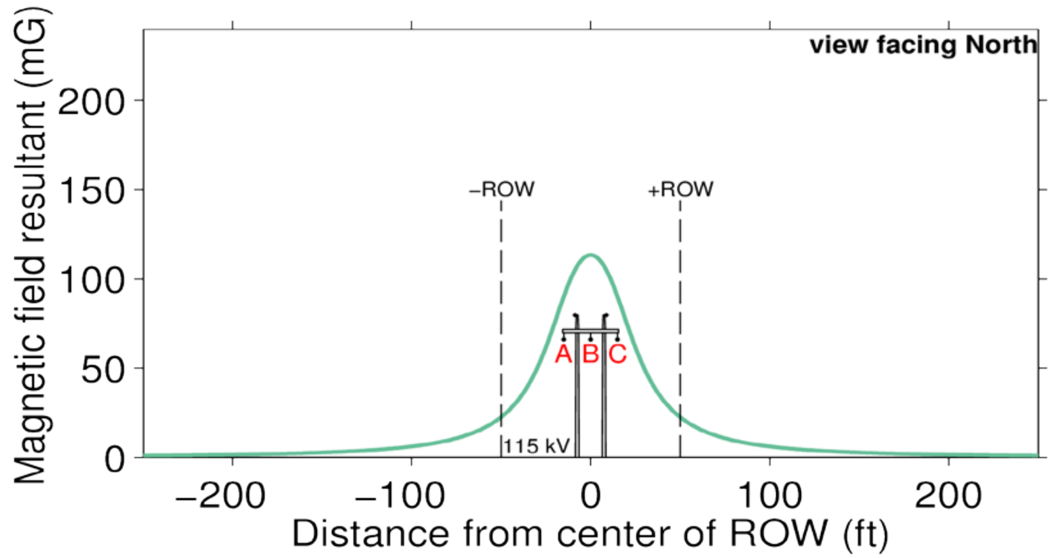
Although there have been decades of research regarding long-term health effects associated with transmission line fields, results remain inconclusive. Magnetic fields are most in question as possible sources of long-term effects, although studies sometimes lump both electric and magnetic fields together. In recent years, considerable research on the possible biological effects of EMF has been conducted. Appendix J includes a review of these studies and their implications for health-related effects.

Scientific reviews of EMF health effects research have found that there is insufficient evidence to conclude that EMF exposures lead to long-term health effects, such as adult cancer, or adverse effects on reproduction, pregnancy, or growth and development of an embryo. However, uncertainties remain about possible links between childhood leukemia and childhood magnetic field exposures at levels greater than 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. Animal and cellular studies provide little support for the idea that any statistical associations reflect a causal relationship, i.e., that magnetic-field exposure increases the risk of childhood cancer or miscarriage.

An increase in public exposure to magnetic fields could occur if the Project results in field level increases and if residences or other structures draw people to these areas. The predicted field levels discussed in this section are only indicators of how the North Alternative may affect the magnetic-field environment. They are not measures of risk or impacts on health.

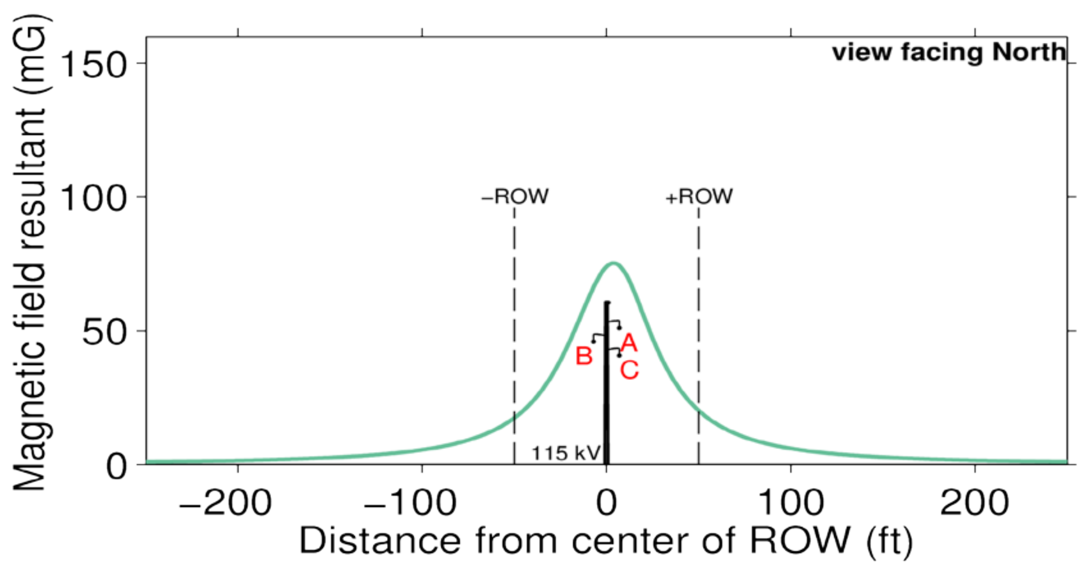
Along the portion of the North Alternative ROW where H-frame structures are proposed, the highest average magnetic field level would be 113.5 mG and drops to 22.7 mG at the edge of the ROW. Peak field values for H-frame structures range from 231.8 to 46.3 mG. Along the portion of the North Alternative ROW where the steel single pole structures are proposed, the highest average magnetic field level would be 75.3 mG decreasing to 20.2 mG or lower at the edge of the ROW. Peak field values for steel single pole structures would range from 153.8 to 41.3 mG. Maximum magnetic fields would occur on the ROW under power lines where conductors are closest to the ground, and decrease from the edge of the ROW. Figure 3-35 and 3-36 show the magnetic field profile as a function of distance from the center of the transmission line ROW for each structure type. Actual day-to-day magnetic field levels would be lower. They would vary because currents change daily and seasonally and clearances change with ambient temperature.

Figure 3-35. Magnetic Fields for H-Frame Configuration for the North Alternative



Source: Appendix I

Figure 3-36. Magnetic Fields for Single Steel Pole Configuration for the North Alternative



Source: Appendix I

Beyond the edge of ROW, magnetic fields fall off rapidly. For example, at a distance of 150 feet from centerline, both H-frame and single pole steel structure transmission lines with maximum current would produce a peak field of 5.7 mG and an average field of about 2.8 mG. Beyond a few hundred feet, the transmission lines' magnetic fields would approach common indoor ambient levels. Given these low levels, the lack of residences near the proposed ROW, and the very short-term nature of expected visitor presence near the proposed ROW, the potential for impacts associated with elevated magnetic fields under the North Alternative would be ***low***.

Magnetic fields would remain unchanged at the Lanes Creek Substation. Beyond the perimeter of the substation yard, magnetic fields would continue to be determined by fields from transmission lines entering the substation. The addition of a new 115-kV line would not incrementally increase fields. Magnetic fields at the perimeter of the proposed Hooper Springs Substation would reflect fields generated by the new 115-kV and 138-kV transmission lines, and would dissipate to ambient levels within a few hundred feet. Since there are no residences near either substation site, there would be ***no*** impact from electric fields at the substations. Motorists passing near or under the line would be exposed only briefly to magnetic fields, which would be required to meet BPA standards at street crossings.

Electromagnetic Interference

If corona is present at the surface of transmission line conductors, it can sometimes cause interference with broadcast radio and television signals close to the North Alternative ROW. This affects only conventional broadcast radio and television receivers operating at lower frequencies (AM radio and TV channels 2 to 6). Satellite and cable TV systems and FM radio signals are not affected. If complaints arise, BPA would take measures under its mitigation program to restore reception to the same or better quality.

Magnetic fields from transmission facilities can also interfere with other electronic equipment, such as distorting images on older TVs and computer monitors with cathode ray tubes. While unlikely to occur at the magnetic field levels found near the North Alternative, such interference is easily remedied by shielding the affected device or moving it to another location. Contemporary display devices using flatpanel technologies, such as liquid-crystal or plasma displays, are not affected. The North Alternative is not anticipated to create electromagnetic interference in nearby homes. Therefore, electromagnetic interference impacts would be ***low***.

Hazardous Waste

Hazardous materials, such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids would be used and stored in project work areas during construction. Gasoline, diesel fuel, oil, hydraulic fluid, lubricants, paints, solvents, adhesives, and cleaning chemicals used in construction activities, equipment, and vehicles could be released during construction as a result of accidents and/or leaking equipment or vehicles. Spills and leaks of hazardous materials during construction activities could also result in soil or groundwater contamination. Mitigation measures, described in Section 3.13.4, Mitigation, would be implemented to manage unanticipated hazardous materials and spills. As a result, impacts associated with unknown contaminates or the unintended release of construction-related hazardous materials would be ***none*** to ***low***.

Contamination

One site, the Henry Mine, would be located approximately 0.7 mile from the North Alternative. This alternative would not come into direct contact with waste dumps, seeps, or mine pits. The North Alternative's crossing of the Little Blackfoot River downgradient of the Henry mining area could result in the potential disturbance of contaminated soils or sediment that have washed downstream from the site. The May 2011 RI/FS detected concentrations of COPCs in groundwater from a well near the alignment, although concentrations did not exceed EPA screening levels. In addition, data from sampling locations in the Little Blackfoot River downstream of the mine indicate that selenium has been detected in surface water at concentrations less than the EPA screening level. No transmission line structures would be placed within 100 feet of the Little Blackfoot River and no access roads crossing the river would be constructed or improved. In the event that unknown or undetected contaminants have traveled downgradient from the Henry Mine along the Little Blackfoot River, project disturbance of contaminated sediments and water would not be likely due to the proposed construction distance from the river. Because the North Alternative would not result in ground disturbance near the mine footprint or within close proximity of the Little Blackfoot River, the risk of releasing contaminants associated with the Henry Mine would be ***low***.

It is possible that unknown contaminated sites could be discovered during project construction, particularly in agricultural lands crossed by the project corridor due to the off-site migration of pollutants or unauthorized dumping. If other contaminants are mobilized by soil-disturbing activities for the North Alternative (such as access road construction or structure installation), workers, the general public, and environmental features may become contaminated or exposed to toxic substances. Contaminants encountered in the construction area would require special handling to prevent releases. Contaminated soil and groundwater, if encountered, would require handling and disposal according to applicable local, state, and federal regulations.

None of the North Alternative's operation and maintenance activities would result in the release or exposure of contaminants related to current mining activities. Because the North Alternative would not cross existing mineral lease blocks, future mine development would not result in the release of mining contaminants from future ground-disturbing operation and maintenance activities. Therefore, there would be ***no*** to ***low*** impacts from contamination releases.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would use steel single-pole structures in the same configuration discussed above; therefore, similar ***low*** EMF levels would be generated (see Figures 3-35 and 3-36).

Under the Long Valley Road Option, construction would not occur in any active mines and the route option would not cross any undeveloped mineral lease blocks. The transmission line would still be located downgradient of the Henry Mine and cross the Little Blackfoot River. While the route option would cross the Little Blackfoot River approximately 830 feet closer to the mine, the transmission line would span the river and structures or access roads would not result in soil disturbance within 100 feet of the river. Therefore, there would be a ***low*** likelihood of mobilizing contaminated sediment from mining activities. Additionally, mitigation measures, described in Section 3.13.4, Mitigation, would be implemented to manage unanticipated hazardous materials and spills, which would result in ***no*** to ***low*** impacts.

North Highland Option

The North Highland Option would use wood H-frame structures in the same configuration discussed above; therefore, similar low electric and magnetic field levels would be generated (see Figures 3-33 and 3-34).

The North Highland Option would not be constructed in any active mine areas, cross any undeveloped mineral lease blocks, or cross any waterbodies downgradient of any mine areas. Therefore, there would be a low likelihood of mobilizing contaminated sediment from mining activities. Similar to the North Alternative and Long Valley Road Option, mitigation measures, described in Section 3.13.4, would be implemented to manage unanticipated hazardous materials and spills, which would result in ***no*** to ***low*** impacts.

3.13.3 Environmental Consequences of the South Alternative

General Safety Issues and Electrical Safety

Risk associated with fire and injury from the South Alternative are the same as described for the North Alternative. Potential safety issues during construction on the highways and roads near the South Alternative also would be the same as described for the North Alternative. Impacts from operation and maintenance of the South Alternative be the same as the North Alternative (***none*** to ***low***). Similar to the North Alternative, the South Alternative was designed and would be constructed in accordance with the NESC. Compliance with the same precautions along the South Alternative as described for the North Alternative would be essential (see Appendix L, Living and Working Safely Around High Voltage Power Lines).

Electric and Magnetic Fields

The possible effects of EMF near the South Alternative ROW would be the same as those described for the North Alternative: short-term electric field effects that can cause shocks and possible long-term health effects associated with magnetic fields plus possible electromagnetic interference.

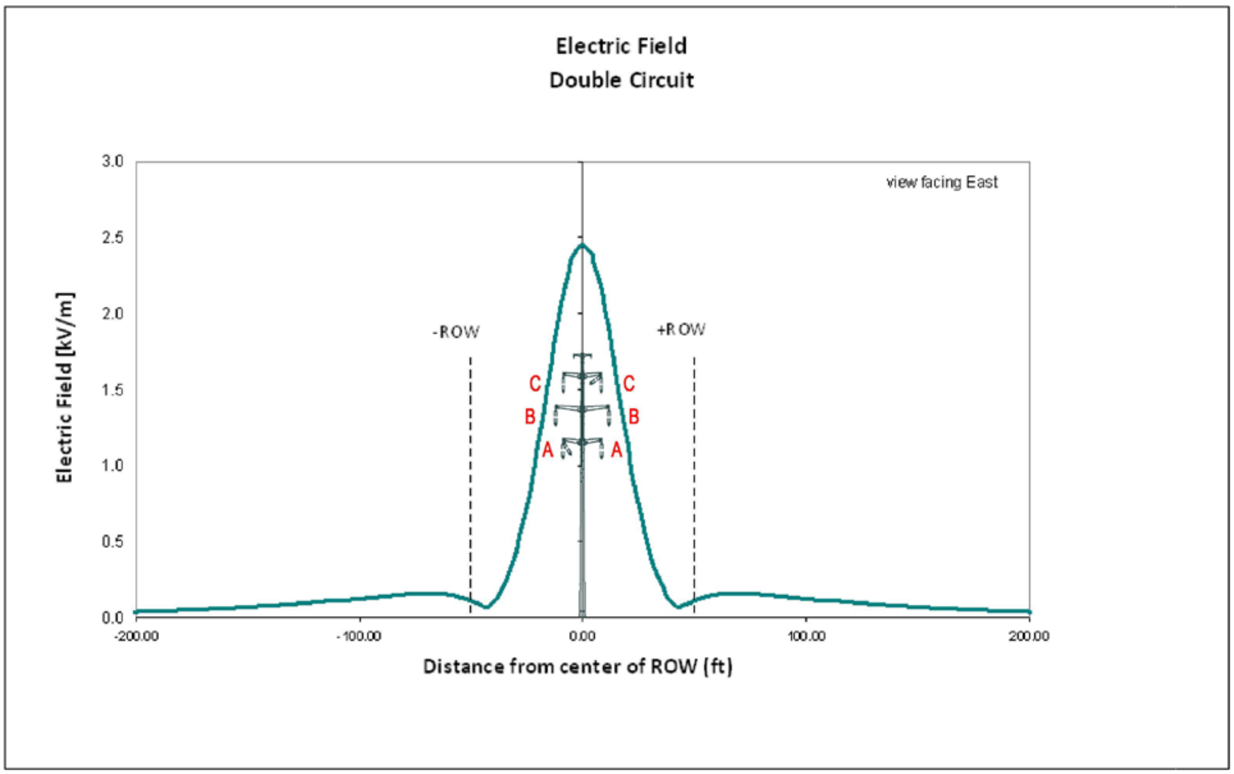
Electric Fields

Similar to the North Alternative, any uses within ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities would not be permitted under the South Alternative. Also similar to the North Alternative, precautions to prevent nuisance shocks would be implemented under the South Alternative, including grounding fences and other metal structures on and near the ROW during construction. After construction, BPA would respond to any complaints and install or repair grounding as needed. Because BPA would ground stationary objects and implement conductor clearance standards, the impact under the South Alternative from nuisance shocks would be ***low.*** Shock risks for nearby residents and passers-by also would be minimal. Similar to the North Alternative, motorists passing near or under the lines would be exposed only briefly to electric fields, which would be required to meet BPA standards at street crossings; therefore, impacts from electric fields under the South Alternative at street crossings would be ***low***.

Along the South Alternative ROW, the highest calculated electric field level would be 2.4 kV/m dropping to 0.11 kV/m at the edge of the ROW (see Figure 3-37). Both values would be under BPA's guideline of 5 kV/m at the edge of the ROW. Electric field level impacts under the South Alternative would be ***low.***

Electric fields at the perimeter of the proposed Hooper Springs Substation for the South Alternative would be the same as those described for the North Alternative. Because there are no residences near the Hooper Springs Substation, there would be ***no*** impact from electric fields.

Figure 3-37. Electric Fields around Steel Single Pole Configuration for the South Alternative



Magnetic Fields

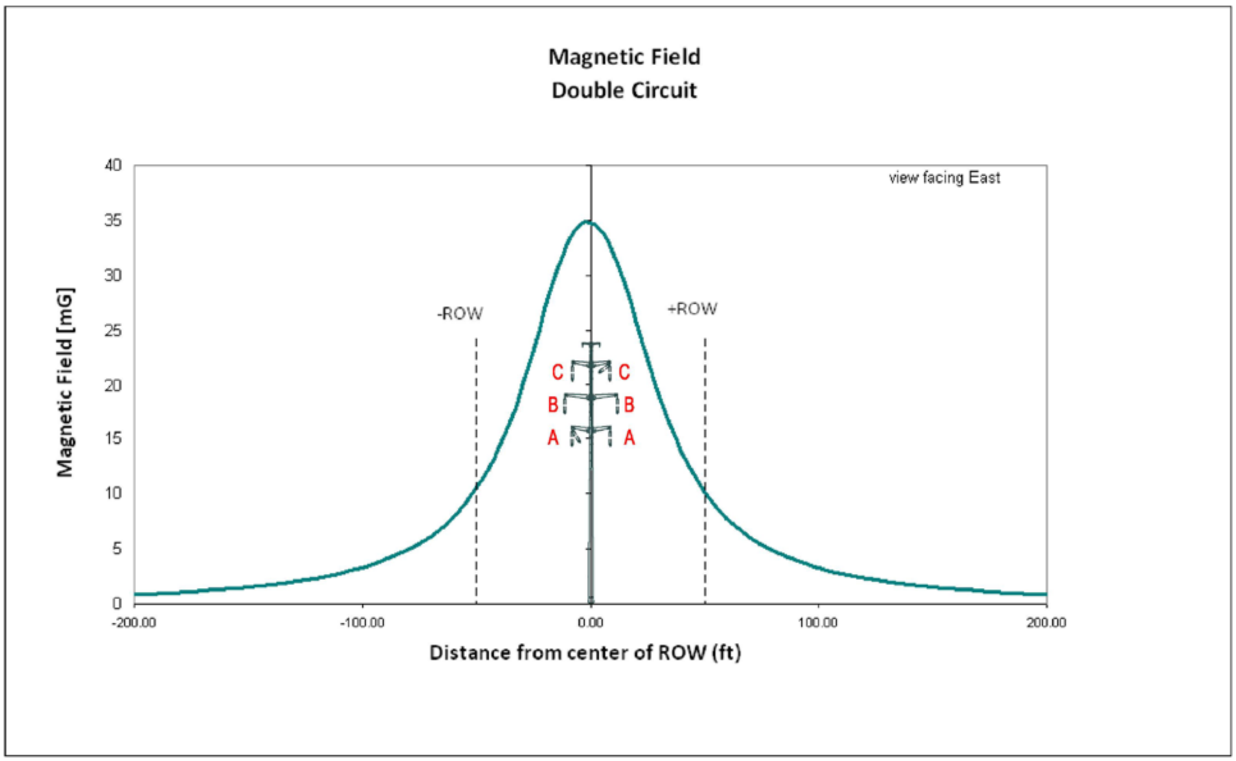
A review of possible biological effects of EMF and their implications for health-related effects is provided in Appendix J. Similar to the North Alternative, an increase in public exposure to magnetic fields could occur if the South Alternative results in field level increases and if residences or other structures draw people to these areas. The predicted field levels discussed in this section are only indicators of how the South Alternative may affect the magnetic-field environment. They are not measures of risk or impacts on health.

Along the South Alternative ROW, the highest average magnetic field level would be 34.6 mG and would drop to 10 mG at the edge of the ROW (see Figure 3-38).

Similar to the portion of the North Alternative with steel poles, magnetic fields fall off rapidly beyond the edge of ROW. For example, at a distance of 200 feet from centerline, the peak field would be 0.9 mG. Beyond a few hundred feet, the transmission line magnetic fields would approach common indoor ambient levels. Because of the lack of residences near the South Alternative ROW, low magnetic field levels, and the very short-term nature of expected visitor presence, the potential for impacts associated with elevated magnetic fields would be ***low***.

