

**Framework for Sage-grouse Impacts Analysis for Interstate
Transmission Lines**

Includes:

Appendix J of the Gateway West Transmission Line Project
Draft Environmental Impact Statement,
Revised after release of the DEIS on 10/22/11

This page intentionally left blank

Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines 10-22-2011

(1) Evaluation of Direct and Indirect Impacts- This portion of the overall SG Impacts Assessment Framework addresses project-related habitat impacts that bear directly on listing factors considered by the U.S. Fish and Wildlife Service (FWS) when evaluating the need to provide full listing protection under the Endangered Species Act (ESA).

A starting point for this analysis is a thorough review of the threats assessment/five factor analysis that FWS conducted as part of the March 23, 2010 (75 FR 13910), listing of the SG as a Candidate under ESA. An evaluation of all potential threats to SG and SG habitat from the transmission line should be conducted incorporating the latest available scientific information—most of which is referenced in the FR notice itself.

Of particular importance is the synthesis evaluation of all potential threats of the project that operate cumulatively to impact SG populations and habitat in a way that is not adequately evaluated by examining threats independently. The project proponent should look to the FR cumulative threats assessment summary as an example of how to fully analyze impacts associated with the proposed project. Reference to additional scientific information published since the issuance of the FR is available on the FWS website and should be incorporated into the analysis.

An analysis of sage-grouse populations that attend leks within 18km of the project is a critical component of an indirect impacts analysis for the species. Sage-grouse that attend leks up to 18km from the project may be indirectly affected by the loss of habitat functionality during other seasons of the year (Connelly et.al. 2000). The construction of a transmission project or other linear facility may pose additional hindrance of seasonal migration patterns or avoidance of important seasonal habitats once used extensively by local sage-grouse populations. Qualitative and quantitative measures of habitat change must be considered in describing the potential impacts of the project. In the context of managing a species that requires such a large landscape of habitats to meet their life-cycle needs, and the nature of the proposed disturbance, it is reasonable to make some assumptive predictions about the relative impacts within 18km.

(2) Addressing Direct Loss of Birds- While the currency of HEA is in terms of habitat acreage and/or dollars associated with what is essentially an economic analysis, a fundamental concern of all agency biologists is the need to address the impact (i.e., “take” including mortality, harm, etc.) to SG populations and the issue of their replacement. This piece of the overall SG Impacts Assessment Framework is an important contribution to the rangewide jeopardy analysis conducted as part of the informal conferencing process for this Candidate species. Additionally, addressing impacts to populations provides key information needed for completing any potential future formal Section 7 consultation that would be required if the SG is ultimately listed under ESA during project development, thereby significantly streamlining this process.

FWS is actively working on this issue as it relates to rangewide SG conservation. There are two ways that the project proponent is expected to help resolve this concern:

- a) Work closely with FWS and State Agency Biologists to develop an approach to address loss of birds from project-related impacts and their replacement;
- b) Contribute financially to research projects that have been designed specifically to address this issue

(3) Mitigation- Until an impacts analysis has been conducted in coordination with agency biologists—leading to an adequate understanding of impacts to SG populations and habitat—the issue of mitigation will not be addressed. However, when discussion and evaluation of mitigation does begin, it is with the understanding that mitigation ratios across state lines will remain the same. That is, a bird in Wyoming is equivalent to one in Idaho; an acre of nesting habitat in WY is worth as much in Idaho; etc.

The Habitat Equivalency Analysis, described below, provides a standardized basis to determine a one-to-one ratio for habitat services lost to habitat services mitigated. However, biological factors may provide a valid basis for adjusting the minimal mitigation ratio beyond one-to-one. Three such factors include: (a) the best available scientific information regarding the relative value of sage-grouse populations contributing to long-term species viability across the species' range points to the relative importance of central and southwestern ID, central and northwestern NV, eastern OR, and the state of WY; (b) regarding individual birds, hens have a much higher biological value, in terms of contribution to populations, than males; and (c) localized habitats of high ecological value including (but not limited to) those serving key functions in demographic, genetic, or seasonal connectivity, important wintering areas, or leks.

Habitat Equivalency Analysis (HEA)- HEA is a method of quantifying the permanent or interim loss of habitat services from project related impacts. HEA provides a scientific-based, peer-reviewed method of scaling compensatory mitigation requirements, and has been used by federal regulatory agencies including the FWS and National Oceanic and Atmospheric Administration. The HEA is not meant to be an impacts analysis in and of itself; rather, it is a way to objectively determine quantity of project-related habitat impacts and provides the quantity and type of mitigation necessary to offset loss of habitat services as a form of output.

HEA is a process that requires close collaboration among the project proponent and State Agencies in states sustaining most of the impacts to populations and habitat (like Wyoming and Idaho) as well as FWS and BLM biologists to ensure adequacy of analysis and a corresponding final product. Other impacted states are expected to play an “advisory” role reviewing the HEA and ensuring consistency with their respective states as well (e.g., UT, NV, CO, and others depending upon the project). Building models associated with the HEA process must be done in close coordination with agency biologists in order to address concerns, questions, assumptions, and issues as they arise.

Agency biologists recognize the need for the incorporation of data and information the HEA models that the project proponent may not currently have. Agency biologists will work with project proponents to obtain such information to the extent they can (e.g., habitat maps; adequate

vegetation data)—again, reiterating the need for an interactive approach between the project proponent and agency biologists in order to ensure adequate completion of the HEA.

The initial starting point for evaluating direct and indirect impacts to SG habitat will be 18km either side of the proposed transmission line, addressing impacts to roughly 98% of nesting hens according the best available scientific information. Any deviation from this starting point must be supported by scientific literature: agency biologists can direct the project proponent to recently published literature on this topic which the project proponent is encouraged to use.

Calculating Density of Disturbance within Key¹ Habitat

Once the Alternatives Analysis is complete and a preferred alternative has been selected, an additional site-specific evaluation of density of disturbance within Key Habitats/Core Areas may be conducted. The purpose of this evaluation is to evaluate opportunities to: minimize density of disturbance within Key Habitats/Core Areas that are outside the designated disturbance corridor identified in the Wyoming Governor's Executive Order 2011-5; and restore and/or enhance important sage-grouse habitat as a part of project-related mitigation. These site-specific habitat evaluations also will enable BLM to: (a) demonstrate compliance with the *Greater Sage-Grouse Habitat Management Policy on Wyoming BLM Administered Public Lands including Federal Mineral Estate* (IM WY-2010-012); and (b) demonstrate consistency with the *Greater Sage-Grouse Core Area Protection*, Wyoming Governor's Executive Order 2011-5.

The overall goal of a Sage-Grouse Key Habitat/Core Area Strategy within both Wyoming and Idaho is to limit the density and duration of disturbances and restrict activities within Key/Core Areas sufficient to ensure the long-term conservation and management of sage-grouse within each state. To this end, the Density Disturbance Calculation (DDC) is a tool designed to measure habitat loss within the Key Habitat/Core Area. In particular, it is used to determine—in terms of management actions—how the project related disturbance can be limited to no more than 5% loss of habitat and result in no more than an average of one disturbance per 640 acres.

The DDC calculates habitat loss in Key Habitat/Core Areas beyond which scientific research has shown negative population level effects will occur. To accomplish this, the following evaluation will be conducted.

Step 1: Determination of leks that will be used in the site-specific evaluation:

Place a four-mile boundary around the outer project boundary (as defined by the proposed area of disturbance related to the project, i.e., 150ft Right of Way, or similar). All occupied and undetermined sage-grouse leks located within four miles of the outer boundary of the project, and within Key Habitat/Core Areas, the will be considered in the DDC.

Step 2: Determine the DDC area size and configuration:

A four-mile boundary placed around the perimeter of each lek identified in Step 1 and the area within the boundary of the leks, plus the four-mile project boundary, creates the DDC area for the project.

Step 3: Density of disturbance habitat evaluation:

Disturbance will be evaluated for the DDC area as a whole, as well as for individual leks within the DDC area. Any portion of the DDC that falls outside Key Habitat/Core Area will be removed from this portion of the evaluation for Wyoming.

Disturbance Calculation: Total acres of “disturbance” within the DDC area will be determined through an evaluation of:

- a. Existing and Proposed disturbance—sage-grouse habitat that is disturbed by existing anthropogenic features or activities (e.g., transmission lines, distribution lines, wind development, oil/gas wells/facilities, geothermal, communication towers, pipelines, paved roads, and others)— and wildfire, including the full 150ft ROW of the proposed action;

- ❖ Additional guidance and information regarding how to “count” the number and acres of existing disturbances is available. Please request additional information regarding this issue from Idaho Fish and Game biologists the Habitat Protection Section (HPS) of the Wyoming Game and Fish Department.

- b. Approved permits (i.e., any state or Federal permits providing approval for on the ground actions) for projects not yet implemented or constructed.

Habitat Disturbance Evaluation: For projects that will result in disturbance of more than 5% of the DDC area, it may be advantageous for the project proponent to map the full extent of sage-grouse habitat within the DDC area in order to reduce this percentage. If this is done, it will be conducted to identify:

- a. “Suitable Habitat” and “Marginal Habitat” using BLM’s Habitat Assessment Framework (HAF) and unsuitable habitats within the DDC area.
- b. Sage-grouse evidence of use of suitable habitats (seasonal use, densities based on best available information)
- c. Priority restoration areas (which could reduce the existing disturbances to below the 5% threshold) for example:
 - i) Areas where plug and abandon activities on retired oil and gas wells will eliminate disturbance
 - ii) Areas where old reclamation has not produced suitable habitat
- d. Areas of invasive species
- e. Lands where other conservation assurances are in place (e.g., CCAA, easements, habitat contract, etc.)

Step 4: Determination of existing and allowable suitable habitat disturbance:

Acres of disturbance within suitable habitat divided by the total suitable habitat within the DDC area, multiplied by 100, equals the percent of disturbed suitable habitat within the DDC area. Subtracting the percentage of existing disturbed suitable habitat from 5% equals new allowable suitable habitat disturbance until plant regeneration or reclamation reduces acres of disturbed habitat within the DDC area.

¹ **Key Habitat Definitions.** For purposes of the Density of Disturbance Analysis for Gateway West, “Key Habitat” areas in Wyoming will correspond to the State of Wyoming’s identified Core Population Areas (version 3), and in Idaho the definition will encompass all of the following habitat types identified on the Idaho Sage-grouse Habitat Planning Map:

Key Habitat: Areas of generally intact sagebrush that provide sage-grouse habitat during some portion of the year.

Potential Restoration Area Type I (Also referred to as R1). Perennial Grasslands: Sagebrush-limited areas characterized by perennial grass species composition and/or structure that should provide suitable potential nesting habitat in the future, once sufficient sagebrush cover is re-established.

Potential Restoration Area Type II (Also referred to as R2). Annual Grasslands: Areas dominated or strongly influenced by invasive annuals such as cheatgrass (*Bromus tectorum*), medusahead rye (*Taeniatherum caputmedusae*) or similar species.

Potential Restoration Area Type III (Also referred to as R3). Conifer Encroachment: Areas where junipers and/or other conifer species are encroaching into sage-grouse habitat areas.

**Direct and Indirect Impacts Information contained in the
Gateway West Transmission Line Project
Draft Environmental Impact Statement**

Includes:

Chapter 3, Section 11, Pages 3.11-63 to 3.11-73

Chapter 3, Section 11, Pages 3.11-127 to 3.11-157

Appendix D, Tables 11.3, 11.5, 11.7, 11.9, 11.11, 11.12 and 11.17

This page intentionally left blank

individuals, but is not likely to result in a loss of viability in the Planning Area, nor cause a trend towards federal listing (R2 language).

Gray Wolf (Nonessential Experimental Population–Wyoming; Forest Service Sensitive)

Construction-related Impacts

Because the gray wolf is considered a habitat generalist and does not require a specific habitat type for survival, gray wolves could potentially be present along any portion of the line. However, as the Project would not impact habitats that are unique to the general area or are specifically required by wolves for survival, habitat loss resulting from the Project's construction would not have a measurable effect on this species. As discussed for the Canada lynx, the gray wolf has a large home range; and as such, it is possible that wolves would not be present during construction. However, if wolves are present during construction, they would likely avoid the area, resulting in a temporary shift in wolf movement patterns.

Operations-related Impacts

The transmission line and its associated structures would not likely serve as a barrier or hazard to the gray wolf; and the operation of the Project is not likely to have a measurable adverse impact to the gray wolf.

Conclusion

The Project would impact habitats that could be utilized by wolves; however, the Project would not impact habitats that are unique to the general area or are specifically required by wolves for survival. If wolves are present near the Project during construction, then they may avoid areas where active construction occurs. Therefore, the Project's construction and operation may affect, but is not likely to adversely affect, the gray wolf.

Greater Sage-Grouse (Candidate; MIS; Forest Service Sensitive; BLM Sensitive)

The USFWS's *12-Month Findings for Petitions to List the Greater Sage-Grouse as Threatened or Endangered* (2010e) listed the following as potential impacts to the greater sage-grouse resulting from powerlines: 1) collisions/electrocutions, 2) consolidation of predatory birds along powerlines, 3) lower recruitment rates near lines, 4) habitat fragmentation, 5) degradation of habitat due to spread of invasive plant species, 6) impacts resulting from the line's electromagnetic fields, and 7) direct loss of habitat. Additional impacts related to construction and operations of the line, as well as associated infrastructure, could include short-term disturbances due to construction and long-term disturbances during operations, increased road access allowing poaching in previously inaccessible locations, and changes to habitat structure resulting from altered fire regimes. Note that many of the general impacts that could occur to this species are addressed in the black-footed ferret section as "impacts that would occur to all species addressed" (e.g., the effects of fire, poaching, and invasive weeds).

Construction-related Impacts

The greater sage-grouse is a ground nester and generally broods, rears young, and winters near their mating grounds (although some birds can migrate up to 50 or 60 miles). Because it is a ground nester, the species is very sensitive to ground-clearing activities that would occur during Project construction. To limit the potential disturbance to this species, one of the Proponents' primary goals while routing the Project was to

avoid all leks by at least 0.25 mile (in accordance the BLM RMP requirements for “no surface occupancy,” which was in place at the time of initial Project design in 2008). However, the centerline of the Project would come within 0.25 mile of a lek with an “undetermined” management status along Segment 10 and within 0.25 mile of a lek with an “occupied” management status along Segment 5 (see Table 3.11-4). In addition, the Proponents attempted to avoid leks by 0.6 mile to the extent possible, based on the assumption made at the time of initial Project design (2008) that the “no surface occupancy” requirement would increase from 0.25 mile to 0.6 mile (as of this date, the BLM “no surface occupancy” restriction has been increased to 0.6 mile). However, not all leks could be avoided by this distance (see Table 3.11-4) due to the need to avoid other sensitive resources (e.g., high-altitude mountain habitats that contain species listed under the ESA, or sensitive cultural resources that are protected by the various SHPOs).

Agency-established timing restrictions would be utilized during the breeding seasons to minimize direct impacts to this species (discussed in more detail below). In addition, the Agencies have identified mitigation measure WILD-10, which would require that all vegetation clearing be conducted prior to the onset of the avian breeding season, to limit the potential impact of clearing on nesting birds.

Loss of habitat would occur due to direct removal of vegetation, introduction of noxious weeds, fragmentation, edge effects, and altered fire regimes (see further discussion in Section 3.10.2). In addition, construction-related noise and dust disturbance would occur during construction, which could potentially make habitat temporarily unsuitable for this species; however, the Proponents have developed measures within their Traffic and Transportation Management Plan (Appendix C-1, Attachment A) to control dust near construction activities and agency-required timing restrictions would be implemented to limit the impacts of noise on birds during sensitive periods. Birds could experience direct mortality if construction equipment drives over nests or strikes birds that are crossing roads, or if birds are hiding in shrub cover that is removed/cleared. However, the Proponents have developed EPMs in their Plan for Operations, Maintenance, and Emergency Response, as well as their Traffic and Transportation Management Plan (see Appendix C) to limit the potential risk of direct vehicular impacts with wildlife. In addition, the risk of direct mortality would be limited due to the utilization of agency required timing restrictions for construction near known breeding grounds (restricting construction to periods outside of the typical breeding season for habitats located within certain distances of leks). However, because some breeding/nesting habitat could still be impacted during the breeding season even with the implementation of these timing restrictions (e.g., in areas far enough from leks that they are not affected by these timing restrictions), some direct impacts to birds as well as their breeding habitat could still occur. If nesting birds are disturbed, this could result in increased mortality of chicks through both crushing by construction equipment, as well as abandonment by their parents. In addition, flight responses and disturbance could increase the energy costs of both parents and chicks, thereby adding additional stresses on birds located adjacent to construction activities. However, Project compliance with the agency timing restriction would limit disturbance or displacement of brooding birds as well as impacts to chicks, by limiting impacts to areas outside of

agency-designated breeding habitats during the breeding season. In addition, as discussed above, mitigation measure WILD-10 would require that all vegetation clearing be conducted prior to the onset of the avian breeding season, to limit the potential impact of clearing on nesting birds, thereby reducing this risk.

Staging areas, fly yards, and the temporary construction areas, not needed for permanent maintenance at each transmission tower pad, would be revegetated following construction in accordance with the Framework Reclamation Plan (see Appendix C-2). However, as stated earlier revegetation in arid landscapes can take many decades to restore to preconstruction conditions; therefore, all direct impacts to habitat within these arid shrublands would be considered long-term, even with the implementation of active revegetation efforts.

The Proponents have provided six EPMs as part of their Project description to help avoid, minimize, and mitigate for direct and indirect impacts on greater sage-grouse. These measures are detailed within the Greater Sage-Grouse Avoidance, Minimization, and Mitigation Measures Plan (Appendix C-5). These EPMs are:

- PAC-7 All greater sage-grouse leks determined to be within 1 mile of the centerline of the Project would be surveyed using protocols, which have been approved by federal and state agencies, during the breeding season immediately prior to construction to determine whether the lek is active. The Proponents will provide survey results to the appropriate land-management agency.
- PAC-8 There would be no construction activities through Idaho's Key and Restoration greater sage-grouse habitats and Wyoming's Core habitats within 1 mile of active leks from March 1 to May 15 between 6 p.m. and 9 a.m. Off-limit areas would be marked so that workers in the area are aware of these sensitive areas.
- PAC-9 If no lek activity has been observed by April 25, construction activities may proceed.
- PAC-10 Surface disturbance would be prohibited year-round within 0.25 mile of previously documented leks.
- PAC-11 Notification would also be placed in areas frequented by on-site personnel (such as break rooms) to advertise the importance of complying with these restrictions.
- PAC-12 Temporal and spatial restrictions do not apply when lek or nesting and brood rearing habitat is separated from Project activities by other forms of human disturbance (e.g., agriculture, highways) or by line of sight barriers).

As the Proponents have not specified what protocols would be used during pre-construction surveys (see PAC-7), the Agencies have identified TESWL-10.

- TESWL-10 Proponents shall provide the Agencies a list of the protocols that the Proponents would use during greater sage-grouse and sharp-tailed grouse pre-construction surveys.