Magnetic fields at the perimeter of the proposed Hooper Springs Substation under the South Alternative would be the same as those described for the North Alternative. Since there are no residences near the substation site, there would be ***no*** impact from electric fields.

Figure 3-38. Magnetic Fields around Steel Single Pole Configuration for the South Alternative



Electromagnetic Interference

If corona is present at the surface of transmission line conductors, it can sometimes cause interference with broadcast radio and television signals close to the South Alternative ROW. If complaints arise, BPA would take measures under its mitigation program to restore reception to the same or better quality. Similar to the North Alternative, the South Alternative is not anticipated to create electromagnetic interference in nearby homes. Therefore, electromagnetic interference impacts under the South Alternative also would be ***low***.

Hazardous Waste

During construction of the South Alternative, the same hazardous materials used for the North Alternative would be used and stored in project work areas. Like with the North Alternative, gasoline, diesel fuel, oil, hydraulic fluid, lubricants, paints, solvents, adhesives, and cleaning chemicals used in construction activities, equipment, and vehicles could be released during construction of the South Alternative. Mitigation measures, described in Section 3.13.4, Mitigation, would be implemented to manage unanticipated hazardous materials and spills. The resulting impact from unknown contaminates or the unintended release of construction-related hazardous materials during construction of the South Alternative would be ***low*** to ***none***.

Contamination

Four mines crossed by the South Alternative corridor, including the Conda/Woodall Mountain, Ballard, Wooley Valley, and North Maybe mines are currently being investigated under CERCLA. While the transmission line and access roads would be designed to avoid areas of contamination, construction activities could come into direct contact with waste dumps, seeps, or mine pits. If contaminants are disturbed, impacts on workers, the general public, and environmental features could be ***moderate*** to ***high***. Similar to the North Alternative, soil sampling as described in Section 3.13.4 would reduce the potential for contaminant disturbance by construction. It is unknown if contaminants are present at the Blackfoot Bridge and Husky-North Dry Ridge mines.

It is possible that unknown contaminated sites could be discovered during construction of the South Alternative, in mining and other areas crossed by the corridor because of possible on-site contamination, off-site migration of pollutants or unauthorized dumping. This could result from transport via dirt and mud, airborne dust, and water. Workers may be exposed to higher-than-normal levels of selenium at hazardous waste sites by swallowing soil or water, or by breathing dust. Workers and possibly the general public, and environmental features may become contaminated or exposed to toxic substances resulting in ***moderate*** to ***high*** impacts. Similar to the North Alternative, contaminants encountered in the South Alternative construction area would require special handling to prevent releases. Contaminated soil and groundwater, if encountered, would require handling and disposal according to applicable local, state, and federal regulations. Operation and maintenance of the South Alternative has the potential to result in the release or exposure of contaminants where previous or current mining activities are crossed by the corridor or access roads. Ground-disturbing maintenance activities could result in ***moderate*** to ***high*** impacts if contaminants are disturbed and released.

South Alternative Route Options

Options 1, 2, 3, and 4

Options 1 through 4 would use steel single-pole structures in the same configuration as discussed above; therefore, similar ***low*** electric and magnetic field levels would be generated.

If contaminants are disturbed during construction or maintenance of Options 1 through 4, impacts to public health and safety would be similar to those described for the South Alternative (***moderate*** to ***high***). However, because Options 3 and 3A would avoid both the Blackfoot Bridge

Mine and the Conda/Woodall Mountain Mine; Option 4 would avoid the Conda/Woodall Mountain Mine; and Option 3A would avoid the Husky-North Dry Ridge Mine, the potential for contaminant disturbance would be lower.

Option 3A

Option 3A would generate similar ***low*** electric and magnetic field levels because steel single-pole structures in the same configuration as discussed above would be used.

Under Option 3A, there is less chance of disturbing contaminants because the route avoids all mining areas except Wooley Valley Mine. Impacts to public health and safety from disturbance of contaminates during construction or maintenance would be similar to those described for the South Alternative (***moderate*** to ***high***).

3.13.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate adverse impacts from the construction, operation, and maintenance of the Project.

- Avoid excavation in areas of identified contaminants.
- Conduct soil sampling in areas likely to be contaminated by mining waste containing selenium and other hazardous substances, where necessary, to ensure proper management and handling of excavated soils and for worker health and safety. Consult with mining companies and USFS prior to any sampling.
- Prepare and implement Spill Prevention and Response Procedures to avoid and contain accidental spills, including notification assessment, security, clean-up, and reporting requirements. The contractor would be required to follow the Spill Prevention and Response Procedures and immediately notify the proper authorities in the event of a hazardous material or petroleum spill.
- Provide spill prevention kits at designated locations on the project site and where hazardous materials are stored.
- Inspect equipment daily for leaks.
- Initiate discussions with local fire districts prior to construction and work with the districts and other appropriate emergency response entities to develop appropriate fire and emergency response plans.
- Construct and operate the new transmission line according to the NESC.
- Restore reception quality if radio or television interference occurs as a result of constructing the transmission line so that reception is as good as or better than before the interference.
- Install barriers, gates, and postings at appropriate access points (see Section 3.1.4, Land Use).

- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Design temporary and permanent access roads to control runoff and prevent erosion (see Section 3.5.4, Geology and Soils).
- Cease project construction near stream courses under high flow conditions (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).

3.13.6 Unavoidable Impacts Remaining after Mitigation

With implementation of mitigation measures, it is unlikely that there would be any unavoidable impacts on public health and safety from the mobilization of mining or other contaminants under the project alternatives and options. However, there is a higher potential for such unavoidable impacts to occur under the South Alternative and its options because of the number of former, current, and proposed mining sites that this alternative and options would be adjacent to or cross.

Once built, the proposed transmission line could cause accidental injury from electric shock if someone were to bring conductive material too close to the lines within the ROW. EMF levels directly under the transmission lines and within the ROW could be higher than ambient levels, but would meet all applicable regulations and standards and would dissipate rapidly beyond the transmission line ROW.

3.13.7 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to public health and safety from the construction, operation, and maintenance of the transmission lines would not occur.

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3.14 Air Quality

3.14.1 Affected Environment

The North and South alternative corridors are within airshed 20, as identified by the Montana/Idaho Airshed Group (Montana/Idaho Airshed Group 2010). As shown in Map 3-9, airshed 20 is located in the southeast corner of Idaho, adjacent to Wyoming to the east and Utah to the south. Pocatello and Idaho Falls are located along the western boundary of airshed 20 (Montana/Idaho Airshed Group 2010).

National and State Ambient Air Quality Standards

The Clean Air Act and its amendments led to the creation of National Ambient Air Quality Standards (NAAQS) by EPA for six criteria air pollutants: carbon monoxide, sulfur dioxide, ozone, particulate matter (PM), nitrogen dioxide, and lead. There are two types of NAAQS: primary standards and secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings (EPA 2011b). Table 3-33 summarizes the NAAQS for the six criteria pollutants. Idaho has adopted the federal air quality standards in the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.575-587). Compliance with the NAAQS is determined based on the averaging time and statistical form of each standard.

The EPA classifies geographic areas as attainment or non-attainment areas based on levels of air pollutants. A geographic area that meets or has pollution levels below the NAAQS is called an attainment area for that pollutant, while an area that does not meet the NAAQS is designated a non-attainment area for that pollutant. Former nonattainment areas currently meeting the NAAQS are designated maintenance areas. State implementation plans are designed to bring nonattainment areas into compliance with the NAAQS. Caribou County is an attainment area for all criteria pollutants (EPA 2011b).

In addition to establishing NAAQS, the Clean Air Act established a Prevention of Significant Deterioration program that regulates the allowable increase in air pollution in relatively clean areas from new major sources or major modifications of existing sources. Special additional air quality and visibility protections are provided for Class I Areas, which include national parks larger than 6,000 acres and national wilderness areas and national memorial parks which exceed 5,000 acres, in existence on August 7, 1977 (42 U.S.C. 7475(d)(2)(B)). There are no Class I areas in the vicinity of the project corridors.

Map 3-9. Idaho Airsheds

Table 3-33. National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Statistical Form
Carbon Monoxide	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and Secondary	Rolling 3 month average	0.15 μg/m^3	Not to be exceeded
Nitrogen Dioxide	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb	Annual Mean
PM_{10}	Primary and Secondary	24-hour	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
$PM_{2.5}$	Primary and Secondary	Annual	15 μg/m^3	annual mean, averaged over 3 years
		24-hour	35 μg/m^3	98th percentile, averaged over 3 years
Ozone	Primary and Secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Sulfur Dioxide	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: EPA 2012a

ppm = parts per million; ppb = parts per billion; μg/m3 = micrograms per cubic meter; PM_{10} is particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ is less than 2.5 micrometers in diameter

Air Quality Monitoring Data

The most recent monitoring data from the air quality monitoring sites closest to the project area are summarized in Table 3-34. Available monitoring data shows that pollutant concentrations of nitrogen dioxide, PM_{10}, and $PM_{2.5}$ in the region are generally below the NAAQS (PM_{10} is particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ is less than 2.5 micrometers in diameter). Ozone concentrations approaching the NAAQS have been recorded on the Wyoming range, approximately 60 miles east of the project corridor. The sulfur dioxide monitor at the Monsanto phosphorus plant in Soda Springs, Idaho recorded 1-hour concentrations just above the NAAQS in 2010. However, data from 2011 shows a substantially lower 1-hour sulfur dioxide concentration of 53.2 parts per billion, below the standard of 75 parts per billion.

Table 3-34. Air Quality Monitoring Data

EPA Monitor ID	Monitor Location	Year	Pollutant	Maximum Concentration	Averaging Period	NAAQS
16-077-0011	Shoshone-Bannock Tribes of Fort Hall Reservation of Idaho	2005	Nitrogen Dioxide	35.8 ppb	1-hour	100 ppb
16-029-0003	Soda Springs High School	2002	PM_{10}	45 µg/m^3	24-hour	150 µg/m^3
		2004	$PM_{2.5}$	14.9 µg/m^3	24-hour	35 µg/m^3
56-035-0097	Wyoming Range	2011	Ozone	0.072 ppm	8-hour	0.075 ppm
16-029-0031	Soda Springs, Monsanto phosphorus plant	2011	Sulfur Dioxide	53.2 ppb	1-hour	75 ppb
				0.0423 ppm	3-hour	0.5 ppm

Source: EPA Air Quality System Data retrieved June 17, 2011, except for sulfur dioxide, which was updated on July 5, 2012.

ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter; PM10 is particulate matter less than 10 micrometers in diameter; PM2.5 is less than 2.5 micrometers in diameter

Alternative Route Options

North Alternative Route Options

Long Valley Road and North Highland options—Both the Long Valley Road Option and the North Highland Option would be located in airshed 20, and would therefore have air quality conditions similar to the North Alternative.

South Alternative Route Options

Options 1 through 4—Options 1 through 4 would be located in airshed 20, and would therefore have air quality conditions similar to the South Alternative.

3.14.2 Environmental Consequences of the North Alternative

Potential construction-related air quality impacts from the North Alternative include PM, fugitive dust, and carbon monoxide emissions from land clearing and mobile source emissions (e.g., construction and maintenance vehicles). As discussed above, Caribou County is an attainment area for all criteria pollutants (EPA 2011b). Therefore, the Project would not be required to comply with the general conformity rules (40 Code of Federal Regulations [C.F.R.] 93 Subpart B).

Construction activities that could create dust include road building and grading, on-site travel on unpaved surfaces, work area clearing and preparation, and other soil disrupting operations. Fine grained soils, such as the loess soils located in the project area (see Section 3.5, Geology and Soils), are particularly susceptible to generating dust emissions when disturbed. Most access roads would be on the native surface (dirt roads or sparse vegetation), and air quality impacts are expected to be localized, temporary (only occurring during active construction), and controlled as practicable. Wind erosion of disturbed areas would also contribute to fugitive dust until revegetation of areas occurs. Impacts to air quality due to fugitive dust from construction of the

North Alternative are expected to be short term and ***low***, and implementation of mitigation measures, as described in Section 3.14.4, would further minimize impacts.

Heavy equipment and vehicles, including those with diesel internal combustion engines, would emit pollutants such as carbon monoxide, carbon dioxide (CO_2), sulfur oxides, PM, oxides of nitrogen, and air toxics (see Section 3.15, Greenhouse Gas Emissions). The amount of pollutants emitted from construction vehicles and equipment would be relatively small relative to existing air pollution sources in the airshed. The Project also does not meet the definition of a major source regulated by the Prevention of Significant Deterioration program and the North Alternative would not be adjacent to any Class I areas. For these reasons, the air quality impacts from construction of the North Alternative would be short term and ***low***.

Dust and emissions from the operation and maintenance of the North Alternative would be long term in nature, but would result in a ***low*** impact. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be very small, temporary, and localized. Vehicles would use the permanent access roads that have rocked surfaces that would limit the quantity of dust generated.

The transmission lines themselves create limited air emissions. The high electric field strength of transmission lines causes a breakdown of air at the surface of the conductors called corona. Corona has a popping sound that is most easily heard during rainstorms. When corona occurs, amounts of ozone and nitrogen oxides are released in such small quantities that they are generally too small to be measured or to have any significant effect on humans, plants, or animals (BPA 2009). Overall, air emissions for corona under the North Alternative would have ***no*** to ***low*** impact to air quality.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would result in a shift of the proposed corridor of the North Alternative off Idaho state lands and on to private agriculture and grazing lands. The option is approximately 7 miles long and would add about 0.6 mile to the length of the North Alternative. Given its similarities to the proposed corridor described above, the Long Valley Road Option would have similar short-term, ***low*** impacts.

North Highland Option

The North Highland Option would shift the proposed corridor of the North Alternative off private lands with a series of wetland complexes to C-TNF lands and different private land. Given its proximity to the corridor of the North Alternative, the North Highland Option would result in the same short-term, ***low*** impacts to air quality.

3.14.3 Environmental Consequences of the South Alternative

Potential construction-related air quality impacts from the South Alternative would be the same as those described for the North Alternative, and could include PM, fugitive dust, and carbon monoxide emissions from land clearing and mobile source emissions.

Dust could be generated from the same construction activities as those described for the North Alternative. Air quality impacts from access roads and wind erosion of disturbed areas for the South Alternative would also be the same as the North Alternative. Impacts to air quality due to fugitive dust from construction of the South Alternative would be short term and ***low***, and implementation of mitigation measures (Section 3.14.4) would further minimize impacts.

Similar to the North Alternative, heavy equipment and vehicles would emit pollutants such as carbon monoxide, CO_2, sulfur oxides, PM, oxides of nitrogen, and air toxics during construction of the South Alternative (see Section 3.15, Greenhouse Gas Emissions). Compared to existing pollution sources in the airshed, the amount of pollutants emitted from construction vehicles and equipment would be relatively small. In addition, the Project also does not meet the definition of a major source regulated by the Prevention of Significant Deterioration program and the South Alternative would not be adjacent to any Class I areas. Therefore, the impacts to air quality from construction of the South Alternative would be short term and ***low***.

Dust and emissions from the operation and maintenance of the South Alternative would be long term, but would yield a ***low*** impact. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be small, temporary, and localized.

Similar to the North Alternative, when corona occurs around the transmission lines of the South Alternative, small quantities of ozone and nitrogen oxides would be released. However, they are generally too small to be measured or to have any significant effect on humans, plants, or animals (BPA 2009). Overall, air emissions for corona for the South Alternative would have ***no*** to ***low*** impact to air quality.

South Alternative Route Options

Options 1 through 4

Options 1 through 4 would remain in the same airshed as the South Alternative, and are expected to result in the same impacts to air quality (construction activities causing dust, vehicle emissions, and corona) as the South Alternative (***low***).

3.14.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate air quality impacts from the Project.

- Ensure construction vehicles travel at low speeds on access roads and at construction sites to minimize dust.
- Do not burn during construction activities.
- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Recycle or salvage non-hazardous construction and demolition debris where practicable.

- Use local rock sources for road construction where practicable.
- Prepare a Fugitive Dust Control Plan (see Section 3.5.4, Geology and Soils).
- Use appropriate seed mixes; application rates, methods, and timing to revegetate disturbed areas (see Section 3.4.4, Vegetation).
- Limit the time soils are left exposed (see Section 3.5.4, Geology and Soils).

3.14.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable impacts would include slight increases in emissions and dust generated during construction and operation of the Project.

3.14.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so impacts to air quality from the construction, operation, and maintenance of the transmission lines would not occur.

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3.15 Greenhouse Gas Emissions

3.15.1 Affected Environment

GHGs are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. When plants decay or are burned, the stored carbon is released back to the atmosphere, available to be taken up by new plants (Ecological Society of America 2008). In forests, the carbon can be stored for long periods of time, and because they are so productive and long-lived, forests have an important role in carbon capture and storage and can be thought of as temporary carbon reservoirs. There are large amounts of GHGs stored deep underground in the form of fossil fuels, and soils store carbon in the form of decomposing plant material and serve as the largest carbon reservoir on land.

Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. When forests are permanently converted to cropland, for instance, or when new buildings or roads displace vegetation, the GHG storage capacity of the disturbed area is diminished. CO_2, nitrous oxide, and methane emissions increase when soils are disturbed (Kessavalou et al. 1998), and burning fossil fuels releases GHGs that have been stored underground for thousands of years and cannot be readily replaced. The resulting buildup of heat in the atmosphere due to increased GHG levels increases temperatures, which causes warming of the planet through a greenhouse-like effect (U.S. Energy Information Administration 2009a). Increasing levels of GHGs could increase the Earth's temperature by up to 7.2°F by the end of the twenty-first century (EPA 2010b).

The principal GHGs emitted into the atmosphere through human activities are CO_2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (EPA 2010b). CO_2 is the major GHG emitted, and the burning of fossil fuels accounts for 81 percent of all U.S. GHG emissions (EPA 2010b, Houghton 2010, U.S. Energy Information Administration 2009b). CO_2 enters the atmosphere as a result of such activities as land use changes; burning of fossil fuels including coal, natural gas, oil, and wood products; and from the manufacturing of cement. CO_2 levels have increased to 379 parts per million within the last century, a 36 percent increase, as a result of human activities (Intergovernmental Panel on Climate Change 2007). See Appendix K for a discussion of GHGs.

Regulatory Framework

The Clean Air Act is the federal air pollution control law under which numerous EPA programs have been implemented, including NAAQS for criteria pollutants, emissions standards for mobile sources and fuels, and permitting programs to control emissions from large generation sources such as power plants. In October 2009, EPA issued a Final Mandatory Reporting of Greenhouse Gases Rule (40 C.F.R. Part 98) that requires reporting of GHG emissions from large sources and suppliers in the United States. The purpose of the rule is to collect accurate and timely GHG data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHGs, are required to submit annual reports to EPA (EPA 2010b). Implementation of Part 98 is referred to as the Greenhouse Gas Reporting Program. Sources and suppliers subject to Part 98 began reporting their yearly emissions under the Greenhouse Gas Reporting Program with the 2010 reporting year. Other EPA initiatives regulating GHG emissions include emissions standards for motor vehicles and a framework for addressing GHG emissions from stationary sources in permitting programs (Final GHG Tailoring Rule).

For federal agencies such as BPA, Executive Orders 13423 and 13514 require agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates. Specific to the NEPA process, CEQ issued “Draft NEPA Guidance on the Consideration of the Effects of Climate Change and Greenhouse Gas Emissions” in 2010. Key GHG and climate change considerations for NEPA documents contained in this draft guidance include:

- Both the effect of the Project on climate change (as measured through GHG emissions) and the effect of climate change on the Project should be considered (e.g., sea level rise, extreme weather events, ecosystem effects) to the extent they are “reasonably foreseeable.”
- Recommends 25,000 metric tons carbon dioxide equivalent (CO_2e) emissions annual as a level warranting detailed assessment—the same level as the GHG reporting rule discussed above.
- Does not recommend any specific protocol for quantifying land use and land management-related GHG emissions and carbon sequestration and seeks public input on this issue.

3.15.2 Environmental Consequences of the North Alternative

Greenhouse Gas Emissions

Implementation of the North Alternative would contribute to GHG concentrations in several different ways. CO_2, methane, and nitrous oxide emission levels would incrementally increase as vegetation and soils are removed and/or disturbed during construction of the transmission line (Kessavalou et al. 1998) and through the operation of construction-related vehicles during the construction period. Emissions would also occur during operation and maintenance of the transmission line. Emissions from construction, operations, and maintenance-related vehicles on and off the transmission line ROW also would impact atmospheric GHG concentrations incrementally because construction equipment and vehicles would be fueled by gasoline and diesel combustion motors.

GHG emissions resulting from the North Alternative were calculated using the methodology described in Appendix K. Calculations were done for two types of activities that produce GHG emissions: building the transmission line and ongoing annual operations and maintenance for the estimated 50-year-long operational life of the transmission line. GHG emissions associated with construction activities would occur during 16 months, over a 2 year construction period and equal approximately 8 months (split between two construction seasons) of total emissions.

The North Alternative would result in an estimated total of 12,244 metric tons of CO_2e emissions during construction and a total of an estimated 126.5 metric tons of CO_2e emissions for ongoing operations and maintenance activities over the 50-year lifespan of the line, as shown in Table 3-35. Emissions from construction of the North Alternative would be equivalent to the emissions from approximately 2,156 passenger vehicles per year. Operation and maintenance emissions under the North Alternative would be equivalent to the emissions from approximately 22 passenger vehicles per year.

Though recognized as a contribution to overall GHGs, measurement of emissions from soil disturbances is difficult. However, research has shown that emissions as a result of soil disturbance 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.

Some trees would be removed as part of the North Alternative and soil disturbance would occur. The nature of tree removal is to permanently convert land (i.e., the proposed ROW) to a non-forested area. Therefore, this action can be characterized as permanently maintaining the proposed ROW at the minimum level of solid carbon storage.

Tree removal for road construction/improvement and danger tree removal would constitute a reduction in the GHG storage capacity of the area. For the purposes of analysis it was assumed that each affected acre contained the maximum level of carbon storage, which resulted in an estimated net carbon footprint associated with the removal of approximately174.6 acres of trees resulting in the loss of 9,952 metric tons of CO_2e. Vegetation removal would result in a loss of carbon storage equivalent to 1,755 passenger vehicles per year. (Detailed information related to these calculations is presented in Appendix K).

Removal and disposal of each tree is an energy consuming process that results in GHG emissions via fuel combustion. This component of GHG emissions, however, was accounted for above in terms of transmission line construction.

Table 3-35. Net Carbon Footprint for Construction and Operation of the North Alternative

Type of Activity	Total CO_2e Emissions in Metric Tons
Construction	12,244
Operation and maintenance (over the entire Project life)	126
Permanent vegetation removal	9,952

To provide context for this level of emissions, the EPA mandatory reporting threshold for large sources of GHGs is 25,000 metric tons of CO_2e emitted annually (74 FR 56260). This threshold is approximately the amount of CO_2e generated by 4,400 passenger vehicles per year. Comparatively, the emissions during project construction would be equivalent to the emissions generated by about 2,156 passenger vehicles per year. Operation and maintenance activities would translate into CO_2 emissions about equal to that of 22 passenger vehicles per year. Lost vegetation carbon storage capacity would be equivalent to 1,755 passenger vehicles per year. Because these activities would be similar to existing conditions, project GHG emissions likely would not represent a substantial change. Given the low contributions, the impacts of construction, operation, and maintenance of the North Alternative on GHG concentrations would be ***low***.

Climate Change

Potential impacts of climate change on the Project include the following (U.S. Global Change Research Program 2009):

- Increased exposure of transmission line and related infrastructure to severe weather events, including flooding and high winds.
- Increased risk for wildfires due to higher summer temperatures and earlier spring snowmelt.
- Increased demand for energy for cooling, which will increase peak electricity demand.

While these general impacts are likely and supported by scientific evidence, the exact magnitude of these future effects at the local level (e.g., within the project's alternative corridors) is not known. It would not be reasonable to attempt to forecast these effects for the NEPA review of an individual project because there is no currently available tool or methodology for readily performing such an assessment within the schedule and budget limitation of an EIS. Despite the inability to predict specific local level impacts, climate change impacts were considered in the design of the Project.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would marginally increase construction-related GHG emissions due to the longer route, but would not alter the overall conclusion or magnitude of GHG emissions in comparison to the North Alternative. Similar to the North Alternative, the effect on GHG emissions would be ***low***. This route option would not be distinguishable from the North Alternative in terms of vulnerability to impacts from climate change.

North Highland Option

The North Highland Option would have impacts similar to those described for the North Alternative, although the amount of tree clearing would increase slightly based on the change in route. However, this change would not alter the overall conclusion or magnitude of GHG emissions in comparison to the North Alternative**.** This route option would not be distinguishable from the North Alternative in terms of vulnerability to impacts from climate change.

3.15.3 Environmental Consequences of the South Alternative

Greenhouse Gas Emissions

The construction assumptions for the North Alternative were used to calculate GHG emissions for the South Alternative. While the construction assumptions are the same, the South Alternative is approximately two-thirds of the distance of the North Alternative; therefore, it is assumed that the GHG emissions would act proportionally to the distance and would be two-thirds of the GHG emissions from the North Alternative. South Alternative emissions would be 8,081 metric tons of CO_2e emissions from construction, or the equivalent of 1,423 passenger vehicles per year. Similarly, operations and maintenance assumptions used for the North Alternative would likely be the same for the South Alternative: 84 metric tons of CO_2e emissions stemming from operation and maintenance activities would occur over the life of the Project, or approximately 15 passenger vehicles per year, as shown in Table 3-36.

The South Alternative would impact noticeably fewer acres of forested area, with approximately 86.3 acres to be removed, resulting in a loss of approximately 4,919 metric tons of CO_2e. Vegetation removal would result in a loss of carbon storage equivalent to 868 passenger vehicles per year. The amount of trees projected to be removed represents the worst case scenario and while the different routes within the South Alternative would alter the amount of forested area removed, the differences in the amount of CO_2e lost would be minimal and would not change the overall conclusion of this analysis. Similar to the North Alternative, the effect on GHG emissions would be ***low***.

Table 3-36. Net Carbon Footprint for Construction and Operation of the South Alternative

Type of Activity	Total CO_2e Emissions in Metric Tons
Construction	8,081
Operation and maintenance (over the entire Project life)	84
Permanent vegetation removal	4,919

Climate Change

Potential impacts of climate change on the South Alternative would be the same as those described for the North Alternative.

South Alternative Route Options

Options 1, 2, and 4

GHG emissions-related impacts from Options 1, 2, and 4 would be the same as those described for the South Alternative. Emissions as a result of operations and maintenances would be expected to be the same. These route options would not be distinguishable from the South Alternative in terms of vulnerabilities to impacts from climate change.

Options 3 and 3A

The construction assumptions for the North Alternative were used to calculate GHG emissions for Options 3 and 3A. While the construction assumptions are the same, Options 3 and 3A are approximately 72 percent of the distance of the North Alternative. It is assumed that the GHG emissions would act proportionally to the distance and would be 72 percent of the GHG emissions from the North Alternative. Options 3 and 3A emissions would be 8,815 metric tons of CO_2e emissions from construction, or the equivalent of 1,552 passenger vehicles per year, slightly higher than the numbers presented for the South Alternative. Similarly, operations and maintenance assumptions used for the North Alternative would likely be the same for Options 3 and 3A: 91 metric tons of CO_2e emissions stemming from operation and maintenance activities would occur over the life of the Project, or approximately 16 passenger vehicles per year, as shown in Table 3-37.

Although Options 3 and 3A are longer than the South Alternative, fewer acres of forested area would be removed as a result of these options, with approximately 51.8 acres to be removed, resulting in a loss of approximately 2,953 metric tons of CO_2e. Vegetation removal would result in a loss of carbon storage equivalent to 520 passenger vehicles per year. Similar to the North and the South alternatives, the effect on GHG emissions would be ***low***.

Table 3-37. Net Carbon Footprint for Construction and Operation of Options 3 and 3A

Type of Activity	Total CO_2e Emissions in Metric Tons
Construction	8,815
Operation and maintenance (over the entire Project life)	91
Permanent vegetation removal	2,953

Potential impacts of climate change from Options 3 and 3A would be the same as those described for the North and South alternatives.

3.15.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate GHG emissions from the Project.

- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.

- Recycle or salvage non-hazardous construction and demolition debris where practicable.
- Use local rock sources for road construction where practicable.

3.15.5 Unavoidable Impacts Remaining After Mitigation

Potential unavoidable impacts would include slight increases in GHG releases necessary for construction and operation of the Project. These impacts would be primarily short term and low as discussed above. The transmission line and related infrastructure would be subject to climate change impacts, such as more extreme weather events, that may be unavoidable. The exact magnitude of these climate change impacts is not known, but was a consideration in the design of the Project with the goal of maximizing future reliability.

3.15.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so the GHG emissions related to the construction, operation, and maintenance of the transmission lines would not occur.

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3.16 Cumulative Impacts

CEQ regulations for implementing the NEPA require the assessment of cumulative impacts in the decision-making process for proposed federal projects. Cumulative impacts are defined as the "impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 C.F.R. 1508.7). As stated in the CEQ handbook, "Considering Cumulative Effects under the National Environmental Policy Act" (CEQ 1997b), cumulative impacts should be analyzed in terms of the specific resource, ecosystem, and human community being affected and focus on effects that are truly meaningful.

This chapter provides an analysis of potential cumulative impacts related to the Project. The analysis was accomplished using the four steps summarized below. The first two steps are further discussed in Section 3.16.1, the third step is addressed in Section 3.16.2, and the fourth step is addressed in Section 3.16.3.

- **Step 1 - Identify Potentially Affected Resources**—Resources are identified that potentially could be cumulatively affected by the Project in combination with other actions.
- **Step 2 - Establish Boundaries**—Spatial (i.e., location) and temporal (i.e., time) boundaries are established for the consideration of other potentially cumulative actions.
- **Step 3 - Identify Potentially Cumulative Actions**—Other past, present, and reasonably foreseeable future actions are identified that have contributed, or could contribute, to cumulative impacts on the resources identified in Step 1. These actions fall within the spatial and temporal boundaries established in Step 2.
- **Step 4 - Analyze Cumulative Impacts**—For each resource, the actions identified in Step 3 are analyzed in combination with the impacts of the Project. This analysis describes the overall cumulative impact related to each resource and the Project's contribution to this cumulative impact.

3.16.1 Affected Resources and Resource Boundaries

In identifying potential cumulative effects (Step 1), BPA considered the likelihood that a variety of other actions with a wide variety of potential effects on numerous resources have taken place or could take place within the project area. Accordingly, BPA determined that all of the same resources described in Sections 3.1 through 3.15 of this EIS should be considered in the cumulative impacts analysis.

BPA then established reasonable boundaries for the consideration of other past, present, and reasonably foreseeable future actions (Step 2). These boundaries were established in terms of where the other actions are located (i.e., spatial boundaries), and when in time these actions took place or will take place (i.e., temporal boundaries). Accordingly, for each resource, the spatial boundary is the area where other past, present, and reasonably foreseeable future actions have, are, or could take place and result in cumulative impacts on the affected resource when combined with the impacts of the Project. Appropriate spatial boundaries can vary for each resource.

The temporal boundary describes how far into the past, and forward into the future, other actions should be considered in the cumulative impact analysis. For the purposes of this analysis, past and present actions that have shaped the landscape since approximately the first European settlement in the general vicinity (i.e., since approximately the mid-1800s) are considered, to the extent that they have had lasting effects contributing to cumulative impacts. The reasonably foreseeable nature of potential future actions helps define the forward-looking temporal boundary. While it is acknowledged that the Project could exist for 50 or more years and could contribute to cumulative impacts during that timeframe, it would be speculative to consider actions beyond what is reasonably foreseeable (see Section 3.16.2). Given this limitation, the forward-looking temporal boundary has been established generally at approximately 10 years following the expected completion of construction of the Project, which is a reasonable timeframe by which the reasonably foreseeable future actions identified in Section 3.16.2 likely would be implemented.

3.16.2 Cumulative Actions

After establishing appropriate spatial and temporal boundaries, BPA identified other past, present, and reasonably foreseeable future actions potentially contributing to cumulative effects along with the Project (Step 3). To identify these other actions, BPA used information gathered in the course of developing the analysis of direct impacts related to the Project and also consulted various federal, tribal, state, and local jurisdictions. BPA also considered guidance on determining what actions to consider in a cumulative analysis from a variety of sources, including the CEQ Cumulative Effects Handbook referenced above.

The following discussion provides more information on how potentially cumulative past, present, and reasonably foreseeable future actions were identified, and describes the cumulative actions that have been identified for the cumulative impacts analysis in this supplemental draft EIS.

Past actions relevant to the cumulative impacts analysis in this supplemental draft EIS are those that have previously taken place and are largely complete, but that have lasting effects on one or more resources that also would be affected by the Project. For these past actions, CEQ has issued a guidance memo entitled “Guidance on Consideration of Past Actions in Cumulative Effects Analysis.” This guidance states that consideration of past actions is only necessary in so far as it informs agency decision-making. Typically the only types of past actions considered are those that continue to have present effects on the affected resources. In addition, the guidance states that “[a]gencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effect of all past actions.” Accordingly, agencies are allowed to aggregate the effects of past actions without “delving into the historical details of individual past actions.” In this supplemental draft EIS, impacts associated with past actions are largely captured in the sections of each resource chapter that discuss the affected environment in the project area (see Sections 3.1 through 3.15).

Present actions are those that are currently occurring and also result in impacts on the same resources that the Project would affect. Present actions generally include ongoing land management and utilization activities (such as farming), as well as recently completed residential, commercial, and industrial development. Like past actions, relevant present actions have largely been captured in Sections 3.1 through 3.15 of this document.

Reasonably foreseeable future actions are those actions that are likely to occur and affect the same resources as the Project. For a future action to be considered reasonably foreseeable, there must be a level of certainty that it will occur. This level of certainty is typically met by the submission of a formal project proposal or application to the appropriate jurisdiction, approval of such a proposal or application, inclusion of the future action in a formal planning document, or other similar evidence. For future actions in the proposal stage, the action must be sufficiently defined in terms of location, size, design, and other relevant features to permit meaningful consideration in the cumulative impacts analysis to be included in this analysis.

The following summarizes past, present, and reasonably foreseeable future actions considered in this cumulative impacts analysis.

- **Agriculture**—Conversion of land to agricultural uses has occurred since European settlement began in the general project area in the mid-1800s. These agricultural uses continue today, and are expected to continue into the foreseeable future Agricultural uses in the project area tend to be located in valleys and other flatter, lower elevation areas in the project vicinity. Agriculture uses include predominately cultivated fields and managed pastures that are used for grazing and hay production. Primary cultivated crops are small grains, mostly grown without irrigation. Some private agricultural parcels in the project area are enrolled in USDA and Farm Service Agency conservation easement programs, in addition to other non-federal conservation easement programs, and enrollment in these programs is expected to continue in the future.
- **Residential, commercial, and other development**—since the mid-1800s, rural residential uses, often associated with farming and ranching activities, have been developed in the project area. Like agricultural uses, these scattered rural residences tend to be located in valleys and other flatter, lower elevation areas in the project vicinity. These rural residential uses continue to exist today, and are expected to continue into the foreseeable future. In addition, residential and commercial uses, and public, industrial, and other developed uses have been developed within the city of Soda Springs. The 2006 Caribou County Comprehensive Plan encourages development within existing city limits, not within rural areas. Accordingly, future development of residential, commercial, industrial, and other developed uses that may occur in the project area would be expected to occur primarily within the city limits of Soda Springs.
- **Mining operations**—Phosphate mining operations began in southeastern Idaho in the early 20th century and continue to this day. Mining for phosphorus and manufacturing the ore into elemental phosphorus and commercial fertilizers are now the dominant economic industries in the region. The major phosphate mines in this region are open pit or contour strip operations. Over the years, a total of 31 phosphate mines have

been developed in southeastern Idaho (BLM 2011a). Of these, 12 have been mined out and are now closed. The remaining mines continue to operate, and numerous undeveloped mining leases exist throughout the region. Existing mining operations within the general vicinity of the Project include the Smoky Canyon Mine, the Dry Valley Mine, Blackfoot Bridge Mine, and the South Rasmussen Ridge Mine. Because the future market for phosphate fertilizers and phosphorous is expected to remain strong in the United States and worldwide, phosphate mining is expected to be an ongoing or growing activity in southeastern Idaho in the foreseeable future (BLM 2011a). Reasonably foreseeable mining operations within the general vicinity of the Project include the proposed Rasmussen Valley, Lanes Creek, Husky-North Dry Ridge, and Dairy Syncline mining projects.

- **Logging**—Logging of forested habitats throughout the project area has occurred since at least the late 1800s and continues to take place today. Most this activity currently takes place primarily on forested federal lands. It is reasonable expected that logging also will continue in the foreseeable future.
- **Road construction**—Past construction of local and state highways (e.g., Highway 34) has occurred in the project area. This construction has bisected native grasslands, forests, shrub-steppe, and agricultural lands in the project area. In addition, numerous other county and local roads have been constructed throughout the project area. Although there are no known plans for any new highways or major roadways in the project area, it is reasonably foreseeable that maintenance and/or improvement of existing roadways could occur. In addition, it is likely that additional new county or local roads could be developed in the project area.
- **Transmission line construction**—BPA and other utilities have built transmission and distribution lines throughout the project area, as well as substations and other ancillary facilities. Operation and maintenance of these transmission lines continue today, and are expected to continue into the reasonably foreseeable future. In addition, Idaho Power and Rocky Mountain Power have proposed to construct the Gateway West Transmission Line Project, which would cross southern Idaho on the C-TNF in Bear Lake County, Idaho.

3.16.3 Cumulative Impact Analysis

This section provides the analysis, by resource, of the cumulative impacts of past, present, and reasonably foreseeable future actions described in Section 3.16.2 in combination with the potential impacts of the Project identified in Sections 3.1 through 3.15 (Step 4). The following analysis describes these potential cumulative impacts in the order that the affected resources are presented in Sections 3.1 through 3.15 of this document. For some resources, cumulative impacts would be approximately the same for the North and South alternatives and their route options (including the preferred alternative, Option 3A); for other resources, cumulative impacts would vary by alternative or option.

Land Use

Land use in the project area has incrementally changed due to cumulative past and present development, and this trend would be expected to continue with future development. These changes have predominantly introduced agricultural uses (mainly crops and livestock grazing), rural residential uses, and mining uses throughout the area. Road construction and transmission line operation have also converted undeveloped and agricultural land uses into road and utility ROWs. Future operation and maintenance of existing PacifiCorp and LVE transmission lines and substations would contribute to continued utility and transportation land uses. Current and future mining in the area would convert agricultural and undeveloped land uses to industrial land uses in areas with phosphate deposits. Development of new mines using federal mineral leases would require environmental review by the overseeing agency (usually BLM or C-TNF), which would require a mine reclamation plan. In general, implementation of the reclamation plan would require the restoration of previous land uses after minerals are extracted. Despite reclamation plans, historic mines may result in selenium contamination that may prohibit the reestablishment of previous land uses until after contamination clean up.

Future increases in development could reduce agricultural and undeveloped land uses. This conversion would be limited through local participation in resource conservation programs that limit development on some properties. Agricultural land conversion would be further limited through zoning regulations that require land uses to be consistent with agricultural use (BLM 2010; Caribou County 2006; USFS 1997, 2003a, 2006). Assuming this focus on agriculture continues under future county comprehensive plan updates, agricultural land conversion for future development could cumulatively reduce the amount of land used for agricultural purposes. Although as a result of county planning efforts, this reduction likely would be considered negligible given the extremely small portion of total agricultural lands in the general area that would be converted. Non-agricultural undeveloped lands would be expected to continue to be converted to other uses in the future.

Under the North and South alternatives and all route options, BPA would obtain easements for operation of the transmission line on private and BLM lands, and would obtain ROW grants or permits to cross C-TNF and state lands. Existing non-forested land uses are not expected to significantly change along the transmission line ROW as a result of project construction. However, the Project would add to the ongoing development of utility-related land uses in the project area. Based on the current land uses in the project area, it is unlikely that changes in land use as a result of the Project would contribute to meaningful cumulative impacts to land uses.

In areas of past mining disturbance along the South Alternative and its route options that are currently engaged in reclamation activities, construction of the transmission line could disrupt some activities in the short term. The South Alternative and Options 1, 2, and 4 would cross portions of the active Blackfoot Bridge Mine and the proposed Husky-North Dry Ridge Mine. Option 3 would avoid the Blackfoot Bridge Mine. Option 3A would avoid the Blackfoot Bridge Mine and the proposed Husky-North Dry Ridge Mine. The siting and operation of the transmission line within areas leased for phosphate mining would not be allowed to unreasonably interfere with mining or reclamation activities in the long term; therefore, the South Alternative and its route option corridors would not contribute to the cumulative impacts to land use in mining areas in a meaningful way.

Recreation

Several recreational uses such as hiking, fishing, hunting, camping, and OHV use occur within the project area. Cumulative past and current activities such as mining; agriculture; transportation and utility facility development; and residential and commercial development have limited recreational opportunities in some locations. BLM and C-TNF lands and IDFG's Blackfoot River WMA are managed under their respective management plans, which include prescriptions to manage recreational use.

Current and reasonably foreseeable future mine development on federal and private lands could contribute to a cumulative negative effect on recreational use through the introduction of additional evidence of human occupation in the area, disruption of wildlife, degraded viewsheds, and potential contamination. Given the large size of federal lands in the project area and the abundant recreational opportunities that currently exist, it is unlikely that continuation of current activities and future actions would markedly affect recreation in the area. The temporary disturbance during construction and the long-term presence of the North or South alternatives or their route options would not contribute in a meaningful way to cumulative impacts to recreation on federal lands. However, placing Option 3A within the Blackfoot River WMA would have the potential for a relatively moderate contribution to cumulative impacts to state lands, because past, present, and proposed future mining activities already encroach upon the WMA. Presence of the Option 3A ROW, structure, access roads, and connection facility would increase evidence of human occupation and possibly cause disruption of wildlife and some recreational activities such as hunting.