Some of the EPMs proposed by the Proponents include suggested modifications to federal land-management agencies construction timing/seasonal restrictions (state agencies may develop additional restriction on state and private lands; see Appendix I). However, the federal agencies have established procedures for granting exceptions to their stipulations and restrictions, on a case-by-case basis. Therefore, the Agencies do not accept the Proponents' approach to developing an exception to the agencies stipulations and restrictions, and any agency-established exception processes would be followed when requesting an exception. As stated earlier, all agency timing and seasonal restrictions will be followed, unless an exception is granted. The Agencies have developed mitigation measure TESWL-16 for any exceptions to stipulations and restrictions that are approved during the established exception process. In the event an exception is granted, the Agencies would require that monitoring is conducted on federally managed lands to determine lek occupancy, and to ensure that all construction activities cease in active areas. Adherence to the agency stipulations and restrictions would reduce the impacts that the Project's construction could have on the greater sage-grouse.

- TESWL-16 Requests for exceptions from greater sage-grouse closure periods and areas must be submitted by the Proponents to the appropriate land-management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed. See WILD-1.

The Agencies have also identified the following mitigation measures, which are required as part of recent published BLM Instructional Memorandums.

- TESWL-14 Surface disturbance shall be avoided within 0.6 to 4 miles of occupied or undetermined greater sage-grouse leks from March 15 to July 15 in all portions of the Project except for Nevada. In Nevada, surface disturbance shall be avoided within view of or within 0.3 mile of all leks from March 1 to May 15; and within areas designated by Nevada as greater sage-grouse brood rearing areas from May 15 to August 15.
- TESWL-15 There shall be no surface occupancy (NSO) within 0.6 mile of the perimeter of occupied greater sage-grouse leks. "No surface occupancy," as used here, means no surface facilities, including roads, shall be placed within the NSO area. Other activities may be authorized with the application of appropriate seasonal stipulations, provided the resource's protected area is not adversely affected.

No areas that have been officially designated as sage-grouse "Winter Concentration Areas"⁸ are known to occur within the Project area; however, if areas that would be

⁸ Note that each state (Idaho, Wyoming, and Nevada) may have a slightly different term for "Winter Concentration Area"; therefore, the term "Winter Concentration Area" refer to any area officially designated by the state as crucial to the survival of sage-grouse during the winter.

impacted by the Project are or become designated as Winter Concentration Areas, then the following measure would apply:

- TESWL-19 There shall be no surface disturbances within areas designated as Winter Concentration Areas for the greater sage-grouse from November 1 through March 15.

The Project, as currently designed, may not be in compliance with a requirement found in the BLM's RMP for the Green River Management Area, regarding distances between disturbances and leks. The Green River RMP states that:

Aboveground facilities (powerlines, storage tanks fences, etc.) are prohibited on or within 1/4 mile of grouse breeding grounds (leks). Placement of facilities, 'on' (very low profile) or below ground, and temporary disruptive activities, such as occur with pipeline construction, seismic activity, etc., could be granted exceptions within 1/4 mile of leks, in certain circumstances.

An existing access road located within 0.25 mile of a lek would be improved within the Green River Management Area. As a result, the Project may not be in compliance with the Green River RMP. If an exception is not granted for this lek, the Project would either need to be altered so that it is in compliance with the Green River RMP, or the RMP would need to be amended. However, as no tall structures would be located within 0.25 mile of this lek, disturbances would be limited to road improvements, and mitigation as well as seasonal timing restrictions would be applied to limit impacts, it is possible that an exception would be granted.

The Project, as currently designed, may not be in compliance with a requirement found in the Kemmerer RMP regarding the management of the Rock Creek/Tunp area. The Kemmerer RMP states:

Manage the Rock Creek/Tunp area of significant resource concern within the objective of preserving and enhancing the critical wildlife habitats and cultural values that occur within the area...No net loss of habitat function allowed from any construction activity within the boundaries of the management area. Successful re-establishment or improvement of habitats could offset any new disturbance areas.

The Project would cross through the Rock Creek/Tunp management area if Alternatives 4A, 4C, 4E, or 4F are chosen, and construction of the line could result in a net loss of sagebrush habitats in this area. Therefore, the Kemmerer FO would require the following mitigation measure if Alternatives 4A, 4C, 4E, or 4F are selected and a plan amendment to the Kemmerer RMP is approved.

- TESWL-23 If the Kemmerer RMP is amended to allow Alternatives 4A, 4C, 4E, or 4F to be selected, existing fences within 1 mile of the portion of the Gateway West Project located on lands managed by the Kemmerer RMP shall be modified with FireFly Grouse Flight diverters (or a similar product) in order to prevent greater sage-grouse mortalities. Additional site-specific reclamation, such as transplanting sagebrush seedlings within previous disturbed habitats, may also be required to off-set the

net loss of sagebrush habitats within the Rock Creek/Tunp management area.

Fences located in sage-brush habitats have been identified as a major cause of mortality for greater sage-grouse, due to these low-flying birds colliding with and becoming entangled within these fences (Stevens 2011); therefore, measures that limit this potential risk could result in a reduction in current greater sage-grouse mortality levels within an area. Therefore, the Agencies and the Proponents may consider applying mitigation measure TESWL-23 Project wide (see the discussion on potential compensatory mitigation located within the following section).

The acreage of impact to suitable habitat by line segment and alternative, based on the preliminary assessment, is listed in Table D.11-5 (Appendix D) and discussed in Section 3.11.2.3. In addition, the acres of impact to Agency-designated greater sage-grouse habitats are listed in Table D.11-14 (in Appendix D). An HEA analysis is currently being conducted, which would assess the habitat services lost by these impacts (see Section 3.11.1.4).

Operations-related Impacts

Table D.11-7 in Appendix D lists the permanent operations impacts, based on the preliminary assessment, that would occur to greater sage-grouse habitat; the impacts by segment and alternative are discussed in detail in Section 3.11.2.3. Due to a lack of available data on the extent and magnitude of indirect impacts that could occur to greater sage-grouse from transmission lines (e.g., the presence of tall structures; UTNR 2010), indirect impacts are assessed in a qualitative manner within this EIS.

Indirect effects to the greater sage-grouse from the Project operations include increased disturbance and poaching along the ROW due to an increase in human activity and access created by the new roads; displacement of greater sage-grouse by species that may benefit from the installation of the powerline; an increase in predation by raptors and ravens (due to an increase in potential perch sites); alteration to habitat due to changes in fire regimes or weed presence/extent; and a potential avoidance of tall transmission structures that could result in an increase in habitat loss and fragmentation (the effects of altered fire regimes and weed presence/extent are discussed in detail within the black-footed ferret section as “impacts that would occur to all species addressed”). Potential direct impacts from Project operations include the effects of the electromagnetic field on sage-grouse and collisions with Project structures.

As was described for the black-footed ferret, the presence of the transmission line could increase both the predation rate and the level of predatory harassment experienced by the greater sage-grouse by increasing or consolidating populations of raptors and ravens along the Project’s route. This effect would be greatest in areas where other tall structures, including distribution and transmission lines, do not currently exist. The distance that these effects could extend from the transmission lines (if they are used as roosting habitat by predatory avian species) depends on the hunting range of the predatory avian species. For example, non-breeding pairs of ravens have been documented to travel an average of 4.3 miles (6.9 kilometers) (up to 38.8 miles [62.5 kilometers]) in Idaho from roost sites to food sources and 16.8 miles (27 kilometers) in Michigan (ranging from 0.5 to 91.3 miles [0.8 to 147.0 kilometers]), with breeding pairs

often traveling up to 0.8 mile (1.3 kilometer) while hunting (Boarman and Heinrick 1999). Golden eagle hunting ranges vary by season and location, but are typically very large (e.g., they can be around 161.6 square miles [260 square kilometers]). To limit the potential risk of increased predation pressures on sensitive prey species, the Agencies have identified TESWL-2 and TESWL-3.

There is a potential risk of avian collisions with transmission lines or other Project-related structures due to the Project's construction and operations, which could result in elevated mortality rates for some avian species. A variety of factors influence avian transmission line collisions: configuration and location of transmission lines; the tendency of specific species to collide with transmission lines; and environmental factors such as weather, topography, and habitat (APLIC and USFWS 2005). Line placement with respect to other structures and topography can influence the collision rate of avian species at a given transmission line. Collisions usually occur near water or migration corridors, and occur more often during inclement weather. Less agile birds, such as heavy-bodied birds or birds that travel in flocks, are more likely to collide with overhead lines because they lack the ability to quickly negotiate obstacles. The risk of greater sage-grouse collisions with transmission structures is very low, due to this species' flight behaviors, which generally involve short, low flights. However, mortalities of greater sage-grouse resulting from collisions have been reported, including three mortalities in Utah (Borell 1939), two mortalities in Idaho (Beck et al. 2006), and two in California (Gardner 2009 as cited in USFW 2010e). Therefore, some greater sage-grouse mortalities resulting from collisions may occur. The presence of guy wires (thin wires that are sometimes used to support tall structures) can increase the risk of avian collisions. The Proponents have developed Avian Protection Plans (see the Proponents' Web sites), which would be implemented to reduce potential risk of avian mortalities. These plans are in compliance with Avian Power Line Interaction Committee (APLIC) suggested practices (see Section 3.10 – General Wildlife and Fish), and includes measures that would be taken if avian mortalities are discovered, and modification and/or additions to the line that can be done if elevated mortalities of avian species are discovered. In addition, the Agencies have identified mitigation measure WILD-7, which would require the use of flight diverters on all guy wires to limit the potential risk of collisions for the greater sage-grouse. Furthermore, the Agencies have identified mitigation measure WILD-3 to ensure that any modifications to the line also be in compliance with APLIC standards.

The BLM's Kemmerer FO has identified the following mitigation measure to further reduce the risk of greater sage-grouse collisions with guy wires on lands they manage:

- TESWL-22 No structures that require guy wires would be used in occupied sagebrush obligate habitats within the area managed under the Kemmerer Resource Management Plan.

The risk of greater sage-grouse mortalities occurring as a result of electrocutions is very low. The spacing between phases of the Project's transmission lines is much larger than the wing spans for all avian species. Therefore, electrocution due to the transmission line is not a hazard for the greater sage-grouse. However, the distribution lines that serve the substations could provide an electrocution hazard to the greater

sage-grouse, although this hazard would be minimal due to the limited number of places where new distribution lines would be constructed (at the Creston, Bridger, and Cedar Hill Substations), the short distances that these distribution lines would travel (between 200 to 500 feet), and the fact that these distribution lines would be constructed in accordance with APLIC guidelines (i.e., designed to prevent avian electrocutions).

There are concerns that the greater sage-grouse would avoid areas that contain tall structures, and could be displaced or cease occupying areas near such structures (Braun 2002; Manville 2004; Pitman et al. 2005; Pruett et al. 2008). Many recommendations have been proposed in the current literature as to how to minimize this potential impact. The most commonly cited document (Connelly et al. 2000) recommends that tall structures not be built within 3 kilometers (approximately 1.9 miles) of grouse leks. However, currently there is no anticipation that this avoidance distance will be recommended or required for this proposed Project. Furthermore, as was discussed earlier, leks could not be entirely avoided by this distance due to other Project-related constraints, such as avoiding sensitive resources such as high-altitude mountain habitats that contain species listed under the ESA, or sensitive cultural resources.

Peer reviewed science that demonstrates an avoidance or non-avoidance of tall structures by the greater sage-grouse is either limited, or nonexistent in the current literature. This lack of evidence is related to a lack of peer-reviewed and controlled studies that can differentiate between the impacts related to tall structures and those related to other components of human developments (e.g., noise, human presence), as opposed to a true lack of evidence (UDNR 2010). Although peer reviewed science that demonstrated a clear avoidance of tall structures is lacking for the greater sage-grouse, studies conducted on species that have similar life history traits to the greater sage-grouse (e.g., the lesser and greater prairie-chickens) have shown that use of habitat is reduced when these habitats are located near tall structures (Pitman et al. 2005; Pruett et al. 2008). The possible mechanisms for this reduced use near tall structures could include many factors such as a reduction in shrub cover near disturbances, a potential inherent fear of tall structures by grouse, increased predation rates near these structures, or a reduced recruitment in poor quality habitats due to disturbances resulting in a decline in attendance over time. Pruett et al. (2008) found that lesser and greater prairie-chickens avoided powerlines by at least 330 feet; however, the presence of state highways did not have a statistically significant impact on their distribution and range. Therefore, if the greater sage-grouse has similar responses to disturbances as the lesser and greater prairie-chickens, it is possible that the vegetative clearing for the permanent access roads would not result in habitat fragmentation for sage-grouse species, but that the presence of the transmission structures and line would serve as a form of habitat fragmentation and a barrier to movement. If the response of the greater sage-grouse to transmission lines is similar to those recorded by Pruett et al. (2008) for the lesser and greater prairie-chickens, then edge effects resulting from newly fragmented habitats could extend approximately 330 feet into habitat patches. This would further reduce the available habitat for the greater sage-grouse and possibly isolate subpopulations (see Tables D.10-3 through D.10-5 of Appendix D for the level of fragmentation that would occur due to both the transmission line and the proposed

access roads). However, because the lesser and greater prairie-chickens have different morphology, behavior, seasonal habitat use patterns, and distributions compared to the greater sage-grouse, caution needs to be taken when applying data on the lesser and greater prairie-chickens to the greater sage-grouse (UDNR 2010).

Greater sage-grouse may also avoid areas adjacent to transmission lines due to the presence of an increased electromagnetic field near the line (Balmori and Hallberg 2007, Naugle et al. 2010). Increased electromagnetic fields have been shown to alter the behavior and physiology of avian species (Fernie and Reynolds 2005). Avian species vary in their sensitivity to an altered electromagnetic field; however, current data are lacking regarding its effects on the greater sage-grouse. Section 3.21 – Electrical Environment discusses the strength of the electromagnetic field at varying distances from the Project. The potential impacts of an increased electromagnetic field would be applicable to all avian species addressed within this document; the sensitivity of the various avian species addressed in this document to an increased electromagnetic field is uncertain, with the exception of raptor species, which have been shown to have a low sensitivity to increased electromagnetic fields (Fernie and Reynolds 2005).

Because data regarding avoidance of habitats by the greater sage-grouse due to transmission lines are limited, the Proponents have conducted an independent desktop analysis regarding the longevity of sage-grouse leks adjacent to existing transmission lines in Idaho, to provide additional information regarding this issue (the results of this independent analysis are presented in Appendix C-5). During this desktop analysis, the Proponents were unable to find evidence of lek abandonment or a decrease in lek attendance (within their study area) that can be correlated with distance to existing transmission lines or the number of years since the transmission line was installed. However, the Proponents' desktop analysis is only one study and has not been peer reviewed; it therefore does not provide enough evidence to definitively say that lek abandonment or a decrease in lek attendance will not occur due to this Project. The Proponents' desktop analysis is only presented within this EIS to add additional data to the assessment and discussion of potential impacts. However, the results of this independent desktop analysis are similar to those found by Johnson et al. (2010). Johnson et al. (2010) was also unable to find a relationship between lek counts and the distance between leks and powerlines, but they were able to find evidence of declining lek use at distances up to 18 kilometers (11 miles) from highways and communication towers.

Compensatory mitigation for impacts to greater sage-grouse and their habitats will likely be necessary due to the current declines in their population rates range-wide, the current concerns regarding their status, the magnitude of potential impacts that the Project could have on their habitats, and the impact that their potential ESA listing could have on the economic stability of Wyoming's oil and gas industry. The Proponents have proposed compensatory mitigation for impacts to greater sage-grouse habitat (see Appendix C-5); however, this mitigation plan has been rejected by the federal and state agencies. The agencies have stated that compensatory mitigation cannot be developed until a quantitative assessment of potential impacts has been finalized, because the magnitude of direct and indirect impacts needs to be disclosed for the agencies to determine the level and type of mitigation that would be required. Below is a list of

some of the compensatory mitigation measures that may be considered by the Proponents and the agencies, once a comprehensive quantitative assessment of the Project related impacts that cannot be avoided or minimized is determined (e.g., after the HEA analysis is conducted and a quantitative assessment of the habitat services lost is complete):

- Establishing Conservation Easements;
- Conduct off-site habitat restoration (e.g., sagebrush plantings, conifer removal, forb and grass plantings to increase diversity; or removal of invasive plants);
- Marking existing fences with flight diverters or removal of existing fences;
- Investing in grazing management plans to benefit sage-brush establishment (i.e., compensating landowners for developing grazing management plans that provide greater benefits to sage grouse);
- Reinitiate habitat restoration in areas where other projects/land-managers restoration efforts have failed;
- Burying existing distribution lines that are owned by private landowners (i.e., non-power company lines, such as those that deliver power to private land owners water tanks);

This is not a comprehensive list of the mitigation measures that could be considered. The Proponents and agencies will continue to work together in order to develop measures to mitigate potential impacts that could occur to greater sage-grouse once minimization and avoidance measures have been implemented. Once the HEA has been finalized, a quantitative assessment of the habitat services lost as a result from the Project's construction and operations will be available. Compensatory mitigation will be developed, in coordination with the Proponents and the regulatory agencies, based in part on this assessment. The results of the DDC (which would be available for the Final EIS) would also contribute to the development of the final compensatory mitigation plan by identifying opportunities to minimize the density of disturbances within Core/Key areas.

Based on guidance found in the BLM's Framework for Sage-Grouse Impacts Analysis for Interstate Transmission Lines (BLM 2011a), the final compensatory mitigation plan will need to address the direct loss of birds (equivalent to "take" for an ESA listed species). To accomplish this, it is expected that the Proponents will work closely with the USFWS and state agencies to develop an approach to address loss of birds from Project-related impacts as well as replacement of any lost birds.

Conclusion

Given the extent of the direct and indirect impact on greater sage-grouse and their habitat, as well as the lack of a compensatory mitigation plan that is currently acceptable to both the Proponents and the state and federal agencies, the Project's construction and operations may impact individuals or habitat, and is likely to contribute to a trend toward federal listing or loss of viability for the greater sage-grouse (R4 language). For the same reasons, the Project may adversely impact individuals and is likely to result in a loss of viability in the Planning Area, or cause a trend towards federal listing (R2 language). This threat determination would be revisited once the

compensatory mitigation plan has been developed. It is assumed that the final plan would result in a determination of “not likely to contribute to a trend toward federal listing or loss of viability for the greater sage-grouse.” The final compensatory mitigation plan would be included as part of the Final EIS.

Grizzly Bear (*Threatened; Forest Service Sensitive*)

Construction-related Impacts

The Proposed Route would impact a total of about 2,561 acres of land within the range of the Yellowstone DPS; however, no lands would be impacted within the grizzly bear PCA or within areas identified by the USFWS as suitable grizzly bear habitats. The majority of impacts that would occur within the DPS boundary would occur adjacent to Highway 80, Highway 30, and the town of Kemmerer. As was discussed for the gray wolf, due to the limited habitat requirements of the grizzly bear, direct impacts to lands resulting from the Project’s construction would not have a measurable effect on this species. However, if bears are present during construction, then construction activities could result in avoidance of the area and/or displacement of bears into adjacent areas. In addition, whitebark pine (an important food source for the grizzly bear) occurs in the upper treeline areas along the Segment 4 Proposed Route and Route Alternatives (within the Kemmerer FO), though the full extent of the stands has not yet been mapped (Means 2010a; Guyon 2009). The extent of these stands and the potential impacts that could occur is currently unknown (see Section 3.7 – Special Status Plants); however, the BLM is currently conducting a whitebark pine and limber pine mapping effort and more detailed information will be incorporated into the Final EIS as it becomes available. In addition, more information regarding the location of whitebark pine in relation to the Project area would be determined during preconstruction surveys and timber cruises. The Agencies have proposed measures to mitigate the potential impacts to whitebark pine (TESPL-1 and TESPL-6). Impacts to whitebark pine stands and individual trees would be avoided to the extent practical, which would limit the impact to potential bear habitat and food sources.