Visual Resources

Past and present actions, such as agriculture, mining, grazing, logging, and road and utility infrastructure have resulted in cumulative changes to the natural landscape and visual resources within the project area. The changes include development of facilities for mining operations, establishment of agricultural uses and residential uses throughout the project area, development of infrastructure (such as roads and transmission lines) incident to human occupation, and clearing of forested areas.

Reasonably foreseeable future actions involving development and resource use would be expected to continue this trend. Changes in the visual landscape due to logging on C-TNF lands and agricultural uses on BLM and BIA lands are expected to continue into the future consistent with their resource management planning. On non-federal lands, continued rural development and agriculture will likely continue to shape the visual landscape. Mining will continue throughout the foreseeable future, which would result in cumulatively large areas of soil and vegetation clearing that would alter the viewshed.

The cumulative visual effect of the Project in combination with other past, present, and reasonably foreseeable actions would be highly dependent on viewpoint locations, the extent of existing visual modification that is already visible from a particular location, and the sensitivities of viewers. ROW and road clearing for the North and South alternatives and route options would result in a cleared swath in forested areas, which would make the transmission line corridor more visible and open due to the removal of vegetation. Further, the addition of the transmission line on the landscape would introduce structures that would be visible from some public viewing areas. Residents in the Wayan area of the North Alternative would see portions of the cleared ROW and some structures. The North Highland Option would be visible to travelers along Highway 34, but the Long Valley Road Option would not. Some transmission line structures for the South Alternative and all five route options would be visible from the few rural residences located along the Blackfoot River and Blackfoot River Road. Overall, the western portion of the North and South alternatives and Options 3, 3A, and 4 would contribute incrementally, in a moderate way, to cumulative visual impacts in that area, due to their location along Highway 34 (a scenic byway) just west of mining activities at Conda. The eastern portions of both alternatives and their options would pass through more undeveloped areas and require new cleared ROWs and some new access roads. These portions of the corridors thus would have the potential to have a relatively high level of contribution to cumulative visual impacts from vantage points along the transmission line ROW.

Similar to cumulative impacts to recreational uses, placement of Option 3A within the Blackfoot River WMA would have a relatively moderate contribution to cumulative impacts to visual resources on state lands. A portion of the Option 3A corridor would be visible within the WMA in the long term.

Vegetation

Past and present actions have resulted in cumulative changes to vegetative communities and special status plant species habitat within the project area. Agricultural conversion, mining, grazing, logging, and road and utility construction have substantially altered these native vegetative communities and habitat through removal and permanent conversion, particularly on private lands. Some of these changes, though not permanent, extend over the long term until required site restoration occurs. In addition, proposed new mines would result in the removal and conversion of native vegetation communities in the mine footprint. These ongoing and reasonably foreseeable actions could result in continued cumulative loss and degradation of native vegetation communities within the project area. The North and South alternatives and all route options would result in temporary impacts on sagebrush habitats and lands already converted to agricultural uses, but would also have long-term impacts on forest vegetation. Relative to the scale of forest disturbance from other development in the area, the North and South alternatives and their route options would result in a small increase in the overall cumulative impact to vegetation communities.

Special status plant species may occur within the project area. Future development activities on C-TNF and BLM lands would be managed under their respective management plans. State-listed special status plant species are not provided with specific regulatory protection, but are considered during future state land management decisions. Damage to special status plant species may occur due to future activities occurring on private lands. There are no documented occurrences of any special status plants within 1 mile of the North or South alternative corridors or their route options, and botanical inventories conducted within the corridors have not identified the presence of any special status plant species. Construction and operation of the Project would not contribute to cumulative impacts on special status species in the project area.

Past and present activities, such as agricultural activities, grazing, mine construction and operation, logging, and road construction have cumulatively resulted in the introduction and spread of noxious weeds. The spread of noxious weeds will continue with vegetation and soil disturbance during the implementation of ongoing and reasonably foreseeable actions. Soil and vegetation disturbance associated with the North and South alternatives and route options would contribute to potential cumulative spread of noxious weed populations. However, the potential contribution of these alternatives would be minimized by project-related mitigation measures, such as revegetation measures. The Project thus would result in minor contributions to the potential cumulative impacts on noxious weed populations in the project area.

Geology and Soils

Erosion, compaction, decreased soil productivity, impacts to hydric soils, and loss of upland soils, prime farmland soils, and rock outcrops have occurred and continue to occur from natural weathering processes and mining, livestock grazing, logging, residential and commercial development, and utility and road infrastructure. This soil disturbance and loss will likely continue as these activities continue to occur in the project area. By implementing the mitigation measures described in Section 3.5, Geology and Soils, the Project, regardless of alternative or option, would have a minimal impact on soil compaction and erosion during construction and soil loss from structure and access road placement. Overall, the Project's contribution to the cumulative soil compaction, erosion, and loss in the project area would be minor.

Water Resources, Floodplains, and Wetlands

Past and present activities that have cumulatively impacted surface and groundwater, floodplains, and wetlands within the project area include agricultural activities, mining, timber harvest, and road and utility construction and operation. Agriculture and livestock grazing that result in trampling of riparian vegetation, sedimentation, and decreases in water quality are prevalent throughout the Blackfoot, Willow, and Salt watersheds. Logging in and around the C-TNF results in soil erosion that may enter nearby waters. Mines in the project area have a potential for runoff of sediment and contaminants into groundwater, waterbodies, and wetlands.

Proposed and future mining activities coupled with future land development and ongoing agricultural uses and logging could result in cumulative increases in vegetation removal; fertilizer, chemical, and manure inputs; soil compaction and erosion; and loss of wetland acreage and function. These actions could result in increased runoff of sediment and contaminates that enter into waterbodies and wetlands or leach into groundwater that could adversely affect water resources in the Blackfoot, Willow, and Salt watersheds.

Construction and operation of the North and South alternatives and route options, except Option 4, would contribute in a relatively minor way to potential cumulative sediment input and riparian and vegetation disturbance along surface waters and wetlands. Wetland fill associated with structures and access roads would have a minor contribution to cumulative wetland fill in the overall project area. Option 4 could result in a moderate contribution to cumulative impacts if wetland fill occurs within the Woodall Springs wetland complex. Overall, based on the small quantity of riparian disturbance, sedimentation, and wetland fill, the Project would have a minor contribution to the overall cumulative impact on water resources.

Wildlife

Past and present actions have cumulatively resulted in extensive changes to wildlife habitats within the project area. Native vegetation communities have been substantially altered (through conversion, loss, or fragmentation) by agriculture, mining, grazing, timber harvest, and road and utility construction, resulting in the cumulative removal and permanent alteration of significant quantities of native wildlife habitat. Agricultural activities, grazing, mining, and timber harvest are expected to continue within the project area in the foreseeable future. These ongoing and reasonably foreseeable future actions have the potential to result in the continuing cumulative loss and degradation of wildlife habitat. The North and South alternatives and route options would result in temporary impacts on sagebrush, grassland, and wetland habitats and lands already converted to agricultural uses, but would also have some long-term impacts on forested habitats. The temporary impacts on non-forested habitats and the long-term impacts on C-TNF and Blackfoot River WMA forested habitats would contribute to the overall cumulative loss and fragmentation of wildlife habitat in the project area of Caribou County.

The construction and operation of the North and South alternatives and route options would contribute incrementally to potential cumulative impacts on special-status wildlife species through short- and long-term habitat avoidance, incidental mortality, and habitat alteration in the alternative corridors. Because the amount of wildlife habitat impacted and the duration of wildlife disturbance by the Project would be minor compared to available habitat at a regional level, the construction and operation of any of the alternatives or route options would contribute little to cumulative impacts on special-status wildlife species at the regional level.

Big game winter ranges within the project area have been cumulatively degraded and/or altered by past and present land use activities including agricultural conversion, mining, grazing, timber harvest, energy infrastructure, and road construction, as well as through recreation and hunting pressures. Future projects within this winter range habitat could further fragment and degrade the habitat quantity and quality. A portion of the North and South alternatives and Options 1 through 4 corridors would cross big game winter range habitat and big game disturbance and habitat alteration would be minimized by avoiding construction during sensitive wintering periods. Any future development within the project area designated as big game winter range on federal lands would meet the standards of the appropriate land manager and/or resource management agency, which would minimize future impacts on federal lands. Overall, the impact to big game winter range from the North and South alternatives and all route options, with the exception of Option 3A, would result in a minor contribution to cumulative disturbance and habitat fragmentation of winter habitat. Option 3A crosses the southern portion of the Blackfoot River WMA where long-term impacts to big game winter range would result in a moderate contribution to cumulative impacts to wildlife.

Fish Resources

Past and ongoing activities in the project area have cumulatively affected fish resources through degradation of water quality, direct disturbance of aquatic macroinvertebrates and fish, and alteration of riparian and instream cover. Runoff of sediment and contaminants such as selenium from past and present mining activities into area streams has contributed to these cumulative effects, adversely affecting aquatic habitat and associated fish resources. The extent of land reclamation varies from mine to mine, so the impacts on area streams varies depending on the measures implemented at each mine. Effects from livestock grazing also cumulatively contribute to impacts on fish and fish habitat in grazing areas. Project stream crossings would have a low, temporary impact on fish and their habitat. Therefore, impacts from the Project when combined with ongoing grazing activities, mining, agriculture, and other actions would have a small contribution on the overall cumulative impacts to fish resources in the project area.

Cultural

Cultural resources in Caribou County have been and are being cumulatively affected because of past and present development activities. Past actions that have impacted cultural resources include agricultural activities, highway and railroad construction, mining operations, construction of transmission lines, and commercial and residential development. Present and ongoing activities that alter the landscape and have the potential to affect cultural resources include agricultural activities, mining and logging operations, and operation and maintenance of existing power lines. Cumulative impacts associated with these activities include disturbance of cultural sites, reduction of the cultural integrity of certain sites, and removal of cultural artifacts. Construction of the North Alternative or South Alternative and all route options could contribute incrementally, albeit in a very minor way, to these cumulative impacts.

Although the Project would be implemented in such a way to avoid impacts on cultural resources there is the potential for impacts on previously undiscovered cultural resources or artifacts. Implementation of mitigation measures as described in Section 3.9, Cultural Resources, would minimize or avoid the potential for impacts on archaeological resources. However, the Project may still contribute incrementally to adverse cumulative impacts on cultural resources in the project area.

Socioeconomics

Past and present actions that have cumulatively affected socioeconomics, including population growth, taxes, and public services, in the project area include construction activities associated with mining, agriculture, logging, and road and utility construction. Additionally, the current economic downturn has contributed cumulatively to reduced employment opportunities, especially in the construction sector, and has influenced population migration. Reasonably foreseeable future actions that could cumulatively affect socioeconomics include ongoing agricultural activities, construction activities associated with new and existing mine expansion and development, road maintenance and construction, and the construction of the Gateway West Transmission Line.

Project construction is expected to result in a temporary influx of construction workers to the project area and generate income for motels, hotels, and RV parks. There may be temporary shortages in hotel/motel and rental resources in Soda Springs and other small communities in Caribou County as the temporarily relocating workforce competes for local accommodations with workers involved in other construction activities that could occur simultaneously, including mining operation and development, and possibly the Gateway West Transmission Line. However, regional hotel/motel and rental accommodation resources in Pocatello and the surrounding region would be more than sufficient to accommodate the workers and families requiring temporary housing.

Impacts occurring to the local economy as a result of project-related expenditures, employment, and construction-related earning would be increased if construction of the mines were to coincide with the Project, but would still be low relative to the overall economy.

The Project would not be expected to cause significant demands on public services or facilities. During construction, public services such as police, fire, and medical facilities would be needed only in cases of emergency, which would likely be the case with other construction projects that could coincide in time with the Project.

Based on these considerations, construction of either the North or South alternatives or their route options would not be expected to result in a measurable contribution to overall cumulative socioeconomic impacts.

Transportation

Past and current activities in the project area result in cumulatively increased vehicle use of roadways and occasional road delays. Agricultural activities, mining, logging, and other development activities will continue to occur and expand in the project area; however, there are no identified specific projects that would combine with the Project to result in cumulative impacts to transportation infrastructure within the immediate project area. In addition, while the transportation network and traffic in the area are likely to increase with future development and population growth, no major roadway construction or maintenance projects are planned during the construction phase of the North or South alternatives or their route options. Because construction would cause only small, short-term increases in traffic, significant traffic delays are not expected; therefore, it is expected that Project would not be a major contributor to cumulative transportation impacts.

Noise

Although implementation of past and present actions in the project area has resulted in some cumulative increase in longer-term noise levels, noise production is very location-dependent, and the project area continues to enjoy relatively low noise levels. Past, present, and reasonably foreseeable future actions that have or will create noise impacts associated with the operation of vehicles and other noise-producing equipment include agricultural activities, development construction, mining, operation of existing energy infrastructure, road maintenance, and OHV vehicle use.

Cumulative noise impacts in the project area typically occur when noise receptors are exposed to noise from sources at about the same time, such as from vehicles, mining noise, and agricultural noise. There could be cumulative noise impacts if these actions are undertaken simultaneously and close to each other. Noise from construction activities during the construction phase of the North or South alternatives or their route options would result in temporary increases in sound levels beyond ambient levels, including noise from helicopters and blasting that may be experienced by area residents up to 1 mile from construction activities. The Project thus could contribute incrementally to noise in the project area, which would likely result in a temporary and intermittent cumulative noise impacts.

Public Health

Past and present actions that have potentially affected public health and safety related to the increased risk of release and exposure of contaminants include mining development, agricultural use of herbicide and pesticides, and industrial activities. These actions are expected to continue into the future. Based on the CERCLA status of some of mine areas and potential impacts of the future mines that are developed in the area, the project area would experience increased potential for contamination and the mobilization of these contaminants in soils, surface waters, or groundwater. The North Alternative would not directly cross any identified contaminated areas or mineral lease blocks; therefore, it is not anticipated that the North Alternative would result in the mobilization of contaminants. The South Alternative and its route options would all cross identified contaminated areas and proposed mine areas; therefore, there is the potential for mobilization of contaminants resulting in considerable contributions to the cumulative impacts on public health. Mitigation measures, described in Section 3.13.4, would reduce the potential for disturbance of contaminants by construction.

Although the both the North and South alternatives and their route options would result in higher levels of EMF under and immediately near the proposed transmission line, it would not cumulatively increase the overall level of EMF exposure in the project area.

Air Quality

The project area is currently designated as in attainment for all criteria pollutants under the Clean Air Act. Past and present actions that have cumulatively affected air quality include fires, mining, construction activities, residential wood burning, wildfires, and agricultural practices in the airshed, all of which are expected to continue for the foreseeable future. Ongoing and future mine development in the project area would generate fugitive dust, vehicle and equipment emissions, and processing plant emissions. In addition to mining activities, agriculture, vehicle traffic, logging activities, wildfires, and residential wood burning will also continue to contribute emissions and particulates, though at a smaller scale, throughout the year in the project area.

Air emissions from construction of the North and South alternatives and their route options would occur during the 16-month project construction period, spread over 2 years. Emissions from either alternative or route option would result in a temporary contribution to cumulative impacts on air quality. Air impacts from the either alternative over the long term would occur, but would be much lower than those experienced during construction. Overall, the Project's emissions would result in a small contribution to cumulative impacts on air quality, compared to the larger-scale emitters in the project area.

Greenhouse Gases

Cumulative GHG concentrations in the atmosphere and corresponding climate change occurring over the past 50 years have been primarily caused by anthropogenic contributions. GHG emissions have largely originated from burning fossil fuels and clearing forests around the world during this time and for a significant past period (Karl et al. 2009). Therefore, unlike the cumulative impacts analyses for other resources discussed in this section, the global nature of GHGs makes cataloguing past, present, and reasonably foreseeable future actions for this resource impossible.

Nonetheless, in a general sense, any action where fossil fuels have been or are being burned contributes to GHG 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 concentrations. Vegetation can affect concentrations in two ways. First, if vegetation is removed prior to maturation, the carbon storing potential is lost and CO_2 can no longer be sequestered in that vegetation. Second, if that vegetation is burned, it will release all of the carbon it has sequestered back into the atmosphere as CO_2. These actions have occurred in the past, are likely still occurring, and will continue to occur in the future at some unknown level.

In 2005, the United States emitted 7,204.2 million metric tons of CO_2e (EPA 2012b), while the state of Idaho emitted 37.2 million metric tons of CO_2e, or approximately 0.5 percent of total U.S. emissions (Strait et al. 2008). In 2010, the United States emitted 6,821.8 million metric tons of CO_2e (EPA 2012b), while the state of Idaho was projected to emit 39.6 million metric tons of CO_2e, based on historical data from 1990 through 2005 (Strait et al. 2008). Strait et al. 2008 suggest that Idaho's gross GHG emissions (emissions excluding carbon sinks, such as agricultural soils) are rising faster than those of the nation as a whole. Idaho's gross GHG emissions increased 31 percent from 1990 to 2005, while national emissions rose by only 16 percent from 1990 to 2004.

In terms of the cumulative impacts on atmospheric GHGs, any addition, when considered globally, could contribute to long-term significant effects to climate change. As described above, the impacts of the North and South alternatives or their options on GHG concentrations would be low. Therefore, the concentrations estimated for the Project, when compared to the regional, national, and global rates, are negligible and comparatively insignificant.

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3.17 Intentional Destructive Acts

Intentional destructive acts, that is, acts of sabotage, terrorism, vandalism, and theft sometimes occur at power utility facilities. Vandalism and thefts are most common, especially of metal and other materials that can be sold. BPA has seen a significant increase in metal theft from its facilities over the past few years. Thefts increase when the price of metal is high on the salvage market. In the last 10 years, BPA has experienced more than 200 thefts or burglaries. The conservative estimate of damages for these crimes is $150,000, but the actual amount is likely much higher since this number does not factor in all labor-related costs associated with repairing the damage.

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. Nationwide, many thieves have been electrocuted while attempting to steal equipment from energized facilities. Recent examples include the July 2011 electrocution death of a man attempting to steal copper from a Duke Energy substation in South Carolina, the August 2011 electrocution death of a man attempting to steal copper from an Entergy substation in Louisiana, the August 2011 severe burning of a woman attempting to steal copper from a Puget Sound Energy substation in Washington, the October 2011 electrocution death of a man attempting to steal copper from a Duke Energy substation in North Carolina, and the December 2011 electrocution death of a man attempting to steal copper from a Memphis Light Gas & Water substation in Tennessee.

Federal and other utilities use physical deterrents such as fencing, cameras, warning signs, rewards, etc., to help deter theft, vandalism, and unauthorized access to facilities. BPA also is in the process of replacing much of its solid copper wire with copper-coated steel wire, posting signage that indicates a trade has been made, and installing surveillance cameras to deter future break-ins. Transmission towers and overhead transmission conductors, however, are mostly on unfenced utility ROWs. Although towers are constructed on footings in the ground and are difficult to dislodge, they remain vulnerable to potential vandalism. In an effort to help prevent intentional destructive acts, 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 a manner that protects the caller's identity.

Acts of sabotage or terrorism on electrical facilities in the Pacific Northwest are rare, although some have occurred. These acts have generally focused on attempts to destroy large steel transmission line towers. In 1999, a large transmission line steel tower in Bend, Oregon, was toppled. In June 2011, at BPA's Alvey Substation near Eugene, Oregon, almost $1 million in damages was incurred when unknown individuals were able to breach a security fence and damage equipment in the substation yard during an attempt to disrupt transmission service.

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 other 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. For example, when a storm affects transmission lines, residential customers can lose power for heating, cooking, refrigeration, and lighting and can experience impacts related to those functions unless they have backup generators. Similarly, commercial, industrial, and municipal customers can experience impacts when infrastructure such as machinery, traffic signals, light rail, or elevators stop functioning.

In some situations intentional destructive acts would have no noticeable effect on electrical service as power can be rerouted around an area because of redundancies built into the transmission system. In other situations, service could be disrupted in the local area, or, if an intentional destructive act causes damage to a major piece of transmission system equipment or a large part of the transmission system, a much greater area could be left without power.

It is difficult to predict the likelihood of, and increased risk for, terrorist or sabotage acts from building the project near, next to, or far from existing transmission system facilities. New transmission towers, overhead conductor, and new substation facilities would increase the risk incrementally on BPA’s 15,000 circuit-mile transmission system. Placing a new line next to an existing line may increase the risk more than building the line far from existing facilities. However, given the extensive security measures that BPA, public and private utilities, energy resource developers, and federal agencies such as the U.S .Department of Homeland Security have and are continuing to implement to help prevent such acts and protect their facilities, along with the inherent difficulty in significantly affecting such large and well-constructed facilities as transmission towers and substation sites, it is considered extremely remote and unlikely that a significant terrorist or sabotage act would occur. Accordingly, the incremental increase in risk to landowners from the presence of the Project would be minimal. If such acts did occur, the problem area would be isolated quickly and electricity rerouted as much as possible to keep the system functioning. In addition, it is expected that federal, state, and local agencies would respond quickly if any such act posing any human or natural resource risks occurs.