Operations-related Impacts

The transmission line and its associated structures would not likely serve as a barrier or hazard to the grizzly bear; and the operations of the Project are not likely to have a measurable adverse impact to the grizzly bear.

Conclusion

If grizzly bears are present near the Project, then they may avoid areas where construction occurs, which could result in displacement of bears to adjacent habitats. The Project would impact habitats that could be utilized by grizzly bears; however, the Project would avoid impacts to whitebark pine to the extent practical (see mitigation measures TESPL-1 and TESPL-6). Therefore, the Project’s construction and operations may affect, but are not likely to adversely affect, the grizzly bear.

decommissioning. Long-term beneficial effects would include the removal of tall structures (towers) from grouse habitats, and the decommissioning of Project facilities and access roads, both of which could increase the connectivity and size of wildlife habitat. Due to the potential for both adverse and beneficial effects to TES wildlife species, consultation with the USFWS would need to be initiated prior to decommissioning.

3.11.2.3 Proposed Route and Route Alternatives by Segment

Segment 1E

Segment 1E, as proposed, would link the Windstar and Aeolus Substations in south-central Wyoming with a 100.6-mile 230-kV single-circuit transmission line. Twenty acres of the expansion of Windstar and Aeolus Substations and 0.5 acre for one regeneration site are attributed to Segment 1E. Alternative 1E-A is a 16.1-mile alternative along the north end of Segment 1E, which was the Proponents' initial proposal before moving the Proposed Route at the suggestion of local landowners to avoid the more settled area around Glenrock. Alternative 1E-B is 21.4 miles longer than the Proposed Route but is being considered by the Proponents because it would avoid a Wyoming-designated sage-grouse core area to the east. The BLM has required the consideration of Alternative 1E-C, which parallels the Segment 1W 230-kV lines into the Aeolus Substation (see Appendix A, Figure A-2). The most common habitat found along Segment 1E is shrubland (see Section 3.6 – Vegetation Communities).

Of the TES species where quantitative species-specific data are available (see Tables D.11-3 and D.11-4 in Appendix D), the bald eagle, black-tailed prairie dog, burrowing owl, greater sage-grouse, mountain plover, northern goshawk, northern leopard frog, Preble's jumping mouse, and the white-tailed prairie dog could occur along Segment 1E. Tables D.11-3 through D.11-8 in Appendix D list the impacts to habitat for each species found along Segment 1E and its Route Alternatives.

The Proposed Route would impact approximately 16 acres of habitat within 1 mile of two northern goshawk nests (Tables D.10-2 and D.11-6 in Appendix D). The number of nests that occur within 1 mile would drop to a single nest under Alternative 1E-C, with approximately 6 acres of habitat impacted (a 10-acre reduction in impacts compared to the Proposed Route). Alternatives 1E-A and 1E-B do not correspond to the same area along the Proposed Route where impacts would occur, and no additional impacts would occur along these Route Alternatives (i.e., these routes would not increase or decrease impacts to this species compared to the Proposed Route).

Tables 3.11-7a–g display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 1E would have a differential effect, where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. Alternative 1E-A would result in fewer impacts to the black-tailed prairie dog, burrowing owl, greater sage-grouse, mountain plover, and white-tailed prairie dog habitat than the comparison portion of the Proposed Route (i.e., the portion of the Proposed Route that starts and ends at the same nodes as the Route Alternative); however, Alternative 1E-A would increase the acreage of construction impacts to the bald eagle, northern leopard frog, and Preble's jumping mouse habitat. Alternative 1E-B would increase the acreage of impacts to burrowing owl, greater sage-grouse, mountain plover, northern leopard frog, Preble's

jumping mouse, and white-tailed prairie dog habitat. Alternative 1E-C would result in fewer acres of impacts to burrowing owl, greater sage-grouse, mountain plover, northern leopard frog, Preble’s jumping mouse, and white-tailed prairie dog habitat. None of the Segment 1E Route Alternatives are capable of avoiding all impacts to these species habitats, as some habitat for these species would be impacted in areas of the Proposed Route that do not currently contain a Route Alternative.

The acreage of impacts to the northern leopard frog and Preble’s meadow jumping mouse habitat are minor between the Route Alternatives and the comparison portion of the Proposed Route; however, because habitats for these species (wetlands and riparian areas) are rare within the general area, even minor differences in the acreage of impacts can have a substantial effect on the availability of habitat. (Table D.9-1 in Appendix D lists the total impacts to all wetland habitats along each segment and Route Alternative; Section 3.9 discusses the distribution of wetlands and riparian areas within the general area.)

The Proposed Route along Segment 1E, as well as Alternative 1E-C, would cross the Medicine Bow-Routt NFs (see Section 3.17 – Land Use and Recreation). The Proposed Route would impact about 1 acre of burrowing owl habitat, 30 acres of greater sage-grouse habitat, 5 acres of mountain plover habitat, 10 acres of northern goshawk habitat, less than 1 acre of northern leopard frog and Preble’s meadow jumping mouse habitat, and 8 acres of white-tailed prairie dog habitat on the Medicine Bow-Routt NFs. Alternative 1E-C would impact about 9 acres of greater sage-grouse habitat, 5 acres of mountain plover habitat, 3 acres of northern goshawk habitat, less than 1 acre of northern leopard frog and Preble’s meadow jumping mouse habitat, and 11 acres of white-tailed prairie dog habitat on the Medicine Bow-Routt NFs.

Tables 3.11-7a–g. Alternative Comparison Tables for Segment 1E

Table 3.11-7a. Acres of Suitable Bald Eagle Habitat (1-mile buffer around winter roosts) Impacted during Construction and Operations of Segment 1E		
Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1E Proposed – Total Length	22	7
1E Proposed – Comparison Portion for Alternative 1E-A	22	7
Alternative 1E-A	53	17
1E Proposed – Comparison Portion for Alternative 1E-B	0	0
Alternative 1E-B	0	0
1E Proposed – Comparison Portion for Alternative 1E-C	0	0
Alternative 1E-C	0	0

Acreages are rounded to the nearest acre.

Table 3.11-7b. Acres of Suitable Black-tailed Prairie Dog Habitat Impacted during Construction and Operations of Segment 1E		
Alternatives	Construction Impacts^{1/} (acres)	Operations Impacts (acres)
1E Proposed – Total Length	240	53
1E Proposed – Comparison Portion for Alternative 1E-A	226	49
Alternative 1E-A	94	27
1E Proposed – Comparison Portion for Alternative 1E-B	0	0
Alternative 1E-B	0	0
1E Proposed – Comparison Portion for Alternative 1E-C	0	0
Alternative 1E-C	0	0

Acreages are rounded to the nearest acre.

1/ Includes both colonies and complexes, as reported in the Appendix D tables.

Table 3.11-7c. Acres of Suitable Burrowing Owl Habitat Impacted during Construction and Operations of Segment 1E

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1E Proposed – Total Length	795	191
1E Proposed – Comparison Portion for Alternative 1E-A	189	44
Alternative 1E-A	108	34
1E Proposed – Comparison Portion for Alternative 1E-B	340	78
Alternative 1E-B	538	120
1E Proposed – Comparison Portion for Alternative 1E-C	597	145
Alternative 1E-C	223	63

Acres are rounded to the nearest acre.

Table 3.11-7d. Acres of Suitable Greater Sage-Grouse Habitat Impacted during Construction and Operations of Segment 1E

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1E Proposed – Total Length	731	186
1E Proposed – Comparison Portion for Alternative 1E-A	122	29
Alternative 1E-A	58	18
1E Proposed – Comparison Portion for Alternative 1E-B	301	68
Alternative 1E-B	496	109
1E Proposed – Comparison Portion for Alternative 1E-C	588	150
Alternative 1E-C	231	70

Acres are rounded to the nearest acre.

Table 3.11-7e. Acres of Suitable Mountain Plover Habitat Impacted during Construction and Operations of Segment 1E

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1E Proposed – Total Length	791	192
1E Proposed – Comparison Portion for Alternative 1E-A	163	37
Alternative 1E-A	88	27
1E Proposed – Comparison Portion for Alternative 1E-B	350	78
Alternative 1E-B	556	116
1E Proposed - Comparison Portion for Alternative 1E-C	607	149
Alternative 1E-C	236	73

Acres are otherwise rounded to the nearest acre.

Table 3.11-7f. Acres of Northern Leopard Frog and Preble’s Meadow Jumping Mouse Habitat Impacted during Construction and Operations of Segment 1E

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1E Proposed – Total Length	9	2
1E Proposed – Comparison Portion for Alternative 1E-A	<1	t
Alternative 1E-A	2	0
1E Proposed – Comparison Portion for Alternative 1E-B	3	1
Alternative 1E-B	4	1
1E Proposed – Comparison Portion for Alternative 1E-C	9	2
Alternative 1E-C	3	<1

Acres are otherwise rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1E Proposed – Total Length	833	198
1E Proposed – Comparison Portion for Alternative 1E-A	140	30
Alternative 1E-A	67	21
1E Proposed – Comparison Portion for Alternative 1E-B	365	82
Alternative 1E-B	594	127
1E Proposed – Comparison Portion for Alternative 1E-C	658	158
Alternative 1E-C	267	75

Acres are otherwise rounded to the nearest acre.

Segment 1W

Segment 1W is composed of two parts, Segment 1W(a) and 1W(c), both of which would consist of a new 230-kV line for part of their length and a reconstruction of an existing 230-kV line for the remaining part. Segment 1W(a) would be about 76.5 miles long, and would extend from the Windstar Substation to the Aeolus Substation. Segment 1W(c) would be about 70.6 miles long, and would extend from the Dave Johnston Power Plant to the Aeolus Substation. Alternative 1W-A is a 16.2-mile alternative located near the town of Glenrock, which was the Proponents' initial proposal before moving the Proposed Route at the suggestion of local landowners in order to avoid the more settled area around Glenrock. Twenty acres of the proposed expansion at the Windstar and Aeolus Substations are attributed to Segment 1W(a) and 3 acres of the expansion at the Difficulty Substation and 17 acres of the expansion at the Windstar and Aeolus Substations are attributed to Segment 1W(c). There are no Route Alternatives proposed south of that point (see Appendix A, Figure A-2). The most common habitat along Segment 1W is shrubland (see Section 3.6 – Vegetation Communities).

Of the TES species where quantitative species specific data are available, the bald eagle, black-tailed prairie dog, burrowing owl, greater sage-grouse, mountain plover, northern goshawk, northern leopard frog, Preble's meadow jumping mouse, white-tailed prairie dog, and the yellow-billed cuckoo could occur along Segment 1W. Tables D.11-5 through D.11-8 in Appendix D list the impacts to habitat for each species quantitatively assessed along Segment 1W and its Route Alternative.

The Proposed Route in Segment 1W(a) would cross through a small portion of yellow-billed cuckoo habitat for less than 0.1 mile (Table D.11-3 in Appendix D). Less than 1 acre of yellow-billed cuckoo habitat would be impacted during construction (Table D.11-5 in Appendix D). This portion of yellow-billed cuckoo habitat impacted along the Proposed Route would be located outside of areas that contain Route Alternatives; therefore, the selection of a Route Alternative would not result in the avoidance of impacts to the yellow-billed cuckoo along this segment. Furthermore, no yellow-billed cuckoo habitat would be crossed by the Route Alternative proposed along this segment.

The Proposed Route would impact approximately 11 acres of habitat within 1 mile of a single northern goshawk nest along Segment 1W(a) and Segment 1W(c). (This nest is also located within 1 mile of Segment 1E.) Selection of Alternative 1W-A would not

result in the avoidance or an increase in impacts to areas near known northern goshawk nests.

Tables 3.11-8a–g display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 1W would have a differential effect, where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. Alternative 1W-A would result in fewer impacts to black-tailed prairie dog, burrowing owl, greater sage-grouse, mountain plover, and white-tailed prairie dog habitat than the comparison portion of Segment 1W; however, it would cause more impacts to bald eagle¹¹, northern leopard frog, and Preble’s meadow jumping mouse habitat. As some habitat for these species would be impacted in areas of the Proposed Route that do not currently contain a Route Alternative, selection of Alternative 1W-A would not result in a complete avoidance of impacts to any of these species’ habitats.

The acreage of impacts to the northern leopard frog and Preble’s meadow jumping mouse habitat are minor between Alternative 1W-A and the comparison portion of the Proposed Route, with about 1 acre of difference between impacts resulting from the two routes. However, because habitats for these species (wetlands and riparian areas) are rare within the general area, even minor differences in the acreage of impacts can have a substantial effect on the availability of habitat. (Table D.9-1 in Appendix D lists the total impacts to all wetland habitats along each segment and Route Alternative; Section 3.9 discusses the distribution of wetlands and riparian areas within the general area.)

The Proposed Route along Segments 1W(a) and 1W(c) would cross the Medicine Bow-Routt NFs (see Section 3.17 – Land Use and Recreation). Segment 1W(a) would impact less than 1 acre of burrowing owl habitat, about 12 acres of greater sage-grouse habitat, 5 acres of mountain plover habitat, 9 acres of northern goshawk habitat, less than 1 acre of northern leopard frog habitat, and 14 acres of white-tailed prairie dog habitat on the Medicine Bow-Routt NFs. Segment 1W(c) would impact about 26 acres of greater sage-grouse habitat, 9 acres of mountain plover habitat, 7 acres of northern goshawk habitat, and 17 acres of white-tailed prairie dog habitat on the Medicine Bow-Routt NFs.

Tables 3.11-8a–g. Alternative Comparison Tables for Segment 1W

Table 3.11-8a. Acres of Suitable Bald Eagle Habitat (1 mile Buffer Around Winter Roosts) Impacted during Construction and Operations of Segment 1W		
Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1W(a) Proposed – Total Length	14	4
1W(a) Proposed – Comparison Portion for Alternative 1W-A	14	4
Alternative 1W-A	47	13
1W(c) Proposed – Total Length	72	14

Acreages are rounded to the nearest acre.

¹¹ In addition, Segment 1W(c) and Alternative 1W-A would lie within 1 mile of a bald eagle nest.

Table 3.11-8b. Acres of Suitable Black-Tailed Prairie Dog Habitat Impacted during Construction and Operations of Segment 1W

Alternatives	Construction Impacts ^{1/} (acres)	Operations Impacts (acres)
1W(a) Proposed – Total Length	240	57
1W(a) Proposed – Comparison Portion for Alternative 1W-A	219	50
Alternative 1W-A	126	38
1W(c) Proposed – Total Length	168	22

Acres are rounded to the nearest acre.

1/ includes both colonies and complexes, as reported in the Appendix D tables.

Table 3.11-8c. Acres of Suitable Burrowing Owl Habitat Impacted during Construction and Operations of Segment 1W

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1W(a) Proposed – Total Length	463	126
1W(a) Proposed – Comparison Portion for Alternative 1W-A	179	38
Alternative 1W-A	119	35
1W(c) Proposed – Total Length	616	104

Acres are rounded to the nearest acre.

Table 3.11-8d. Acres of Suitable Greater Sage-Grouse Habitat Impacted during Construction and Operations of Segment 1W

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1W(a) Proposed – Total Length	379	119
1W(a) Proposed – Comparison Portion for Alternative 1W-A	96	22
Alternative 1W-A	48	14
1W(c) Proposed – Total Length	486	95

Acres are rounded to the nearest acre.

Table 3.11-8e. Acres of Suitable Mountain Plover Habitat Impacted during Construction and Operations of Segment 1W

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1W(a) Proposed – Total Length	408	120
1W(a) Proposed – Comparison Portion for Alternative 1W-A	133	28
Alternative 1W-A	90	26
1W(c) Proposed – Total Length	615	98

Acres are rounded to the nearest acre.

Table 3.11-8f. Acres of Suitable Northern Leopard Frog and Preble’s Meadow Jumping Mouse Habitat Impacted during Construction and Operations of Segment 1W

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1W(a) Proposed – Total Length	7	2
1W(a) Proposed – Comparison Portion for Alternative 1W-A	<1	t ^{1/}
Alternative 1W-A	2	t ^{1/}
1W(c) Proposed – Total Length	12	2

1/ “t” indicates values <0.1. Acres are otherwise rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
1W(a) Proposed – Total Length	430	119
1W(a) Proposed – Comparison Portion for Alternative 1W-A	93	19
Alternative 1W-A	70	19
1W(c) Proposed – Total Length	641	111

Acres are rounded to the nearest acre.

Segment 2

Segment 2, as proposed, would link the Aeolus and Creston Substations in southeast Wyoming with two 500-kV circuits on one structure. One circuit would be operated at 230 kV during the initial phase of the Project. Its total proposed length is 96.7 miles. Fifty-two acres of the expansion of the Aeolus Substation and the construction of the Creston Substation and 0.5 acre for one regeneration site are attributed to Segment 2. There are three Route Alternatives, two of which are near the community of Fort Fred Steele. Alternative 2A at 28.4 miles long is being considered by the BLM because it remains in the WWE corridor nearer the town and the state historic site, and Alternative 2B, at 6.2 miles, is closer to the community than the comparison portion of the Proposed Route and was the initially proposed route before the Proponents responded to local suggestions and relocated the Proposed Route farther to the south. Alternative 2C is a 24.4-mile alternative located north of Hanna, Wyoming. It is being evaluated at the recommendation of the Wyoming Governor's office to follow a utility corridor approved by that office for minimizing effects to sage-grouse (see Appendix A, Figure A-3). The most common habitat type along Segment 2 is shrubland (see Section 3.6 – Vegetation Communities).

Of the TES species where quantitative species-specific data are available, the bald eagle, black-footed ferret, burrowing owl, greater sage-grouse, mountain plover, northern leopard frog, Preble's meadow jumping mouse, pygmy rabbit, white-tailed prairie dog, and Wyoming pocket gopher could occur along Segment 2. Tables D.11-5 through D.11-8 in Appendix D list the impacts to habitat for each species quantitatively assessed along Segment 2 and its Route Alternatives.

The Proposed Route would impact about 232 acres of black-footed ferret habitat. These impacts would occur along portions of the route where Route Alternatives have not been proposed. In addition, the Route Alternatives would not impact additional habitat for this species. Therefore, selection of any of the current Route Alternatives along Segment 2 would not have an effect on the amount of habitat for this species that would be impacted.

Tables 3.11-9a–h display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 2 would have a differential effect, where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. Alternative 2A would result in an increase in impacts to all of the species assessed (Tables D.11-5 through D.11-8 in Appendix D). Alternative 2B would result in an increase in impacts to the bald eagle, mountain plover, northern leopard frog, Preble's meadow jumping mouse, and Wyoming

pocket gopher habitat than the comparison portion of Segment 2; however, it would result in fewer impacts to the burrowing owl, greater sage-grouse, pygmy rabbit, and white-tailed prairie dog habitat. Alternative 2C would result in an increase in impacts to burrowing owl, pygmy rabbit, and white-tailed prairie dog habitat, with fewer impacts to mountain plover, northern leopard frog, greater sage-grouse, and Preble’s meadow jumping mouse habitat. As some habitat for these species would be impacted in areas of the Proposed Route that do not currently contain a Route Alternative, selection of an alternative would not result in a complete avoidance of impacts to any of these species’ habitats.