3.18 Irreversible or Irretrievable Commitment of Resources

NEPA requires that an EIS include a discussion of any irreversible and irretrievable commitments of resources that would be involved in the proposed project should it be implemented (42 USC 4332(C)(v) (see also 40 CFR 1502.16). An irreversible commitment of resources occurs when a nonrenewable resource such as minerals or petroleum-based fuels are used for the construction or operation of the project. Because these nonrenewable resources are "used up," or consumed, this use cannot be reversed except possibly over an extremely long period of time (e.g., hundreds of thousands or millions of years), and thus are considered irreversible. An irretrievable commitment of resources, on the other hand, involves the loss of productive use or value of renewable resources such as timber or rangeland for a period of time.

The Project would consume aluminum, steel, other metals, wood, gravel, sand, plastics, and various forms of petroleum products in the construction of the transmission line, substations, connection facility, and construction and improvement of access roads. Most of these materials are not renewable and could potentially be irreversible commitments of resources if not recycled (metals and glass) or reused (sand and gravel) at the end of the project life.

Irretrievable commitments would include small amounts of land lost to grazing and crop production for Hooper Springs Substation and at some structure sites. In addition, timberlands within the C-TNF and on the Blackfoot River WMA would be lost as a result of ROW construction and vegetation maintenance. These commitments are irretrievable rather than irreversible because management direction could change and allow these uses in the future.

Implementation of any of the alternatives or options would consume natural and human-made resources for transmission line, substation, and access road construction, operation, and maintenance. The following sections describe potential commitments of resources by resource area. This section does not address the No Action Alternative because there would be no project-related irreversible and irretrievable commitments of resources under that alternative.

3.18.1 Geology and Soils

Project construction would cause irreversible alterations to topography, particularly during construction of new access roads and at the Hooper Springs Substation site. Vegetation clearing, access road construction, and structure placement would increase soil erosion potential throughout the project area. Long-term impacts of soil erosion would be preventable once erodible soils are revegetated and stabilized following construction, however, an irretrievable loss of soil stability and increased soil compaction would occur between construction and revegetation.

3.18.2 Vegetation and Wildlife

The Project would cause an irretrievable removal of natural habitat from access road, structures, the connection facility, and the Hooper Springs Substation site. Vegetation (including wetlands) removal and conversion along the ROW would represent an irreversible commitment of biological resources if areas are not restored after construction or if transmission facilities are retired but not removed. Likewise, if former low-growing vegetation cover and composition does not recover after construction, an irreversible commitment of resources would occur. Resulting wildlife losses from these permanent alterations and during construction and operation of the Project would represent an irretrievable commitment of biological resources.

3.18.3 Cultural Resources

Any loss of cultural resources (archaeological sites, historic trails, structures, and cultural landscapes) would be irreversible, because they are nonrenewable resources. Prior to construction, archaeological sites would be delineated and avoided by siting transmission structures and roads to avoid sensitive areas. Visual elements that alter the character or setting of cultural resource sites could cause an irretrievable reduction in site integrity. The commitment would be irreversible if facilities are retired but not removed.

3.18.4 Land Use

The Project would commit land for ROW clearing, transmission towers, access roads, and construction staging areas. Construction areas that would not be occupied by project facilities could be used for other uses. Use of these areas for construction would not be an irreversible commitment of resources, but the temporary loss of productive use of these lands for other purposes during construction would be irretrievable. Land used for transmission facilities also would represent an irretrievable property commitment during the transmission facilities' operation and maintenance. The commitment would become irreversible if any facilities are retired but not removed, or if after removal some areas of the natural landscape could not be restored to their prior use.

3.18.5 Greenhouse Gases

The Project would cause an irretrievable commitment of resources (primarily tall-growing trees and shrubs) available to sequester GHG emissions that help minimize the effects of climate change. Should any transmission facilities be retired and removed at a later date, those areas that previously supported carbon sequestering vegetation could be restored. Fuel combustion by construction equipment and the carbon that would not be sequestered from vegetation removal along the ROW and access roads would represent an irreversible contribution of GHG emissions into the atmosphere.

3.19 Relationship Between Short-term Uses of the Environment and Long-term Productivity

NEPA requires that an EIS include a discussion of the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity (42 USC 4332(C)(iv) (see also 40 CFR 1502.16). This section discusses whether construction and operation of the proposed project could cause short-term uses of the environment that would affect, either positively or negatively, the long-term productivity of the environment. For the purposes of this section, “short term” generally refers to the more immediate period of time during which the proposed project would be constructed, whereas “long term” refers to an indefinite period beyond this timeframe.

Short-term uses of the environment associated with the alternatives and options are generally the same as the environmental impacts described for each environmental resource in Chapter 3 of this supplemental draft EIS. These impacts include both temporary and permanent “use” of the physical environment as a result of developing the proposed project and energy and resource use during project construction and maintenance. In considering the effect of these uses on long-term productivity, four main types of long-term productivity are considered: soil, hydrological, biological, and economic.

3.19.1 Soil Productivity

While maintenance of long-term soil productivity is mainly a concern in areas that are in agricultural use, this concern also can arise anywhere that soils provide an economic or ecological benefit. Construction of the Project would affect soil productivity through land clearing, grading, and occupation by project facilities. At structure and substation/connection facility sites and along access roads, project construction would have a long-term negative effect on soil productivity because these soils would be taken out of use for the life of the Project or longer if facilities are abandoned and not restored. In areas between structures and substation/connection facility sites and outside of access roads, the Project would not be expected to affect long-term soil productivity because these areas would be restored, either actively or naturally, to general pre-project conditions, and the soils in these areas could be put to other uses in the long term.

3.19.2 Hydrological Productivity

Wetlands, groundwater resources, and floodplains contribute to long-term hydrological productivity by providing filtration, habitat for sensitive species, and essential recharge for agricultural and municipal use. Construction of the Project would affect wetlands through grading and occupation by project facilities. At structures, substation/connection facility sites, outside of access roads, and along access roads, project construction would have a long-term effect on wetlands unless recovery efforts were made to offset this disturbance. Impacts to wetlands would vary depending on which alternative or option is selected.

Hooper Springs Substation and access road sites could contribute to long-term effects to groundwater quality by increasing the potential for pollutant discharge into groundwater.

In areas between structures and substation/connection facility sites and outside of access roads, the Project would not affect long-term floodplain or groundwater productivity because those areas would be restored, either by BPA or through natural recovery, to similar pre-project conditions.

3.19.3 Biological Productivity

Vegetation and wildlife contribute to biological productivity; their long-term productivity provides an ecological and recreational benefit in sensitive or remote areas. Project construction would affect biological resources through land clearing, grading, and occupation by project components.

During construction, all tall-growing trees and shrubs within the 100-foot-wide ROW would be permanently removed. In some cases where forest dominates the landscape, danger trees would be removed outside of the 100-foot ROW. After construction, natural recovery and vegetation restoration would take place in some areas, but in others, vegetation and habitat would be permanently altered. Where danger trees are removed, trees would be allowed to grow back and could recover in the long term (unless removed again at a much later time). However, trees and shrubs within the ROW would not be permitted to grow beyond allowable limits during the life of the Project. Long-term productivity could be restored if the area is later reclaimed.

Transmission line construction also would impact wildlife. Substantial habitat could be permanently lost, altered, and fragmented. The noise and increased human activity related to construction could decrease some wildlife species' breeding success, and in some cases cause direct mortality. At the same time, habitat alteration can encourage the increase of species that can best adapt to the altered habitats, potentially increasing species diversity. Over the long term, species that are highly adaptable or that avoid areas during short-term construction activities could return once construction is complete.

3.19.4 Economic Productivity

Timber production, agriculture, and industrial uses can contribute to economic productivity. Transmission line construction and operation could affect the economic productivity of some resources by limiting their long-term revenue potential, but could contribute to long-term revenue potential in sectors that benefit from a reliable transmission system.

Project construction would affect economic productivity through land clearing, grading, and occupation by project components. At structure and substation/connection facility sites and along access roads, project construction would have a long-term negative effect on land used for agriculture or timber production because those areas would be taken out of use for the life of the Project. In areas between structures and substation/connection facility sites and outside of access roads, the Project would not be expected to affect long-term economic productivity for agricultural activities such as grazing or crops shorter than 4 feet at maturity, since these areas would be restored, either actively by BPA or naturally, to pre-project conditions. Crops that exceed height restrictions in the ROW could be permanently excluded from production, but could be put to other agricultural uses in the long term. Timber production land would have long-term productivity losses both in the ROW and outside of the ROW (danger trees).

While the Project may have short-term effects on mining activities from traffic delays, they likely would not cause a negative effect to the economic productivity of the mining companies. As described in Chapter 3: in the long-term, construction and operation of the transmission line cannot affect the long-term economic productivity of the mines or the mining companies. A surface use such as the proposed transmission line cannot unreasonably interfere with the full extraction of the phosphate and while the mining leases do allow for other authorizations or surface uses, they cannot unreasonably interfere with the rights of the mine lessee.

The Project could create a long-term increase to economic productivity by providing a more reliable transmission system. Increased reliability could create a long-term economic benefit to existing businesses that rely on transmission service for production output.

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4 Consultation, Review, and Permit Requirements

This chapter addresses federal statutes; implementing regulations, Executive Orders; and other consultation, review, and permit requirements potentially applicable to the Project. This supplemental draft EIS is being sent to tribes, federal agencies, and state and local governments as part of the consultation for the Project.

4.1 National Environmental Policy Act

This EIS has been prepared by BPA pursuant to regulations implementing NEPA (42 U.S.C. 4321 et seq.), which requires federal agencies to assess, consider, and disclose impacts that their actions may have on the environment. BPA has assessed the potential environmental effects of the Project in this supplemental draft EIS and has made this document available for public comment. It will consider impacts and public comments when making decisions regarding whether to proceed with the Project.

4.2 Endangered Species Act of 1973

ESA of 1973 (16 U.S.C. 1536), as amended in 1988, establishes 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.

ESA is administered by USFWS for wildlife and freshwater species and by the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service for marine and anadromous species. 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) of ESA requires federal agencies to ensure that the actions they authorize, fund, and carry out do not jeopardize endangered or threatened species or their critical habitats. Section 7(c) of ESA and the federal regulations on endangered species coordination (50 C.F.R. 402.12) require that, if listed species or designated critical habitat are present and could be affected by a project, a federal agency must prepare a biological assessment to analyze the potential effects on listed species and critical habitat and make an effect determination for each species. USFWS and/or NOAA Fisheries Service review the biological assessment and, if they conclude that the action may adversely affect a listed species or its habitat, issue a biological opinion, which includes a take statement and a list of reasonable and prudent alternatives to follow during construction. If USFWS and/or NOAA Fisheries Service find that the Project may affect, but is not likely to adversely affect a listed species or its habitat, they issue a letter of concurrence.

BPA used information obtained from the USFWS-Idaho website to develop a list of ESA-listed species potentially present in Caribou County. This list was originally developed in spring 2011, and revised accordingly in summer 2012, December 2012, and December 2013. Three species were identified as potentially occurring in the county: Canada lynx (threatened), wolverine (proposed threatened), and greater sage-grouse (candidate). No critical habitat has been designated in Caribou County. Field surveys of the North and South alternatives, including route options, conducted during winter/spring and summers of 2011, 2012, and 2013 did not document evidence that the Canada lynx or wolverine were present. Field surveys did identify potential suitable foraging habitat for Canada lynx on C-TNF lands; however, C-TNF lands in the project area serve only as potential migratory corridors (linkage habitat) for lynx. During sage-grouse surveys in early spring 2013, surveyors identified an area of sage-grouse use that had not been previously documented. The site was about 3,000 feet north of the South Alternative and Options 1 through 4 corridors on a steep ridgetop in the vicinity of the Blackfoot River Narrows. Given the area topography, this site would not be within view of the transmission lines. The presence of a displaying male and two female sage-grouse at the site indicates that this site is suitable for lekking activities. However, no physical signs were observed during a follow-up ground survey of this area that would indicate this site is heavily used as a lek site or as a nesting/rearing site. None of the alternatives cross sage-grouse preliminary priority or general habitat.

Based on informal consultation with USFWS during the preparation of this supplemental draft EIS, it was determined that Canada lynx are not present along the alternative corridors; therefore, the Project would have no effect on Canada lynx. In the event that wolverines are listed, the construction of the Project could result in short-term disturbances if wolverines avoid construction areas. Potential impacts on the ESA-designated species and associated mitigation measures are discussed further in Sections 3.4, Vegetation, and 3.7, Wildlife.

4.3 Fish and Wildlife Conservation Act of 1980

The Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901 et seq.) encourages federal agencies to conserve and promote the conservation of nongame fish and wildlife species and their habitats. The Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) requires federal agencies undertaking projects affecting water resources to consult with USFWS and the state agency responsible for fish and wildlife resources, which, for this Project would be IDFG.

Construction and operation of the Project would create impacts to federally threatened or endangered species that would not exceed minor. Populations of Yellowstone cutthroat trout, which is considered a special status species by IDFG, exist in the Blackfoot Reservoir and Blackfoot River. The Project would not result in major impacts on water resources. Further, BPA has consulted with IDFG and incorporated recommendations to avoid and minimize potential impacts on Yellowstone cutthroat trout. Standard erosion control measures would be used during construction to control sediment movement into streams, protecting water quality and fish habitat. Mitigation measures designed to avoid and minimize impacts on fish and wildlife and their habitats is discussed in detail in Sections 3.4, Vegetation; 3.7, Wildlife; and 3.8, Fish.

4.4 Migratory Bird Treaty Act of 1918

The MBTA implements various 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 U.S.C. 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989). Under the Act, taking, killing, or possessing migratory birds or their eggs or nests is unlawful. Most species of birds are classified as migratory under the Act, except for upland and nonnative birds such as sage-grouse, pheasant, chukar, gray partridge, house sparrow, European starling, and rock dove.

The Project may impact migratory birds through disturbance, injury, or mortality from tree clearing and habitat removal during ROW clearing and access road development, and through the increased potential for power line collisions during transmission line operation. Potential impacts on migratory birds and mitigation measures are discussed in Section 3.7, Wildlife. In 2001, Executive Order 13186 was signed concerning the responsibilities of federal agencies to promote migratory bird conservation. One aspect of this Executive Order was for agencies to enter in to a Memorandum of Understanding with USFWS outlining how they would meet the responsibilities of the Executive Order. DOE and USFWS entered into the first Memorandum of Understanding in 2006. In 2013, DOE and USFWS signed a second updated Memorandum of Understanding that BPA follows when developing projects. In accordance with the 2013 Memorandum of Understanding, BPA will consult with USFWS to ensure appropriate mitigation measures would be employed to minimize the risk of bird mortality and help promote the conservation of migratory bird populations. In furtherance of this effort, BPA has developed an avian collision risk model that helps predict areas along a corridor that may pose higher collision risks to birds and a bird collision marking plan, which outlines how BPA would mark transmission lines to reduce potential bird collisions, among other things.

4.5 Bald Eagle and Golden Eagle Protection Act of 1940

The BGEPA of 1940 prohibits the taking or possessing of and commerce in bald and golden eagles, with limited exceptions (16 U.S.C. 668-668d, June 8, 1940, as amended 1959, 1962, 1972, and 1978). The Act only covers intentional acts or acts in “wanton disregard” of the safety of bald or golden eagles.

There is the possibility that some incidental, unintentional eagle mortality could occur over the life of the Project because there are foraging, perching, roosting, and possibly nesting areas near the alternative and option corridors. However, because BGEPA only applies to intentional acts or acts in wanton disregard of the safety of bald or golden eagles, any such mortality would not be subject to this act. For further discussion regarding potential impacts on eagles and associated mitigation, see Section 3.7, Wildlife.

4.6 Noxious Weed Control

The Federal Noxious Weed Act of 1974, as amended in 2009, sets out regulations for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health (7 U.S.C. Sections 2801-2814, January 3, 1975, as amended 1988, 1994). The Act requires federal agencies to develop management programs to control undesirable plants on federal lands under each agency’s jurisdiction. Undesirable plant species are defined as those that are classified as undesirable, noxious, harmful, exotic, injurious, or poisonous, pursuant to state or federal law. A noxious weed list (7 C.F.R. 360.200) is developed by the Secretary of Agriculture, which lists noxious weeds (as defined by the Plant Protection Act) that are subject to restrictions on interstate movement (7 U.S.C. 7712).

Idaho Code (Title 22, Chapter 24, Noxious Weeds) designates 64 species of noxious weeds. This law is implemented by administrative rules established under the IDAPA (IDAPA 02, Title 06, Chapter 22, Noxious Weed Rules). The administrative rules place each noxious weed species into one of three categories. Each category has specific management requirements associated with detection, control, and/or containment of the given species. The categories are as follows:

- Early Detection and Rapid Response—Plants in this category must be reported to the Idaho State Department of Agriculture within 10 days of observation. Eradication must begin in the same season in which the weed is found.
- Statewide Control—Plants in this category may already exist in some parts of the state. In some areas of the state, control or eradication may be possible, and a plan must be established that will reduce population levels within 5 years.
- Statewide Containment—Plants in this category already exist in the state. New or small infestations can be reduced or eliminated, while established populations may be managed as determined by the local weed control authority.

Noxious weed species documented within the alternative corridors include Canada thistle and leafy spurge, both of which are classified as statewide containment species in Idaho; and musk thistle, which is an Idaho Control status species.

Construction and maintenance activities would create some risk of spreading undesirable plant species along the alternative and route option corridors. BPA would conduct post-construction surveys for undesirable plant species included on the federal noxious weed lists and on state of Idaho and Caribou County lists. If noxious weed species are found or spread as a result of transmission line construction or maintenance, BPA would coordinate with the state, county, and/or landowner(s) regarding their control or eradication (BPA 2000). See Section 3.4, Vegetation, for a detailed discussion of noxious weed species, impacts, and mitigation measures.

4.7 Clean Air Act

The Clean Air Act as revised in 1990 (PL 101-542, 42 U.S.C. 7401) requires EPA and the states to carry out programs intended to ensure attainment of NAAQS. EPA is authorized to establish air quality standards for six “criteria” air pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter ($PM_{2.5}$, PM_{10}), and sulfur dioxide. EPA uses these six criteria pollutants as indicators of air quality. EPA has established NAAQS for each criteria pollutant, which define the maximum legally allowable concentration. If the NAAQS for a pollutant is exceeded, adverse effects on human health may occur. When an area exceeds these standards, it is designated as a nonattainment area. Pollution control measures are mandated for federal actions in nonattainment areas.

A nonattainment area can be listed for any of the criteria pollutants. An area that was once a nonattainment area, but has since improved its air quality enough so that it now meets EPA established air quality standards, is upgraded to a maintenance area designation. Maintenance areas also have pollution controls imposed on them, but because the air quality is not as poor as in nonattainment areas, the control standards are not as strict. All other areas not listed by EPA for air quality degradation are considered attainment areas. The General Conformity

Requirements of the C.F.R. require that federal actions do not interfere with state programs to improve air quality in nonattainment areas. General Conformity Requirements do not apply to the Project because it is located in an attainment area.

Idaho has adopted the federal air quality standards in the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.575-587). Project construction activities that could create dust include road building and grading, on-site travel on unpaved surfaces, work area clearing and preparation, and soil disrupting operations. Heavy equipment and vehicles, including those with diesel internal combustion engines, would emit pollutants such as carbon monoxide, CO_2, sulfur oxides, PM, nitrogen oxides, and other air toxins. The air quality impacts of the project alternatives and route options are expected to be short term and low, and mitigation measures would be implemented to minimize these air quality impacts. Air quality impacts and related mitigation measures are discussed in Section 3.14, Air Quality.

4.8 Greenhouse Gases

Executive Orders 13423 and 13514 require federal agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates. In 2010, BPA began implementing a Sustainability Action Plan, which addresses managing and reducing GHG emissions by the agency. In addition, the 2010 draft guidance by CEQ describes two primary ways to consider climate change in planning and compliance documents. The first is the agency's contribution to climate change through the release of GHGs. The second approach to considering climate change is in considering the effects that a changing environmental baseline, as a result of changes in climate, has on the Project. In its recent draft guidance, CEQ relies on 40 C.F.R. 1502.24 when it states that "[w]ith regard to the effects of climate change on the design of a project and alternatives, Federal agencies must ensure the scientific and professional integrity of their assessment of the ways in which climate change is affecting or could affect environmental effects of the project" (CEQ 2010).

The project alternatives and route options would remove trees and other vegetation that collect, or "sequester," carbon in the form of atmospheric CO_2, and would involve the use of construction vehicles and equipment that would generate emissions of gases such as CO_2 that contribute to climate change. The removal of vegetation would result in lost carbon storage equivalent to 9,952, 4,919, and 2,953 metric tons of CO_2 from the North and South alternatives, and Option 3A, respectively. Construction of the North Alternative would produce an estimated 12,244 metric tons of GHG emissions over the course of 1 year, and operation and maintenance of the transmission line would be expected to produce about 126 metric tons over the life of the transmission line. Construction of the South Alternative would produce an estimated 8,081 metric tons of GHG emissions over the course of 1 year, and 84 metric tons over the life of the transmission line, and construction of Option 3A would produce an estimated 8,815 metric tons of GHG emissions over the course of 1 year, and 91 metric tons over the life of the transmission line. These emissions would be well beneath EPA's mandatory reporting threshold of 25,000 metric tons of CO_2e GHG emissions per year. Based on these estimates, the Project's contribution to GHG levels in the atmosphere would be ***low***. See Section 3.15, Greenhouse Gas Emissions, for the complete analysis and discussion.