For Alternatives 2A and 2B, the increase in impacts to bald eagle and Wyoming pocket gopher habitat would be substantial, indicating that these Route Alternatives would impact substantially more habitat for these two species than the comparison portion of the Proposed Route. Alternative 2B would also result in a substantial increase in impacts to northern leopard frog and Preble’s meadow jumping mouse habitat, while Alternative 2C would substantially reduce impacts to these two species’ habitats.

Tables 3.11-9a–h. Alternative Comparison Tables for Segment 2

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	<1	t ^{1/}
Proposed – Comparison Portion for Alternative 2A	<1	t ^{1/}
Alternative 2A	26	7
Proposed – Comparison Portion for Alternative 2B	<1	t ^{1/}
Alternative 2B	28	6
Proposed – Comparison Portion for Alternative 2C	0	0
Alternative 2C	0	0

1/ “t” indicates values <0.1. Acreages are otherwise rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,113	288
Proposed – Comparison Portion for Alternative 2A	236	45
Alternative 2A	340	67
Proposed – Comparison Portion for Alternative 2B	70	12
Alternative 2B	44	11
Proposed – Comparison Portion for Alternative 2C	219	45
Alternative 2C	262	42

Acreages are rounded to the nearest acre.

Table 3.11-9c. Acres of Suitable Greater Sage-Grouse Habitat Impacted during Construction and Operations of Segment 2

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,336	365
Proposed – Comparison Portion for Alternative 2A	311	63
Alternative 2A	365	78
Proposed – Comparison Portion for Alternative 2B	81	14
Alternative 2B	59	14
Proposed – Comparison Portion for Alternative 2C	312	69
Alternative 2C	295	51

Acres are rounded to the nearest acre.

Table 3.11-9d. Acres of Suitable Mountain Plover Habitat Impacted during Construction and Operations of Segment 2

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1390	307
Proposed – Comparison Portion for Alternative 2A	331	52
Alternative 2A	384	68
Proposed Comparison Portion for Alternative 2B	88	11
Alternative 2B	59	16
Proposed – Comparison Portion for Alternative 2C	331	49
Alternative 2C	316	32

Acres are rounded to the nearest acre.

Table 3.11-9e. Acres of Suitable Northern Leopard Frog and Preble’s Meadow Jumping Mouse Habitat Impacted during Construction and Operations of Segment 2

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	12	4
Proposed – Comparison Portion for Alternative 2A	3	<1
Alternative 2A	6	1
Proposed – Comparison Portion for Alternative 2B	<1	t
Alternative 2B	5	<1
Proposed – Comparison Portion for Alternative 2C	2	<1
Alternative 2C	<1	t

Acres are rounded to the nearest acre.

Table 3.11-9f. Acres of Suitable Pygmy Rabbit Habitat Impacted during Construction and Operations of Segment 2

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	880	193
Proposed – Comparison Portion for Alternative 2A	225	43
Alternative 2A	314	63
Proposed – Comparison Portion for Alternative 2B	63	11
Alternative 2B	38	9
Proposed – Comparison Portion for Alternative 2C	222	45
Alternative 2C	263	43

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,225	310
Proposed – Comparison Portion for Alternative 2A	260	50
Alternative 2A	349	69
Proposed – Comparison Portion for Alternative 2B	81	14
Alternative 2B	44	11
Proposed – Comparison Portion for Alternative 2C	259	54
Alternative 2C	287	46

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	419	86
Proposed – Comparison Portion for Alternative 2A	<1	t ^{1/}
Alternative 2A	1	6
Proposed – Comparison Portion for Alternative 2B	<1	t ^{1/}
Alternative 2B	20	6
Proposed – Comparison Portion for Alternative 2C	0	0
Alternative 2C	0	0

1/ "t" indicates values <0.1. Acres are otherwise rounded to the nearest acre.

Segment 3

Segment 3, as proposed, would link the Creston and Anticline Substations in southeast Wyoming with two 500-kV circuits on one structure. One circuit would be operated at 230 kV during the initial phase of the Project. Its total proposed length between those two substations is 46.7 miles. Sixty-nine acres of the construction of the Anticline and Creston Substations are attributed to Segment 3. Segment 3 would also link the Anticline and Jim Bridger Substations with a 4.3-mile 230-kV line and a 5.5-mile 345-kV line and includes the 10-acre expansion of the Jim Bridger 345-kV Substation. There are no Route Alternatives proposed along this segment (see Appendix A, Figure A-4).

Of the TES species where quantitative species-specific data are available, the black-footed ferret, burrowing owl, greater sage-grouse, grizzly bear, mountain plover, northern leopard frog, pygmy rabbit, white-tailed prairie dog, and the Wyoming pocket gopher could occur along Segment 3.

Construction of Segment 3 would impact approximately 222 acres of black-footed ferret habitat, 601 acres of burrowing owl habitat, 694 acres of greater sage-grouse habitat, 611 acres of grizzly bear habitat (only consists of lands within the DPS boundary), 737 acres of mountain plover habitat, 14 acres of northern leopard frog, 539 acres of pygmy rabbit habitat, 612 acres of white-tailed prairie dog habitat, and 586 acres of Wyoming pocket gopher habitat (Tables D.11-5 through D.11-8 in Appendix D).

Segment 4

Segment 4, as proposed, would link the Anticline Substation near the Jim Bridger Power Plant in southwestern Wyoming with the Populus Substation in Idaho with two 500-kV circuits on one structure. Its total proposed length is 203 miles. Eighty-nine acres of the construction of the Anticline Substation and the expansion of the Populus Substation and 1.5 acres for three regeneration sites are attributed to Segment 4. It has six Route Alternatives in the middle portion of its route but the first 52 miles to the east and the last 61 miles to the west (in Idaho) do not have any Route Alternatives. The middle section of the Proposed Route is 90.2 miles long, and its Route Alternatives vary from 85 to 102 miles long. These alternatives were proposed by the Wyoming Governor's office (4A, paralleling the existing 345-kV lines throughout); by the BLM Kemmerer FO (4B through 4E, including edits from various cooperating agencies), with the intent to avoid impacts to cultural resources to the extent practical; and by the Proponents (4F, attempting to avoid impacts to cultural resources while still remaining north of the existing lines) (see Appendix A, Figures A-5 and A-6). The most common habitat type along Segment 4 is shrubland (see Section 3.6 – Vegetation Communities).

Of the TES species where quantitative species-specific data are available, the bald eagle, black-footed ferret, burrowing owl, Canada lynx, Columbian sharp-tailed grouse, Columbia spotted frog, greater sage-grouse, grizzly bear, mountain plover, northern goshawk, northern leopard frog, pygmy rabbit, white-tailed prairie dog, and the Wyoming pocket gopher could occur along Segment 4. Tables D.11-5 through D.11-8 in Appendix D list the impacts to habitat for each species quantitatively assessed along Segment 4 and its Route Alternatives.

Construction of Segment 4 would impact about 18 and 38 acres of habitat for the bald eagle (within 1 mile of nests) and northern goshawk (within 1 mile of nests), respectively. No habitat for these species would be impacted along the six Route Alternatives, or along the comparison portion of the Proposed Route.

Construction of Segment 4 would impact about 119 acres of Wyoming pocket gopher habitat. No habitat would be impacted along the six Route Alternatives, or along the comparison portion of the Proposed Route.

Construction of Segment 4 would impact about 302 acres of Canada lynx habitat. If Alternative 4F is chosen, about 181 acres of this impact would be avoided. The remaining five Route Alternatives (Alternatives 4A through 4E) would not impact lynx habitat, and would completely avoid the 302 acres of impacts that would occur along the Proposed Route (Table D.11-5 in Appendix D).

Tables 3.11-10a–j display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 4 would have a differential effect, where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. In general, selection of a Route Alternative along Segment 4 would result in an increase in impacts to the assessed species. An increase in impacts during construction would occur to habitat for the Columbian sharp-tailed grouse, Columbia spotted frog, greater sage-grouse, northern leopard frog, pygmy rabbit, and white-tailed prairie dog under each of the six Route

Alternatives over the comparison portion of the Proposed Route. The burrowing owl, black-footed ferret, grizzly bear, and mountain plover are the only species that would experience fewer impacts under certain Route Alternatives. Impact to burrowing owl habitat would be reduced under Alternative 4A, while impacts to black-footed ferret habitat would be reduced under Alternatives 4A and 4F. Impacts to grizzly bear habitat would be reduced under all Route Alternatives except for 4F (which would impact similar acreage as the Proposed Route). The mountain plover is the only species assessed that would experience fewer impacts under all six of the Route Alternatives compared to the comparison portion of Segment 4.

For all Route Alternatives, the increase in impacts to Columbia spotted frog, and northern leopard frog habitat would be substantial, indicating that these Route Alternatives would impact substantially more habitat than the comparison portion of the Proposed Route. As was discussed for Segment 1W, because habitat for these species (riparian/wetland areas that can support these species) is limited within the general area, even minor differences in the acreage of impacts can have a substantial effect on the availability of habitat for this species. In addition, Alternatives 4B, 4C, and 4D would substantially increase impacts to burrowing owl habitat, while Alternatives 4B through 4E would substantially reduce impacts to habitat for the grizzly bear; however, as noted earlier, these impacts to bear habitat only consist of areas that fall within the DPS boundary and not the PCA or areas that have been designated as suitable bear habitat by the USFWS.

The Proposed Route along Segment 4 would cross the Caribou-Targhee NF (see Section 3.17 – Land Use and Recreation). Segment 4 would impact about 13 acres of burrowing owl habitat, 116 acres of Columbian sharp-tailed grouse habitat, 38 acres of northern goshawk habitat, 1 acre of northern leopard frog habitat, and 4 acres of pygmy rabbit habitat on the Caribou-Targhee NF.