The construction of the transmission line would not be impacted by climate change or any corresponding effects related to changes in the resources evaluated in this EIS given the short 2 year construction schedule. The operation and maintenance of the transmission line could be affected by climate change, though the actual impacts are remote and speculative and would mostly correspond to changes in the underlying natural and socioeconomic resources considered in this EIS. For example, increased extreme weather events could result in flooding and erosion potentially affecting transmission line structures. Fire regimes may change, increasing the risk of forest fires. Federal land managers near the project alternative and route option corridors (BIA, BLM, and C-TNF) may see changes in vegetation, wildlife, water resources, and fisheries that could alter how they manage the lands; however, it is unlikely the operation and maintenance of the transmission line would be substantially affected. For additional information on the impacts of climate change on project facilities, see Section 3.15, Greenhouse Gas Emissions.

4.9 Clean Water Act

The Federal Water Pollution Control Act, popularly known as the Clean Water Act (33 U.S.C. 1251 et seq.), regulates discharges into waters of the United States. Implementation of the Project may require a permit pursuant to the Clean Water Act as regulated by USACE for the placement of fill material and the potential disturbance of wetlands and other waters of the United States. Requirements for implementation of the Clean Water Act in Idaho are described below.

Section 401 (33 U.S.C. 1341 et seq.) certification is required for any permit or license issued by a federal agency for any activity that may result in a discharge into waters of the state, to ensure that the Project will not violate state water quality standards. Pursuant to the provisions of Section 401(a)(1) of the Clean Water Act, as amended, 33 U.S.C. 1341(a)(1), and Idaho Code 39-101 et seq., and 39-3601 et seq., IDEQ has authority to review Section 404 permits and issue water quality certification. Any Section 401 certification in Idaho also ensures that the Project would comply with water quality improvement plans developed for affected waterbodies and would not adversely impact water quality impaired streams (streams that already do not meet water quality standards).

Section 402 of the Clean Water Act (33 U.S.C. 1342 et seq.) authorizes stormwater discharges associated with industrial activities under the National Pollutant Discharge Elimination System. For Idaho, EPA has a Construction General Permit authorizing federal facilities to discharge stormwater from construction activities disturbing land of 1 acre or more into waters of the United States, in accordance with various set conditions. BPA would develop a SWPPP during final project design, which would be adapted by the contractor prior to construction, and revised onsite as necessary. A copy of the SWPPP is maintained onsite during construction and is a basis for environmental compliance inspection during construction.

Section 404 requires authorization from USACE when there is a discharge of dredged or fill material into waters of the United States, which include wetlands. The basic premise of Section 404 is that dredged or fill material cannot be discharged into water if the nation’s waters would be significantly degraded or if a feasible alternative exists that is less damaging to the aquatic environment. As discussed in Section 3.6, Water Resources, Floodplains, and Wetlands, construction of the North Alternative would result in approximately 1.1 acres of short-term impacts from vegetation removal and temporary fill, and permanent fill resulting in approximately 1.5 acres of long-term, direct impacts on wetlands. However, the 1.5 acres of impacts are spread across 12 discrete wetlands, with no impacts greater than 0.5 acre in any given wetland. Construction of the South Alternative would result in approximately 2.8 acres of short-term impacts on wetlands and no long-term impacts. Construction of Option 3A would result in approximately 2.7 acres of short-term impacts on wetlands and 0.1 acre of long-term, direct impacts. BPA would apply for a Section 404 permit and coordinate with USACE concerning the Project and its potential effects on waters of the United States.

4.10 Floodplains and Wetlands (Executive Orders 11988 and 11990)

DOE mandates that effects on 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 C.F.R. 1022.12), and federal Executive Orders 11988 (Floodplain Management, May 24, 1977; 42 FR 26951) and 11990 (Protection of Wetlands, May 24, 1977; 42 FR 26961). In accordance with these regulations, BPA has prepared an assessment of effects of the Project on floodplains and wetlands. This evaluation serves as the notice of floodplain/wetlands involvement for the Project. For the assessment of effects see Section 3.6, Water Resources, Floodplains, and Wetlands.

No new construction would occur in floodplains. The proposed transmission line would span the floodplains of the Blackfoot River and other waterbodies. Wetlands within the project alternatives' ROWs are associated with the Blackfoot River, smaller drainages, and topographic depressions. The alternatives and route options have been sited to avoid wetlands to the maximum extent practicable. BPA also would implement appropriate mitigation to avoid, minimize, and compensate for any wetland impacts. Construction, operation, and maintenance of the Project are not expected to significantly affect the long-term existence, quality, or natural functioning of wetlands. Potential impacts on wetlands are discussed above in Section 4.9. There are no wetlands present at the proposed Hooper Springs or Lanes Creek Substation sites. Effects on floodplains, and wetlands and associated mitigation measures are discussed in the Section 3.6, Water Resources, Floodplains, and Wetlands.

4.11 Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) regulates all work done in or structures placed below the ordinary high water mark of navigable waters of the United States. No work associated with the Project would occur below the ordinary high water mark in Section 10 navigable waters. Additionally, placement of conductors across the Blackfoot River would not require a Section 10 permit because the Blackfoot River is not a Section 10 water.

4.12 Wild and Scenic Rivers Act

Section 4(d) of the National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287) requires that “In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas.” NRI is managed by the Rivers, Trails, and Conservation Assistance Program of the National Park Service. In partial fulfillment of the Section 5(d) requirements, the National Park Service has compiled and maintains a NRI, a registry of river segments that potentially qualify as national wild, scenic or recreational river areas.

CEQ provides guidance to federal agencies with permitting and/or granting authority for projects on or near rivers listed on the NRI. In accordance with a 1979 presidential directive, all federal agencies shall, as part of their normal planning and environmental review process, take care to avoid or mitigate adverse effects on rivers identified on the NRI. In accordance with these requirements, BPA has prepared an assessment to determine whether the project alternatives or route options could affect an NRI segment.

The Blackfoot River from its source to the slack water of the Blackfoot Reservoir (32 miles) is listed on the NRI as potentially eligible for listing under the Wild and Scenic Rivers Act because of its scenic and fisheries resources. BPA would coordinate with the National Park Service to evaluate effects relative to the Blackfoot River NRI segment. Project-related impacts on the Blackfoot River are described in Section 3.6, Water Resources, Floodplains, and Wetlands.

4.13 Hazardous Materials and Pollution Control

4.13.1 Safe Drinking Water Act

The Safe Drinking Water Act (42 U.S.C. 200f et seq.) protects the quality of public drinking water and its source. BPA would comply with state and local public drinking water regulations. The Project would not affect any sole source aquifers or other critical aquifers, or adversely affect any surface water supplies (IDEQ 2011b).

4.13.2 Spill Prevention Control and Countermeasures Act

The Spill Prevention Control and Countermeasures Act is intended to prevent discharge of oil into navigable waters of the United States or adjoining waterbodies. Facilities subject to the Act must prepare and implement a plan to prevent any discharge of oil into or upon navigable waters or adjoining shorelines. The plan is called a Spill Prevention, Control, and Countermeasure Plan.

In BPA’s experience, typical construction and maintenance activities have generated small amounts of these hazardous wastes: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Small amounts of hazardous wastes may be generated by the Project. These materials would be disposed of according to state law and the Resource Conservation and Recovery Act (RCRA). As detailed in Section 3.13, Public Health and Safety, BPA would prepare and implement Spill Prevention and Response Procedures that would include notification procedures, to prevent and contain accidental spills.

4.13.3 Resource Conservation and Recovery Act

RCRA, as amended, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste, and on owners and operators of treatment, storage, and disposal facilities. Each treatment, storage, and disposal facility owner or operator is required to have a permit issued by EPA or the state. Typical construction and maintenance activities, in BPA's experience, have generated small amounts of these hazardous wastes: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Small amounts of hazardous wastes may be generated by the Project. These materials would be disposed of according to state law and RCRA.

4.13.4 Toxic Substances Control Act

The Toxic Substances Control Act is intended to protect human health and the environment from toxic chemicals. Section 6 of the Act regulates the use, storage, and disposal of polychlorinated biphenyls (PCBs). BPA adopted guidelines to ensure that PCBs are not introduced into the environment. Equipment used for the Project would not contain PCBs. Any equipment removed from the project area that may contain PCBs would be handled according to the disposal provisions of this Act.

4.13.5 Federal Insecticide, Fungicide and Rodenticide Act

The Federal Insecticide, Fungicide and Rodenticide Act 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 ROWs and in substation yards 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.

4.13.6 Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA (commonly known as Superfund), was enacted by Congress on December 11, 1980, to establish prohibitions and requirements concerning closed and abandoned contaminated sites, provide for liability of persons responsible for releases of contamination at these sites, and establish a trust fund to provide for cleanup when no responsible party could be identified.

As discussed in Section 3.13, there are several sites associated with past and current mining activities and either under investigation or already designated as a Superfund site that exist within Caribou County. The closest mine with CERCLA implications to the North Alternative corridor is the Henry Mine, which operated from 1969 to 1989. The Henry Mine is located approximately 1 mile southeast of the town of Henry, Idaho, and approximately 3,500 feet east of the North Alternative corridor. P4 Production, LLC is under an EPA Agreed Order for a remedial investigation and feasibility study of the Henry Mine.

As discussed in Section 3.13, four mining areas (the Conda/Woodall Mountain Mine, Ballard Mine, Wooley Valley Mine, and North Maybe Mine) in the vicinity of the South Alternative corridor and its route options are currently being investigated under CERCLA. Option 3A attempts to avoid mining areas, but does pass within the vicinity of the North Maybe Investigation Area and through several mineral leases, as well as the far northern portion of the proposed Husky-North Dry Ridge mine area located on the Bigfoot River WMA. The South Alternative and Options 1, 2, and 4 also cross one active phosphate mine, Blackfoot Bridge Mine, and one proposed mine, Husky-North Dry Ridge Mine. Option 3 crosses the same mines as the South Alternative except Conda/Woodall Mountain Mine and Blackfoot Bridge.

If BPA discovers hazardous material, toxic substance, or petroleum products that may pose an immediate threat to human health or the environment, BPA requires that the contractor notify BPA immediately. Other conditions such as large dump sites, drums of unknown substances, suspicious odors, stained soil, etc., must also be reported immediately to BPA. In these situations, the contractor would not be allowed to disturb such contaminants until BPA conducts appropriate investigation and notifies appropriate authorities.

4.14 Cultural Resources

Regulations established for the management of cultural resources include:

- 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;
- Archaeological Data Preservation Act of 1974 (16 U.S.C. 469 a-c);
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470 et seq.), as amended;
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.); and
- Executive Order 13007 Indian Sacred Sites.

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Historic properties are properties that are included in the NRHP or that meet the criteria for the National Register. If a federal agency plans to undertake a type of activity that could affect historic properties, it must consult with the appropriate SHPO and/or Tribal Historic Preservation Officer to make an assessment of adverse effects on identified historic properties, and seek ways to avoid, minimize, or mitigate any adverse effects.

NHPA amendments specify that properties of traditional religious and cultural importance to a Native American tribe (also known as Traditional Cultural Properties) may be determined to be eligible for inclusion on the NRHP. In carrying out its responsibilities under Section 106, BPA would be required to consult with any Native American tribe that attaches religious and cultural significance to any such properties. The Native American Graves Protection and Repatriation Act requires consultation with appropriate Native American tribal authorities prior to the excavation of human remains or cultural items (including funerary objects, sacred objects, and cultural patrimony) on federal lands or for projects that receive federal funding. The Native

American Graves Protection and Repatriation Act recognizes Native American ownership interests in some human remains and cultural items found on federal lands and makes the sale or purchase of Native American human remains illegal, whether or not they derive from federal or Indian land. Repatriation, on request, to the culturally affiliated tribe is required for human remains.

Executive Order 13007 addresses Native American sacred sites on federal land. Sacred site means any specific, discrete, narrowly delineated location on federal land that is identified by a tribe, or tribal individual determined to be an appropriately authoritative representative of a Native American religion. The site is sacred by virtue of its established religious significance to, or ceremonial use by, a Native American religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site. This order calls on agencies to do what they can to avoid physical damage to such sites, accommodate access to and ceremonial use of tribal sacred sites, facilitate consultation with appropriate Native American tribes and religious leaders, and expedite resolution of disputes relating to agency action on federal lands.

BPA sent a letter describing the Project and Area of Potential Effect to the SHPO, the Shoshone Bannock Tribes of the Fort Hall Reservation, the Shoshone Paiute Tribes of the Duck Valley Reservation, and the Northwest Band of the Shoshone Nation in June 2011. An updated letter was sent to consulting parties in September 2012. Section 3.9, Cultural Resources, further discusses cultural resources along the project alternatives' corridors, potential impacts associated with each alternative and route option, and mitigation measures to protect archaeological and historic resources.

4.15 Farmlands Protection Policy Act

The Farmland Protection Policy Act (7 U.S.C. 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 nonagricultural uses. The Act attempts to ensure that federal programs are administered in a manner that, to the best extent practicable, will be compatible with state, local government, and private programs and policies to protect farmland.

The Farmland Protection Policy Act designates farmland as prime, unique, of statewide importance, and of local importance based on their soil characteristics. The areas of prime farmland within the ROWs and associated access roads are approximately 85, 34, and 113 acres for the North and South alternatives and Option 3A, respectively (see Section 3.1, Land Use, and Section 3.5, Geology and Soils).

4.16 Caribou-Targhee National Forest Revised Forest Plan

The CNF RFP establishes forest-wide goals, objectives, standards, and guidelines for land and resource management, as well as goals, objectives, standards, and guidelines applicable to individual management prescriptions. Under the National Forest Management Act, consistency with these goals, objectives, standards, and guidelines must be demonstrated prior to project approval (16 U.S.C. 1604[i] and 36 C.F.R. 219.10[e]). Goals, objectives, standards, and guidelines applicable to the Project that were considered in project planning and alternatives development include those listed below. A full analysis of the project's relationship to all potentially applicable standards and guidelines is provided in Appendix A, Table A-2.

4.16.1 Forest-wide Goals - Lands (RFP 3-8)

4. Uses and occupancy of National Forest System lands, such as hydroelectric development, communication sites, water developments, and utility corridors that meet public needs, and cannot be accommodated off the National Forest, are consistent with direction for other National Forest resources.
5. Special use authorizations are issued only for uses that serve the public, promote public health and safety, protect the environment, and those uses that are legally mandated.

4.16.2 Forest-wide Standards - Lands (RFP 3-9)

1. Allow special uses that are compatible with other resources .

4.16.3 Forest-wide Standards - Transportation and Utility Corridors (RFP 3-10)

1. Existing and proposed ROW of the following types shall be designated as corridors (Management Prescription 8.1). This does not prevent the inclusion of lower-rated transmission lines or smaller pipelines within the corridors.
   - Communication lines and zones for interstate use
   - Railroads
   - Federal, state, interstate, and forest highways
   - Electric transmission lines of 66 kV and greater, including fiber optics
   - Oil, gas, slurry, or other pipelines 10 inches or larger in diameter
2. Proponents of new facilities within existing corridors and new corridor routes shall demonstrate that the proposal is in the public interest, and that no other reasonable alternative exists to public land routing.
3. Allow for essential access for repair and maintenance of facilities within energy corridors.

4.16.4 Forest-wide Guidelines - Transportation and Utility Corridors (RFP 3-10)

1. Utility corridors should have irregular clearing widths and follow patterns of existing natural openings (RFP 3-10).
2. Utility structures should be made to blend with the existing landscape to the extent feasible (RFP 3-10).
3. Where feasible, new facilities should be limited to existing ROWs having widening potential (RFP 3-10).

4. Before new corridors or widening of existing corridors are approved, consideration should be given to wheeling, uprating, or multiple circuiting of transmission lines or increasing pipeline capacity by addition of compressors or looping (RFP 3-10).
5. Avoid parallel corridors. Consolidate facilities within existing energy corridors where feasible (RFP 3-10). Pipelines and other related utilities should share utility corridors except as needed to meet other resource goals (RFP 3-10).

4.16.5 Forest-wide Guidelines – Roads (RFP 3-37)

3. Design and construct roads to a standard appropriate to their intended use, considering safety, cost, and resource impacts, and emphasizing protection of water quality.
4. Avoid road construction on unstable slopes and highly erosive soils.

4.16.6 Forest-wide Guidelines – Scenic Resources (RFP 3-40)

1. New and reconstructed structures and facilities should be built to blend with the surrounding landscape, using the concepts outlined in the Built Environment Image Guide or current direction.

4.16.7 Objective – Management Prescription 2.1.6(b), Gravel Creek Special Emphasis Area (RFP 4-33)

1. Coordinate a review of the status of the property with the Idaho Department of Transportation, Federal Highway Administration, and USACE every 3 years (RFP 4- 34).

4.16.8 Guidelines – Management Prescription 2.1.6(b), Gravel Creek Special Emphasis Area (RFP 4-33)

1. Manage to improve wetland/riparian conditions in the area (RFP 4-34).

4.16.5 Standards – Management Prescription 2.8.3, Aquatic Influence Zone (RFP 4-45)

1. Within legal authorities, ensure that new proposed management activities within watersheds containing 303(d) listed waterbodies improve or maintain overall progress toward beneficial use attainment for pollutants which led to listing (RFP 4-50).
2. All new and replaced culverts, both permanent and temporary, shall be designed and installed to meet desired conditions for riparian and aquatic species (RFP 4-51).

4.16.6 Guidelines – Management Prescription 2.8.3, Aquatic Influence Zone (RFP 4-45)

1. Avoid locating facilities and utility corridors in AIZs (RFP 4-49).
2. Use herbicides, pesticides and other toxicants and chemicals only as needed to maintain desired AIZ attributes (RFP. 4-50).
3. Avoid constructing roads within the AIZ unless there is no practical alternative (RFP 4-51).

4. Culverts (permanent and temporary) should be sized so that the probability of flow exceedance is 50 percent or less during the time the culvert is expected to be in place. Consider bedload and debris when sizing culverts (RFP 4-51).
5. When feasible, use bridges, arches, and open-bottom culverts in fish-bearing streams (RFP 4-51).
6. Avoid placing ditch relief culverts where they may discharge onto erodible slopes or directly into streams (RFP 4-51).
7. Where feasible, install cross-drainage above stream crossings to prevent ditch sediments from entering streams (RFP 4-51).
8. New or reconstructed roads and trails should cross the AIZ riparian areas as perpendicular as possible (RFP 4-51).
9. Avoid making channel changes on streams or drainages (RFP 4-51).
10. Design and install drainage crossings to reduce the chances of turning stream flows down the road prism in case of a blocked or overflowing culvert (RFP 4-51).
11. Road drainage patterns should avoid disruption of natural hydrologic flow paths (RFP 4-51).

4.16.7 Guidelines – Management Prescription 5.2, Forest Vegetation Management (RFP 4-71)

1. All ground-disturbing areas within an activity area should be monitored for 5 years for noxious weeds invasions (RFP 4-72).

4.16.8 Standards – Management Prescription 8.2.2(g), Phosphate Mine Areas (RFP 4-82)

1. Overburden and soil materials shall be managed according to state-of-the-art protocols to help prevent the release of hazardous substances in excess of state and/or federal regulatory standards (RFP 4-83).

4.16.9 Guidelines – Management Prescription 8.2.2(g), Phosphate Mine Areas (RFP 4-82)

1. Selection of plant species for establishment should reflect the surrounding ecosystem and post remedial land use. Plant materials used should be adapted to the climate of the site. Consideration and preference should be given to promoting natural succession, native plant species, and structural diversity (RFP 4-84).

The Project would generally be consistent with these standards and guidelines. However, given the spatial configuration of C-TNF lands within the vicinity of the project alternatives and route options, and the location of the Lanes Creek Substation on C-TNF lands and connection facility on private lands, there are no reasonable alternatives to crossing public lands. Construction methods and mitigation measures would be implemented to minimize the impact of the Project on public lands.

The RFP designates management prescriptions across the forest to serve different forest purposes and management goals. In order to site the project alternatives and route options across the C-TNF, an amendment to the RFP would be needed to designate the transmission line ROW as Management Prescription 8.1, Concentrated Development Areas, in accordance with Forest-wide Standard 1 for Transportation and Utility Corridors (RFP 3-10), discussed above. Appendix A of this EIS provides the necessary information for the RFP amendment. A NEPA evaluation of this proposed amendment, as called for by 36 C.F.R. Part 219, Section 219.10(f), would be performed as part of the EIS process. As part of the proposed plan amendment evaluation, a determination as to whether the proposed amendment is a significant or non-significant amendment to the current plan would be made and documented in the C-TNF's Record of Decision for the Project.

4.17 Bureau of Land Management Resource Management Plan

Portions of the project alternatives and route options would be located on land managed by the BLM Idaho Falls District, Pocatello Field Office. At the present time, the 2012 Pocatello RMP provides direction for managing lands under the jurisdiction of the Pocatello Field Office. The purpose of the RMP is to provide a comprehensive framework for the management of lands, mineral estates, and other interests administered by the Pocatello Field Office. The RMP does not establish a comprehensive set of goals and actions related to the impacts of utility ROWs on other resources. Rather, "according to current BLM guidance and the President's National Energy Policy, the BLM objective is to continue to make public land available for needed ROWs where consistent with national, state, and local plans, and use ROWs in-common to minimize environmental impacts and proliferation of separate ROWs" (BLM 2012).

The RMP establishes three types of management areas with respect to authorization of utility ROWs and other land use authorizations: Exclusion Areas, Avoidance Areas, and Open Areas. There are no Exclusion or Avoidance areas on BLM lands crossed by the Project.

Areas not identified as Avoidance or Exclusion areas are open to ROWs and land use authorization proposals. BLM may require restrictions to protect resources such as wildlife, protected watersheds, erosive soils/steep slopes, cultural, historical, recreation, visual resources and other identified resources.

It is anticipated that by minimizing impacts on natural resources and public recreation on BLM lands, the Project would generally be consistent with applicable BLM RMP policies.

4.18 Bureau of Indian Affairs Lands

The North Alternative ROW crosses lands managed by BIA for the Fort Hall Irrigation Project near the northeastern edge of the Blackfoot Reservoir. There is no comprehensive land or resource management document in place that establishes goals, objectives, or implementing actions for lands administered by BIA in the project area. BIA manages these lands for multiple uses; currently, these lands are predominantly leased for grazing. By minimizing impacts on natural resources and conflicts with existing uses on BIA-managed lands, the North Alternative would generally be consistent and compatible with ongoing management of BIA lands in the project area. Neither the South Alternative nor its route options cross BIA-managed land.

4.19 Blackfoot River Wildlife Management Area Plan

Option 3A crosses lands managed by IDFG as part of the Blackfoot River WMA near the eastern terminus of the ROW, in the vicinity of the proposed connection with the existing LVE line on Diamond Creek Road. The Blackfoot River WMA is managed in accordance with the 1999 Blackfoot River WMA Management Plan. According to the Management Plan, the mission of the Blackfoot River WMA is to enhance wildlife and cutthroat trout habitat and provide opportunities for wildlife and fisheries related recreation. The Management Plan does not contain any provisions specifically governing the establishment of utility ROWs, but it requires that any habitat manipulation taking place on the Blackfoot River WMA must be in keeping with the mission of the Blackfoot River WMA mission. By siting the ROW along the southern border of the Blackfoot WMA and minimizing impacts on natural resources and conflicts with existing uses, the Project would generally be compatible with ongoing management of the Blackfoot River WMA.

4.20 State, Area-wide, and Local Plan and Program Consistency

CEQ regulations for implementing NEPA require EISs to discuss possible conflicts and inconsistencies of a project with approved state and local plans and laws. The Project would be undertaken solely by BPA, which is a federal entity. Pursuant to the federal supremacy clause of the U.S. Constitution, BPA is not obligated to apply for local development or use permits in such circumstances. Therefore, BPA would not formally apply to any local jurisdictions for permits such as conditional use permits or shoreline development permits. However, BPA is committed to planning the Project to be consistent or compatible to the extent practicable with state and local land use plans and programs, and would provide local jurisdictions with information relevant to these permits.

The only applicable state or local land use plan or program is the Caribou County 2006 Comprehensive Plan. Although the land use element of this plan does not contain any specifically applicable goals or policies, the plan's public services, facilities, and utilities element includes the following policy that is relevant to the Project:

7.1.4 Policy: Coordinate the use and placement of utility easements and ROWs and encourage multiple and coordinated use of these (Caribou County 2006).

The North and South alternatives and route options would be consistent with this policy because BPA would coordinate ROW placement with all affected landowners and land managers. Landowners would be able to continue to use their land in accordance with easement agreements after construction. Section 3.1, Land Use, includes further discussion of the Project's consistency with state and local plans.

4.21 Noise Control Act

The Noise Control Act of 1972 as amended (42 U.S.C. 4901 et seq.) sets forth a broad goal of protecting all people from noise that jeopardizes their health or welfare. It places principal authority for regulating noise control with states and local communities. Neither the state of Idaho nor Caribou County has environmental noise regulations with numerical decibel limits applicable to the Project. As described in Section 3.12, noise levels created by the Project would be below BPA's 50 dBA criterion. Potential noise impacts and mitigation measures associated with the North and South alternatives and route options are described in Section 3.12, Noise.

4.22 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income 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 and low income populations. Minority populations are considered members of the following groups: American Indian or Alaska Native; Asian or Pacific Islander; Black, not of Hispanic Origin; or Hispanic if the minority population of the affected area exceeds 50 percent, or is meaningfully greater than the minority population in the project area. The Order further stipulates that the 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.

The Project has been evaluated for potential disproportionately high environmental effects on minority and low-income populations (see Section 3.10, Socioeconomics), and it is anticipated that there would not be a disproportional effect on minority and low-income populations from the Project.

4.23 Federal Aviation Administration Review

As part of transmission line design, BPA seeks to comply with Federal Aviation Administration (FAA) procedures. According to FAR 49 C.F.R. Part 77.13, the FAA requires BPA to submit its designs for FAA approval if a proposed structure is taller than 200 feet from the ground or water surface where the line crosses a body of water, if a conductor is 200 feet above the ground or water surface where the line crosses a body of water, or if any part of the proposed transmission line and/or its structure are within a prescribed distance of an airport. Given that all project structures would be shorter than 200 feet and more than 3.7 miles from an airport, no proposed structures for either the North or South alternatives or their options have been identified as an object affecting navigable airspace. Although it is not expected that FAA would require a "Notice of Proposed Construction and Alteration" (Form 7460), BPA intends to submit a Form 7460 to the FAA. The FAA would then conduct its own study of the Project and make recommendations to BPA for airway marking and lighting. General BPA policy is to follow FAA recommendations. Accordingly, BPA will coordinate with the FAA concerning the Project and to provide information to the FAA to aid in its review process.

4.24 Federal Communications Commission

Potential transmission line interference with radio or television transmissions is governed by Federal Communications Commission regulations under 47 C.F.R. Chapter 1 Section 14.5, which states in part that the operator "shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected." BPA would comply with the Federal Communications Commission's requirements relating to radio and television interference from the proposed transmission line if any such interference occurs. While the Project may slightly increase electromagnetic interference above existing levels, interference is not expected. BPA would investigate each complaint about electromagnetic interference.

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U.S. Census Bureau. 2011c. Table P1 – Total Population. US Census 1990 SF-1. For Geographies: State of Idaho; Bannock County; Caribou County; Pocatello, ID; Soda Springs, ID; Wayan, ID.

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5.2 Personal Communications

Beck, Wayne. Zone Silviculturist, Caribou-Targhee National Forest. 2011. Personal communication on July 29, 2011, with Chris Dixon, LBG. Regarding: timber selling practices and estimated timber values.

Bybee, Chad. County Executive Director. Farm Service Agency, USDA. 2012. Personal communication on January 5 and 23, and July 2, 2012, with Jason Medema, LBG. Regarding: agricultural lands in Caribou County and use.

Bybee, Chad. County Executive Director, Farm Service Agency, USDA. 2011. Personal communication on August 22, 2011, with Jason Medema, LBG. Regarding: agricultural lands in Caribou County.

Call, Carol. Deputy Assessor, Caribou County. 2011. Personal communication on August 23, 2011, with Chris Dixon, LBG. Regarding: Caribou County agricultural land values in 2010.

Chamberlain, Sue. 2011. Caribou Lodge and Motel Personal communication on July 18, 2011, with Chris Dixon, LBG. Regarding: mines in the area and room availability.

Cravens, Dan. Regional Economist. Idaho Department of Labor. 2011. Personal communication on July 19, 24, and 25, 2011, with Chris Dixon. LBG. Regarding: unemployment and employment in southeastern Idaho.

Dayley, Eric. Captain. Region 5, Idaho State Police. 2011. Personal communication on July 22, 2011, with Chris Dixon, LBG. Regarding: staffing and capabilities of the Region 5 Idaho State Police.

Green, Devon, U.S. Forest Service. 2011. Personal communications in March and April 2011, with Dan Gunderson, BergerABAM. Regarding: wildlife species survey protocols.

Griffiths, Bryce. 2012. Personal communication on November 29, 2012, with Chris Flanagan, LBG.

Hemmert, Max. Clerk and Business Manager. Soda Springs School District. 2011. Personal communication on July 24, 2011, with Chris Dixon, LBG. Regarding: staffing, capacity and capabilities of the Soda Springs School District.

Klauser, Kristi. Bannock County Comptroller. Bannock County, ID. 2011. Personal communication on July 22, 2011, with Chris Dixon, LBG. Regarding: Bannock County's revenue and expenditures for 2010.

Kukachka, Robert. Soil Scientist, USDA-NRCS, Soda Springs, ID. 2012. Personal communication on April 25, May 15, and September 12, 2012, with Jason Medema, LBG. Regarding: prime farmlands within the Project corridor and project vicinity.

Krantz, C. Idaho Department of Transportation. 2013. Personal communication on December 24, 2013, with Dara Braitman, LBG. Regarding traffic volumes on State Highway 34.

Larson, Brent. Forest Supervisor. U.S. Bureau of Land Management. 2012. Personal communication January, 2012, with Katey Grange, BPA. Regarding: site investigations and reclamation plans for Wooley Valley Mine site.

Mascarenas, Veda. Caribou County Clerk. Caribou County, ID. 2011. Personal communication on July 26, 2011, with Chris Dixon, LBG. Regarding: Caribou County's revenue and expenditures for 2010.

Mende, James. Fisheries Biologist. Idaho Department of Fish and Game. 2012. Personal communication on December 14, 2012, with Jason Medema, LBG. Regarding: species presence in project area.

Mickelsen, Larry. District Conservationist. Natural Resources Conservation Service. 2012. Personal communication on January 5, 2012 and July 2, 2012, with Jason Medema, LBG. Regarding: land use.

Miller, Danny. Realty Specialist. BLM. 2012. Personal communication on January 4, 2012, with Jason Medema, LBG. Regarding: land use.

Parker, Kevin. Rangeland Management Specialist. Soda Springs and Montpelier Ranger Districts. Caribou-Targhee National Forest. 2011. Personal communication on May 9, 2011, with Dan Gunderson, BergerABAM. Regarding toadflax on C-TNF lands.

Patterson, Charles. Outdoor Recreation Planner. BLM Pocatello Field Office. 2012. Personal Communication on November 13, 2012 with Jason Medema. Regarding: recreational opportunities on BLM lands.

Peterson, Debbie. Communications Supervisor. LifeFlight Dispatch Center, Boise, ID. 2011. Personal communication on July 21, 2011, with Chris Dixon, LBG. Regarding: capabilities and response time of LifeFlight services in the project area.

Wadman, Wally. Manager, JR Inn. 2011. Personal communication on July 18, 2011, with Chris Dixon, LBG. Regarding: room availability.

Watkins, Teresa. Administrative Assistant. Soda Springs Police Department. 2011. Personal communication on July 19, 2011, with Chris Dixon, LBG. Regarding: staffing and capabilities of the Soda Springs Police.

Webster, Marylyn. China Hat Store and RV Park. 2011. Personal communication on July 18, 2011, with Chris Dixon, LBG. Regarding: RV lot availability, periods of high occupation in the park.

6 Agencies, Organizations, and Persons Receiving this EIS

The project mailing list contains local, state, and federal agencies; public officials; tribes; businesses; utilities; interest groups; media; libraries and potentially interested individuals. These entities have directly received or have been given instructions on how to receive all project information made available so far, and they will have an opportunity to review the supplemental draft and final EISs. Specific entities receiving this EIS are listed below by category.

6.1 Federal Agencies

Bureau of Indian Affairs, Fort Hall Agency and Forth Hall Irrigation Project

Bureau of Land Management, Pocatello Field Office

National Park Service, National Trails System and Rivers, Trails, and Conservation Assistance

Natural Resources Conservation Service, Bear River Resource Conservation and Development Council

U.S. Army Corps of Engineers, Boise Regulatory Office and Idaho Falls Field Office

U.S. Department of Agriculture, Farm Service Agency

U.S. Department of Transportation, Federal Highway Administration

U.S. Environmental Protection Agency, Idaho Operations Office and Regions 8 and 10

U.S. Fish & Wildlife Service, Eastern Idaho Ecological Services Field Office

U.S. Fish & Wildlife Service, Grays Lake National Wildlife Refuge

U.S. Fish & Wildlife Service, Southeast Idaho National Wildlife Refuge Complex

U.S. Forest Service, Caribou-Targhee National Forest

U.S. Forest Service, Roadless Area Conservation National Advisory Committee

6.2 State Agencies

Idaho Bureau of Homeland Security

Idaho Department of Agriculture

Idaho Department of Environmental Quality

Idaho Department of Fish and Game

Idaho Department of Lands

Idaho Department of Parks and Recreation

Idaho Department of Public Utilities Commission

Idaho Department of Water Resources

Idaho Governor’s Office of Energy Resources

Idaho Governor’s Office of Species Conservation

Idaho State Historic Preservation Office

Idaho Transportation Department

Wyoming Game and Fish Department

Wyoming Public Service Commission

6.3 Local Governments

Bannock County

Bonneville County Commissioners

Caribou County

Caribou County Commissioners

City of Soda Springs

Georgetown City Council Members

Lincoln County, Wyoming, Planning and Development

Oneida County Commissioners

6.4 Public Officials

Governor C.L. "Butch" Otter

U.S. Senator Mike Crapo

U.S. Senator James Risch

U.S. Senator Michael Enzi

U.S. Representative Mike Simpson

Jim Smith, Mayor of Soda Springs, Idaho

State Senator John Tippets

State Representative Marc Gibbs

State Representative Thomas Loertscher

6.5 Tribes or Tribal Groups

Shoshone Bannock Tribes of the Fort Hall Reservation

Shoshone Paiute Tribes of the Duck Valley Reservation

Northwest Band of the Shoshone Nation

Fort Hall Business Council

6.6 Businesses

7 Sons LLC

Agrium

Aristeria Capital LLC

Associated Logging Contractors

Ball Brothers Sheep Company

Bear Lake Grazing Co.

Blackfoot Springs Ranch LLC

Bluebell Ranch, Inc.

Bowman Chiropractic

Brown Dirt Farm

C2C Holdings, Inc.

Caribou Cattle LLC

Columbia Helicopters Inc.

Corbridge Brothers Ltd.

D & R Corporation

Dirt Poor, LLC

Dry Creek Lumber

Elwood Ranch LLC

Etcheverry Sheep Company

Gentile Valley Land & Cattle Company

J.R Simplot Company, Anaconda Company

J R Simplot Company, Ruby Company
Jouglard Sheep Company
Hamilton Outfitters
Holland & Hart LLP
Lake Family Ranches
Lance Mecciro Construction
Lewis Bros Inc.
Live Water Properties
Mays Land & Livestock
Money Pit Ranch
Monsanto
NEC
Newersaveat Farms
North Wind Inc.
Nu-West Industries
Osprey Ranch LLC
Oxarango Lamb & Wool
P4 Production LLC
Peart Land & Development LLC
Peavler's Mountain Star
Phillips Brothers Farm
PMD 403
R.C. Rich Sheep Company
Ranch Inc.
Rhodia Inc.
Silverstar Communications
Simplot
SOAR, Inc.
Southern Pines LLC
Stiles Farms Inc.
Strasbaugh Development Corp.
Stoor Family LLC
Torgeson Murdoch Ranch, Inc.
Tucker Torgeson Farms
Union Pacific Railroad Company
West Logging and Construction
Wilcox Logging, Inc.

6.7 Utilities

Fall River Electric Cooperative
Lower Valley Energy
PacifiCorp

6.8 Interest Groups

Blue Ribbon Coalition
Forest Service Employees for Environmental Ethics
Greater Yellowstone Coalition
Idaho Citizens Grazing
Idaho Conservation League
Idaho Foundation for Parks and Lands
Idaho Public Utilities' Commission
Idaho Woolgrowers Association
Jackknife Cattle Association
Jackknife Creek Coalition
Oregon-California Trails Association
Trout Unlimited
Western Lands Project

Western Watersheds Project

Wyoming Public Service Commission

6.9 Media

Caribou County Sun

The News-Examiner

6.10 Libraries

Albertson College of Idaho – NL Terteling Library

Bear Lake County District Library

City of Twin Falls Public Library

Grace District Library

Idaho Falls Public Library

Idaho State University – Eli M. Oboler Library

Lewis and Clark State College Library

Marshall Public Library

Soda Springs Public Library

South Bannock District - Lava Hot Springs Library

University of Idaho School Library

6.11 Interested Individuals

Clair Anderson

Lyle Auler

Chris Bauer

Laurence Beller

Bravyn Beus

Keith Bitton

P. Thomas Blotter

Bloxham Family Trust

Fred Brog

Clark and Nina Brown

Scott and Diane Brown

Scott W. Brown

Vaneal Burgess

Kay Burton

Paul Campbell

Mark J. and Beth Carter

Donna Mae Christensen

Craig Christensen

Curtis Clemmer

Lane Clezie

Tami Cole

Susie Melva Cook

Craig and Dawn Corbett

Michael Commons

Randy and Gwen Cracroft

Keller R. Crane

J. Alan Crawford

James E. Crawford

Tucker Dahlke

David Dalling

Warren J. Davis

Curtis Dehl

Doyle and Ruth Dekay

Steve DeMott

Stewart S. Denney

Richard Dixon

Gregg Drameu

Bruce M. and Martha Dredge

Robert Eliason

Walter Engeler

Bryce Erickson

Ron and Linda Facer

David Farnsworth

Kym Ferguson

Tim and Diane Fowler

H. Paul Friesema

Dale Fullmer

Brett Gentry

Darrell J. Godfrey

Jeff Godfrey

Ronald Graves

Richard G. Hamp

Evan W. Hayes

Hal Heiner

La Dell Heiner

Lee Hendrickson

Adonia Henry

Rex and Pam Hibbert

Clair L. Holmgren

Craig Holmgren

Randy Hubbard

Keith and Carolyn Hunsaker

Karen Hunt

Leon E. Jarvis

Jerry Jayne

Brad Jenkins

Francis W. Johnson

Jeff Jones

Lori Jordan

Gary A. Kirby, Susie Melva Cook, and Maria Kirby

Elma N. and Keith Krogue

Keith and Karen Krogue

Leonard Herbert Krogue

Keith N. Krogue

Marlo Krogue

Larry Lahbee

Bruce Larsen

Mark Larsen

Ariel M. Larson

Butch Lindstrom

Ernest J. Lombard

Dean R. Luthi, Jr.

Randall Luthi (Eldon Luthi Estate)

Reed Luthi (Luthi Family Trust)

Scott Marchand

Rene Marchand

Georgia Mattison

Gary L. Miller

Sebastien Minaberri (Minaberri Family Trust)

Edward J. Minhondo Trust

Richard Mitchell

Bob Monk

Lewis A. Munson

Arlene Nash

Fred and Dianne Nate
Lonnie Nichols
Wally Noe
Tod L. Nuffer
Wade Olorenshaw
Stanley C. Osburn
Kyle Owens
Ron Owens
Mike Pabst
Tim Palmer
Mike Panting
George and Renee Perschon
Jody Phillips
Karl Phillips
Lorin and Ruth Ann Rasmussen
Steve Rhodes
Pete Riede
John Robison
Dusty Roche
Jeff Roche
Justin Roche
Richard Rose
Dennis Rowe
Rod and Ruth Shea
Craig Shuler
Alan Skinner
David C. and Aneta Smith
Vernon Soderman
Diane Somsen
Earl Somsen
Kristine P. Somsen
Steven and William Somsen
William and Cherese Somsen
Rex Spackman
Richard Steffens
Lynn Stoller
Bruce Stoor
Jim Stoor
Ralph E. Stoor
Katie Strong
John Stucki
Jack Sturm
Jeff Sweeney
Shawn Sweeney
Coby and Linda Tigert
Brian Torgesen
Greg Torgesen
Irene Torgesen
Nedra Torgesen
Burgess Vaneal
Tony Varilone
Christine Waite
Emery and Marilyn Webster
Myrl Wells
Patty Wells
Carol E Welling
Dickson Whitney, Jr.
Dickson Whitney, Sr.
Lyn Whitworth
Ross Wild
Bill and Elizabeth Williams
Don Wind
Randal and Debra Woolstenhulme

7 List of Preparers

The Hooper Springs Transmission Project EIS is being prepared by BPA with the technical assistance of environmental consultants. Individuals responsible for preparing the draft EIS, along with their affiliation, experience, and education are listed below in alphabetical order by last name.

Bonneville Power Administration

Sunshine Clark-Schmidt—Archaeologist, BPA. Responsible for coordinating studies and consultation regarding cultural resources. Education: M.S. Archaeology. Years of experience: 13.

Tish Eaton—Senior Environmental Protection Specialist, BPA. Responsible for EIS coordination and development. Education: B.S. Soil Science/Watershed Management. Years of Experience: 14.

Katey Grange—Environmental Protection Specialist, BPA. Previously responsible for EIS coordination and development. Education: B.S. Aquatic and Fisheries Science; MEM Environmental Management. Years of Experience: 7.

Zachary Gustafson—Contract Environmental Protection Specialist, CRGT, Inc. Responsible for EIS coordination and development. Education: B.A. Geology; M.Ed. Education; MURP Urban and Regional Planning. Years of experience: 7.

Debby Hammack—Electrical Engineer, BPA. Responsible for Transmission System Planning. Education: B.S. Electrical Engineering. Years of experience: 15.

Danna Liebhaber—Engineer, BPA. Contributor to noise and public health and safety. Education: B.S. Electrical Engineering. Years of Experience: 10.

Liz Oliver—Contract Archaeologist, BPA. Responsible for coordinating studies and consultation regarding cultural resources.

Erich Orth—Project Manager, BPA. Responsible for management of the transmission line including schedule, cost, and scope. Education: B.S. Civil Engineering; M.S. Civil Engineering. Years of experience: 5.

Steve Sander—Senior Environmental Scientist, BPA. Responsible for environmental liability/CERCLA, hazardous and solid waste issues. Education: B.S. Earth Sciences. Years of experience: 40.

Environmental Consultants

Holly Bender—Economist, LBG. Responsible for assessing impacts associated with socioeconomics. Education: Ph.D. Mineral Economics, B.A. Political Science and Economics. Years of experience: 16.

Dara Braitman—Planner, LBG. Responsible for assessing impacts associated with transportation, recreation, and noise. Education: M.U.P Urban Planning, B.A. Urban Studies. Years of experience: 8.

Susan Davis—Deputy Project Manager, LBG. Responsible for addressing impacts associated with vegetation and wildlife. Education: B.S. Wildlife Management. Years of experience: 19.

Chris Dixon—Environmental Planner, LBG. Responsible for addressing impacts associated with local socioeconomics Education: M.U.R.P. Urban and Regional Planning; M.B.A. Business Administration; B.S. Environmental Economics and Management. Years of experience: 4.

Sally Fisher—Senior Environmental Scientist, LBG. Responsible for data collection on public health and safety (Hazardous Materials). Education: B.S. Soil Science/Natural Resource Management. Years of experience: 30.

Peter Foote—Senior Fisheries Scientist, LBG. Responsible for addressing impacts on fisheries. Education: M.S. Fisheries Biology; B.S. Wildlife Biology. Years of experience: 38.

Douglas Ganey—Environmental Scientist, LBG. Responsible for addressing impacts associated with geology and soils. Education: M.E.S.M. Environment Science and Management; M.S. Geosciences; B.A. Geology. Year of experience: 22.

Linda Green—GIS Analyst, LBG. Responsible for calculating impacts and mapping. Education: B.A. Environmental Studies. Years of experience: 2.

Dan Gunderson—Senior Scientist, BergerABAM. Responsible for data collection of wildlife, vegetation, and wetlands. Education: B.S. Biology. Years of experience: 13.

Robert Knable—Sr. Environmental Scientist /Deputy Project Manager, LBG. Responsible for EIS coordination and development and assessing impacts associated with water resources. Education: M.S. Resource Geography; B.A. Environmental Geography. Years of experience: 24.

Emily Larson—Environmental Scientist, LBG. Responsible for addressing impacts associated with visual resources. Education: B.S. Environmental Science and Studies. Years of experience: 7.

Jean Philippe Magron—Environmental Planner, LBG. Responsible for addressing impacts associated with transportation. Education: M.S. Coastal Zone Management; B.S. Biological and Chemical Oceanography. Years of experience: 12.

Deborah Mandell—Senior Technical Editor, LBG. Responsible for technical editing of the EIS and appendices. Education: M.B.A. Finance and Marketing; B.A. Government. Years of experience: 27.

Michael Mayer—Project Manager, LBG. Responsible for EIS coordination and development. Education: J.D.; M.S. Wildlife and Fisheries Conservation; B.S. Wildlife and Fisheries Biology. Years of experience: 17

Jason Medema—Environmental Planner, LBG. Responsible for addressing impacts associated with land use, noise, and recreation. Education: Graduate Certificate, Real Estate Development; M.S. Environmental Studies; B.A. International Affairs. Years of experience: 10.

David Plakorus—LEED Green Associate, Planner, LBG. Responsible for assessing impacts associated with air quality. Education: M.B.A.; M.U.R.P Urban and Regional Planning; B.A. History. Years of experience: 4.

James Puckett—GIS Specialist, LBG. Responsible for mapping and GIS data support. Education: MPA; M.A. Geography; B.A. Geography. Years of experience: 6.

Catherine Price—Senior Environmental Engineer, LBG. Responsible for addressing impacts associated with public health and safety (Hazardous Materials). Education: B.S. Chemical Engineering. Years of experience: 34.

Amber Roesler—Environmental Scientist, BergerABAM. Responsible for data collection on public health and safety (Hazardous Materials) and geology and soils. Education: M.S. Geochemistry; B.S. Chemistry. Years of experience: 10.

Joshua Schnabel—Environmental Planner, LBG. Responsible for addressing impacts associated with visual resources. Education: M.A. Geography/Natural Resource Management. B.A. Sociology. Years of experience: 10.

Michael Snyder—Environmental Scientist, LBG. Responsible for addressing impacts associated with water resources, wetlands, and floodplains. Education: M.S. Biology; M.S. Biological Sciences. Years of experience: 14.

Leo Tidd—Senior Planner, LBG. Responsible for addressing impacts associated with air quality and greenhouse gas emissions. Education: MPA Environmental Science and Policy; B.S. Environmental Studies. Years of experience: 8

Laura Totten—Senior Ecologist, LBG. Responsible for performing an aerial photography interpretation of vegetation communities of the proposed routes and assessing impacts associated with vegetation. Education: M.S. Biology/Botany; B.S. Biology/Botany. Years of experience: 18.

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8 Glossary and Acronyms

8.1 Glossary

Access road: Roads constructed to each structure first to build the structure and line, and later to maintain and repair it.

Accipiter: Genus of hawks characterized by short, rounded wings, long tails, and long legs. In North America, there are three species: the northern goshawk, the Cooper's hawk, and the sharp-shinned hawk.

Air toxins: Also known as hazardous air pollutants, air toxics are chemical compounds that are known to cause or are suspected of causing cancer or other serious health effects. With the exception of particulate matter, ambient air quality standards for air toxics were not required by the Clean Air Act. Air toxics are regulated by EPA through other means, including vehicle emission standards for mobile sources. For mobile sources, the primary air toxics of concern are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. As part of the 2007 Control of Hazardous Air Pollutants from Mobile Sources rule, these seven compounds were identified by EPA as among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment.

Airshed: A geographic area used to evaluate air quality. Typically involves areas regional in scale, though local airsheds can be defined as well.

Ambient (noise): Background noise generated by existing noise sources in the surrounding area.

Angle structures: Structures that support the transmission line at points where it changes direction at an angle of 15 degrees or more (see also Dead-End Structure).

Aquatic influence zone (AIZ): Habitat associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands, as defined by USFS.

A-weighted decibel (dBA): The scale used to measure and describe volume that corresponds to human perception.

Basalt: Dark, fine-grained volcanic rock that sometimes displays a columnar structure. It is typically composed largely of plagioclase with pyroxene and olivine.

Bedrock: Solid rock beneath the soil and surface rock.

Blasting: The controlled use of explosives to excavate or remove rock.

Buffer: An area surrounding the boundary of the resource that protects its functions from disturbance and provides habitat to fish and/or wildlife.

Bunchgrass: Perennial grass species that tend to grow in discrete tufts or clumps (i.e., bunches) rather than in sod-like carpets.

Candidate species: Plants and animals that have been studied and USFWS has concluded that they should be proposed for addition to the federal endangered and threatened species list.

Capacity (electrical): The ability to store an electrical charge.

Carbon dioxide equivalent (CO_2e): A metric measure used to compare the emissions from various GHGs based upon their global warming potential. CO_2e are commonly expressed as "million metric tons of carbon dioxide equivalents (MMTCO2Eq)." The CO_2e for a gas is derived by multiplying the tons of the gas by the associated global warming potential.

Census collection district: A subdivision of the county and includes population data from both the town or city under which it is named as well as the surrounding lands.

Circuit: A connection that allows electrical current to flow.

Clean Water Act 303(d) list: List of waterbodies that do not meet water quality standards as set by EPA under the Clean Water Act.

Climax species: A plant community that remains essentially unchanged in terms of species composition for as long as a site remains undisturbed.

Conductor: The wire cable strung along a transmission line through which electricity flows.

Corona: The electrical breakdown of air molecules in the vicinity of high-voltage conductors.

Counterpoise: Underground wires that extend horizontally from each structure and that connect with ground wire to provide lightning protection.

Critical habitat: A formal term under ESA that refers to specific geographic areas, whether occupied by listed species or not, that are determined to be essential for the conservation and management of listed species, and that have been formally described in the Federal Register.

Cultural resources: A general term, not defined in federal law, which includes historic resources as well a larger universe of resources including archeological, Native American graves, and traditional uses.

Culvert: A corrugated metal or concrete pipe used to carry or divert runoff water from a drainage; usually installed under roads to prevent washouts and erosion.

Cumulative impacts: Impacts that could occur when considered along with other past, present, and reasonably foreseeable future actions.

Current (transmission lines): The amount of electrical charge flowing through a conductor (as compared to voltage, which is the force that drives the electrical charge).

Dampers: Devices attached to insulators in order to minimize vibration of the conductors in windy conditions.

Danger tree: A tree of sufficient height to potentially hit a structure or the conductors if it were to fall or be blown over.

dBA: A-weighted decibels are an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced. This correction is made because the human ear is less sensitive at low audio frequencies, especially below 1,000 Hertz, than at high audio frequencies.

Dead-end structures: Heavier, 3-pole structures designed for use where the transmission line loads the structure primarily in tension rather than compression, such as in turning large angles along a line or bringing a line into a substation.

Decibels: Unit of measure for audible noise.

Easement: A grant of certain rights to the use of a piece of land (which then becomes a ROW). This includes the right to enter the ROW to build, maintain, and repair the facilities. Permission for these activities is included in the negotiation process for acquiring easements over private land.

Ecoregion: Areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources; they are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components.

Electric and magnetic fields (EMF): The two kinds of fields (electric and magnetic) produced around the electric wire or conductor when an electric transmission line or any electric wiring is in operation.

Electromagnetic Interference: Interference of an electrical device caused by the presence of an electromagnetic field.

Endangered (species): Those species officially designated by USFWS or the National Marine Fisheries Service as being in danger of extinction throughout all or a significant portion of their range. A designation also used by state agencies for state lists.

Environmental Justice Population: Low-income and minority populations protected under Executive Order 12898 from disproportionate adverse effects of federal projects.

Ephemeral waterbody: An ephemeral waterbody is a wetland, spring, stream, river, pond or lake that only exists for a short period following precipitation or snowmelt. floodplain—A floodplain, or flood plain, is a flat or nearly flat land adjacent to a stream or river that stretches from the banks of its channel to the base of the enclosing valley walls and experiences flooding during periods of high discharge.

Erosion: The movement of soil due to water, gravity or wind.

Fallow Land: Cropland that is not seeded for a season; it may or may not be plowed.

Faults: A crack in the earth's crust resulting from the displacement of one side with respect to the other.

Fish-bearing stream: Any water that has fish presence, or is used by fish, even if for only one day a year.

Fledgling: A young bird from the time it first leaves the nest until it is independent of all parental care.

Floodplains: Areas adjacent to rivers and streams that might be flooded during high water; those that have a 1 percent chance of being flooded in a given year are 100-year floodplains.

Forb: Herbaceous flowering plant other than a grass.

Fugitive dust: Any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of people.

Gauss: A unit of magnetic induction.

Global Warming Potential: A measure of the total energy that a gas absorbs over a particular period of time (usually 100 years), compared to CO_2.

Greenhouse gas (GHG): Chemical compounds found in the earth's atmosphere that absorb and trap infrared radiation, or heat, re-radiated from the surface of the earth.

Ground rod: Rod that connects to a ground wire that is placed in the ground to route lightning strike electricity into the earth.

Ground wire: Wires placed above the conductors to route lightning-strike electricity to the ground.

Guy wire: A tensioned cable that anchors a structure to the ground to provide extra stability.

Guy wire anchors: Anchor plates buried into the ground to which guy wires are attached.

Habitat: The natural home or environment of an animal, plant, or other organism.

Herbaceous: Plants whose growing stems possess little or no woody tissue.

Herbicide: A chemical substance used to kill, slow, or suppress the growth of plants.

Hertz (Hz): The unit of frequency in cycles per second; power systems in the U.S. operate with a frequency of 60 Hz.

Hydrologic Unit Code: A unique code, consisting of two to eight digits, used to identify units (watersheds) in the U.S. Geological Survey's four-level classification system.

Insulators: A component made of non-conductive materials that connects the conductor to the suspension structure and prevents the transmission of electrical current from the conductor to the ground.

Intermittent: Referring to periodic water flow in creeks or streams.

Irreversible commitment of resources: The use of nonrenewable resources such as minerals and petroleum-based fuels. Irretrievable commitments of resources cause the lost production or use of renewable resources such as timber or rangeland.

Kilovolt: One thousand volts of electrical power.

Landslide: Any mass-movement process characterized by downslide transport of soil and rock, under gravitational stress, by sliding over a discrete failure surface; or the resultant landform. Can also include other forms of mass wasting not involving sliding (rockfall, etc.).

Lek: An area where birds gather during the breeding season for community courtship displays to attract mates.

Lithic scatter: A surface scatter of cultural artifacts that consists entirely of lithic (i.e., stone) tools and chipped stone debris.

Liquefaction: The fluid-like behavior of soils during a seismic event.

Load: The amount of electric power or energy delivered or required at any specified point or points on a system. Load originates primarily at the energy-consuming equipment of customers.

Load growth: Increase in demand for electricity. (See Load).

Loess: A very fine grained type of sediment formed by the accumulation of wind-blown silt.

Megawatts (MW): A megawatt is one million watts, or one thousand kilowatts; an electrical unit of power.

Milligauss (mG): A unit used to measure magnetic field strength; one-thousandth of a gauss.

Minority Population: Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy or activity.

Mitigation: Steps taken to lessen the impacts of proposed activities on a specific resource. Measures may include reducing the impact, avoiding it completely, or compensating for the impact.

Noxious weeds: Plants that are injurious to public health, crops, livestock, land or other property.

Ordinary high water mark: The highest level reached by a body of water that has been maintained for a sufficient period of time to leave evidence on the landscape.

Overstory: Stratum of trees that have outgrown the other vegetation in a forest to have their uppermost crown foliage largely or fully in direct sunlight, usually as a relatively continuous layer (excluding gaps).

Palustrine: Non-tidal, perennial wetlands characterized by emergent vegetation.

Particulate matter: A criteria air pollutant. Particulate matter includes dust, soot and other tiny bits of solid materials that are released into and move around in the air.

Perennial waterbody: a watercourse that flows throughout a majority of the year in a well-defined channel.

PM_{10}: A measure of particles in the atmosphere with a diameter of less than or equal to a nominal 10 micrometers.

$PM_{2.5}$: A measure of particles in the atmosphere with a diameter of less than or equal to a nominal 2.5 micrometers.

Pulling and tensioning: Process of installing and tightening new conductors.

Prehistoric: Referring to cultural resources that predate European settlement in North America.

Prime farmland: Federally designated land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses.

Radiogenic: Related to or caused by radioactivity.

Reservoir: a natural or artificial place where water is collected and stored for use, especially water for supplying a community, irrigating land, furnishing power, etc.

Revegetate: Reestablishing vegetation on a disturbed site.

Right-of-way (ROW): For the purposes of this EIS, a ROW is an easement for a strip of land used for a transmission line.

Riparian habitat: The zone of vegetation that extends from the water's edge landward to the edge of the vegetative canopy. Associated with watercourses such as streams, rivers, springs, ponds, lakes, or tidewater.

Sagebrush-steppe: Dry environment found in the western United States and Canada. It can be identified by the sagebrush, shrubs, and short bunchgrasses that grow in it.

Salmonid: Of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.

Scoping: Part of the environmental impact document process where significant issues are identified for detailed analysis.

Scrub-shrub: Wetlands dominated by woody vegetation less than 20 feet (6 meters) tall.

Sedimentation: The deposition or accumulation of sediment.

Seral: A seral community (or sere) 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.

Site-potential tree: The height of two trees located at the site in question.

Snag: Standing dead tree.

Snubs: Trenches about 8 feet deep by 4 feet wide by 12 feet long used during installation of conductors.

Sock line: The line or rope connected to a steel wire that is used to pull the conductors through the structures during installation.

Sole source aquifers: EPA defines a sole or principal source aquifer as one which supplies at least fifty percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as “sole source aquifers.”

Stand: An area of uniform vegetation that typically contains similar soil, light and water conditions and history of disturbance.

Substation dead-end structures: These are the structures within the substation where incoming or outgoing transmission lines end. Substation dead-ends are typically the tallest structure within the substation.

Suspension structure: A structure designed to support conductors strung along a virtually straight line with only small turning or descending or ascending angles.

Threatened (species): Those species officially designated by USFWS or the National Marine Fisheries Service at risk of becoming endangered throughout all or a significant portion of their range.

Transmission line: The structures, insulators, conductors, and other equipment used to transmit electrical power to electric distribution facilities (substation).

Tributary: A stream that flows to a larger stream or other body of water.

Turbidity: The extent to which water is muddy or cloudy due to the presence of suspended matter.

Understory: Foliage layer lying beneath and shaded by the main canopy of a forest.

Volt: The international system unit of electric potential and electromotive force.

Voltage: The driving force that causes a current to flow in an electrical circuit.

Waters: Surface water is water collecting on the ground or in a stream, river, lake, wetland, or ocean; it is related to water collecting as groundwater.

Watershed: The region draining into a river, river system, or other body of water.

Wetlands: Areas with standing water or a high water table that under normal circumstances support vegetation typically adapted to saturated soil conditions; generally include swamps, marshes, bogs and areas with vegetation that grows in or around water.

Woody debris: Materials left over from cutting or harvesting, such as limbs of branches of a tree. Woody debris may be placed in stream channels to slow and divert water flow and improve habitat for fish.

Zoning: Regulations used to guide growth and development; typically involve legally adopted restrictions on uses and building sites in specific geographic areas to regulate private land use.

8.2 Acronyms

AADT	Annual average daily traffic
AIZ	Aquatic Influence Zone
ATV	All-terrain vehicle
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
Blackfoot River WMA	Blackfoot River Wildlife Management Area
BLM	Bureau of Land Management
BMP	Best management practice
BPA	Bonneville Power Administration
°C	Degrees Celsius
C-TNF	Caribou-Targhee National Forest
CEQ	Council on Environmental Quality

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
CNF	Caribou National Forest
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COPC	Contaminants of potential concern
CRP	Conservation Reserve Program
dBA	Decibels on the A-weighted scale
DOE	U.S. Department of Energy
E3	Energy and Environmental Economics, Inc.
EA	Environmental assessment
EIS	Environmental impact statement
EMF	Electric and magnetic field
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FREC	Fall River Electric Cooperative
FS	Feasibility Study
g	Gauss
GHG	Greenhouse gas
HCWMA	Highlands Cooperative Weed Management Area
Highway 34	Idaho State Highway 34
HUC	Hydrologic Unit Code
ICES	International Committee on Electromagnetic Safety

IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
ITD	Idaho Transportation Department
kV	Kilovolt
kV/m	Kilovolts per meter
line mile	Transmission Line Mile
LOS	Level of Service
LNG	Liquefied Natural Gas
LVE	Lower Valley Energy
MBTA	Migratory Bird Treaty Act
mG	Milligauss
MIS	Management Indicator Species
MP	Mile point
msl	Mean sea level
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NERC	North American Reliability Corporation
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory

ODA	Overburden disposal area
OHV	Off-highway vehicle
PAB	Palustrine Aquatic Bed
PCBs	Polychlorinated biphenyls
PEM	Palustrine Emergent
PM	Particulate matter
Project	Hooper Springs Transmission Project
PSS	Palustrine Scrub-Shrub
PUB	Palustrine Unconsolidated Bottom
RCRA	Resource Conservation and Recovery Act
RFP	Revised Forest Plan
RI	Remedial Investigation
RMP	Resource Management Plan
ROS	Recreation Opportunity Spectrum
ROW	Right-of-way
RV	Recreational vehicle
SHPO	State Historic Preservation Officer
Simplot	J.R. Simplot Company
SRMA	Special Recreation Management Area
STATSGO	State Soil Geographic Database Site
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total maximum daily load
TNF	Targhee National Forest
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code

USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V/m	Volts per meter
VOC	Volatile organic compounds
VQO	Visual Quality Objectives
VRM	Visual Resource Management
WECC	Western Electricity Coordinating Council
WMA	Wildlife Management Area

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