The roads analysis for the Caribou NF travel plan categorizes roads regarding their level of risk to wildlife species (Forest Service 2005). Of the roads crossed or used by the Project on the Caribou-Targhee NF, Road 20401 has a low risk for goshawk, leopard toad, boreal toad, peregrine falcon, and overall wildlife. Roads 20404, 20425, 20438, 20463, 20466, and 21000 have a low risk for all categories assessed. Therefore, it is likely that the new roads, which would be revegetated and closed to the public following construction, would have a low risk to wildlife species as well.

Tables 3.11-10a–j. Alternative Comparison Tables for Segment 4

Table 3.11-10a. Acres of Suitable Black-Footed Ferret Habitat Impacted during Construction and Operations of Segment 4		
Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	549	113
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	408	85
Alternative 4A	328	72
Alternative 4B	443	111
Alternative 4C	443	111
Alternative 4D	443	111
Alternative 4E	443	111
Alternative 4F	321	72

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,536	353
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	697	143
Alternative 4A	683	151
Alternative 4B	1,019	248
Alternative 4C	1,068	253
Alternative 4D	994	241
Alternative 4E	1,029	244
Alternative 4F	710	158

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	861	192
Proposed-Comparison Portion for Alternatives 4A,B,C,D,E,F	83	16
Alternative 4A	84	17
Alternative 4B	119	25
Alternative 4C	118	25
Alternative 4D	119	26
Alternative 4E	115	24
Alternative 4F	86	18

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	9	2
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	9	2
Alternative 4A	52	6
Alternative 4B	36	3
Alternative 4C	28	2
Alternative 4D	32	3
Alternative 4E	28	2
Alternative 4F	35	3

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	2,073	486
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	973	203
Alternative 4A	1,020	232
Alternative 4B	1,240	295
Alternative 4C	1,203	284
Alternative 4D	1,241	297
Alternative 4E	1,198	283
Alternative 4F	1,004	227

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,949	449
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	1,085	232
Alternative 4A	1,043	234
Alternative 4B	287	64
Alternative 4C	423	90
Alternative 4D	301	65
Alternative 4E	424	90
Alternative 4F	1,087	246

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,125	260
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	605	119
Alternative 4A	502	109
Alternative 4B	575	139
Alternative 4C	575	139
Alternative 4D	576	139
Alternative 4E	576	139
Alternative 4F	496	109

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	66	14
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	16	3
Alternative 4A	59	7
Alternative 4B	48	4
Alternative 4C	40	3
Alternative 4D	44	5
Alternative 4E	40	4
Alternative 4F	43	4

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,506	365
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	850	186
Alternative 4A	912	215
Alternative 4B	1,044	265
Alternative 4C	1,062	261
Alternative 4D	1,011	258
Alternative 4E	1,022	252
Alternative 4F	939	223

Acres are rounded to the nearest acre.

Table 3.11-10j. Acres of Suitable White-Tailed Prairie Dog Habitat Impacted during Construction and Operation of Segment 4

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,585	358
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	957	207
Alternative 4A	1,092	245
Alternative 4B	1,282	311
Alternative 4C	1,326	313
Alternative 4D	1,291	314
Alternative 4E	1,325	312
Alternative 4F	1,073	244

Acres are rounded to the nearest acre.

Segment 5

Segment 5, as proposed, would link the Populus and Borah Substations with a 54.6-mile single-circuit 500-kV line. Forty-four acres of the expansion of the Populus and Borah Substations are attributed to Segment 5. There are five Route Alternatives including two proposed by the BLM to avoid the Deep Creek Mountains (5A and 5B, 8 miles and 19 miles longer than the comparison portion of the Proposed Route), one preferred by Power County that crosses the Fort Hall Indian Reservation (5C, 6 miles shorter than the comparison portion of the Proposed Route), one originally proposed by the Proponents (5D, 2 miles shorter than the comparison portion of the Proposed Route but located within more agricultural lands), and one proposed by Power County as an alternative approach to the Borah Substation (5E) (see Appendix A, Figure A-7). The most common habitat type along Segment 5 is shrubland (see Section 3.6 – Vegetation Communities).

Of the TES species where quantitative species-specific data are available, the bald eagle, burrowing owl, Columbian sharp-tailed grouse, greater sage-grouse, northern leopard frog, pygmy rabbit, and the yellow-billed cuckoo could potentially occur along Segment 5. Tables D.11-5 through D.11-8 in Appendix D list the acres of impacts to habitat for each species quantitatively assessed along Segment 5 and its Route Alternatives.

The Proposed Route would cross approximately 1.6 miles of habitat within 1 mile of two active bald eagle nests along Segment 5 (Table D.11-4 in Appendix D). This would result in a construction impact to approximately 28 acres of habitat. Alternatives 5A through 5C would not have an impact to bald eagle habitat as the habitat impacted along the Proposed Route occurs in an area not encompassed by these three Route Alternatives (Table D.11-6 in Appendix D). Alternative 5D is proposed as a Route Alternative to the portion of the Proposed Route where the 28 acres of impacts would occur. Selection of Alternative 5D would result in 21 acres of impact (a 7-acre reduction in impacts compared to the Proposed Route). Impacts to habitats within 1 mile of nests would be almost entirely avoided along Segment 5 if Alternative 5E were selected (Table D.11-6 in Appendix D).

Tables 3.11-11a–f display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 5 would have a differential effect,

where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. Unlike many of the other Project segments, there is no distinct trend regarding which Route Alternative along Segment 5 would result in either an increase or decrease in the acreage of impacts to TES habitat, with the exception of Alternative 5E (which would decrease impacts to all species that have available quantitative data). Alternatives 5A and 5B would result in an increase (over the comparison portion of the Proposed Route) in impacts to burrowing owl, Columbian sharp-tailed grouse, greater sage-grouse, and pygmy rabbit habitat; however, it would result in fewer impacts to northern leopard frog habitat. Alternative 5C would increase impacts to burrowing owl, northern leopard frog, pygmy rabbit, and yellow-billed cuckoo habitat, but would result in fewer impacts to Columbian sharp-tailed grouse and greater sage-grouse habitat. Alternative 5D would increase impacts to burrowing owl and yellow-billed cuckoo habitat, but would result in fewer impacts to Columbian sharp-tailed grouse, greater sage-grouse, and pygmy rabbit habitat. Because some habitat for these species would be impacted in areas of the Proposed Route that do not currently contain a Route Alternative, selection of any of the Route Alternatives would not result in a complete avoidance of impacts to any of these species' habitats.

The differences in acreage of impacts to northern leopard frog and yellow-billed cuckoo habitats are minor between most of Route Alternatives (typically differing by only a few acres), with the exception of Alternative 5D, which would result in substantially more impacts to yellow-billed cuckoo habitat compared to the comparison portion of the Proposed Route (from zero acres to 9 acres). Because habitats for these two species are rare within the general area, even minor differences in the acreage of impacts can have a substantial effect on the availability of habitat (Table D.9-1 in Appendix D lists the total impacts to all wetland habitats along each segment and Route Alternative; Section 3.9 – Wetlands and Riparian Areas discusses the distribution of wetlands within the general area).

Tables 3.11-11a–f. Alternative Comparison Tables for Segment 5

Table 3.11-10a. Acres of Suitable Burrowing Owl Habitat Impacted during Construction and Operations of Segment 5		
Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	469	87
Proposed – Comparison Portion for Alternatives 5A,B	190	26
Alternative 5A	264	31
Alternative 5B	369	45
Proposed – Comparison Portion for Alternative 5C	239	28
Alternative 5C	287	32
Proposed – Comparison Portion for Alternative 5D	153	26
Alternative 5D	174	34
Proposed – Comparison Portion for Alternative 5E	72	18
Alternative 5E	45	16

Acreages are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	891	163
Proposed – Comparison Portion for Alternatives 5A,B	427	72
Alternative 5A	546	84
Alternative 5B	673	96
Proposed – Comparison Portion for Alternative 5C	575	92
Alternative 5C	430	55
Proposed – Comparison Portion for Alternative 5D	352	56
Alternative 5D	323	47
Proposed – Comparison Portion for Alternative 5E	91	18
Alternative 5E	60	17

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	100	100
Proposed – Comparison Portion for Alternatives 5A,B	34	34
Alternative 5A	44	44
Alternative 5B	50	50
Proposed – Comparison Portion for Alternative 5C	42	42
Alternative 5C	30	30
Proposed – Comparison Portion for Alternative 5D	35	35
Alternative 5D	23	23
Proposed – Comparison Portion for Alternative 5E	17	17
Alternative 5E	16	16

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	11	2
Proposed – Comparison Portion for Alternatives 5A,B	5	<1
Alternative 5A	<1	<1
Alternative 5B	<1	<1
Proposed – Comparison Portion for Alternative 5C	4	<1
Alternative 5C	5	<1
Proposed – Comparison Portion for Alternative 5D	6	2
Alternative 5D	6	2
Proposed – Comparison Portion for Alternative 5E	3	1
Alternative 5E	2	1

1/ "t" indicates values <0.1. Acres are otherwise rounded to the nearest acre.

Table 3.11-11e. Acres of Suitable Pygmy Rabbit Habitat Impacted during Construction and Operations of Segment 5

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	338	77
Proposed – Comparison Portion for Alternatives 5A,B	103	18
Alternative 5A	164	20
Alternative 5B	186	25
Proposed – Comparison Portion for Alternative 5C	152	23
Alternative 5C	226	27
Proposed – Comparison Portion for Alternative 5D	123	25
Alternative 5D	107	26
Proposed – Comparison Portion for Alternative 5E	59	16
Alternative 5E	45	16

Acreages are rounded to the nearest acre.

Table 3.11-11f. Acres of Suitable Yellow-Billed Cuckoo Habitat Impacted during Construction and Operations of Segment 5

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	<1	<1
Proposed – Comparison Portion for Alternatives 5A,B	<1	<1
Alternative 5A	<1	<1
Alternative 5B	<1	<1
Proposed – Comparison Portion for Alternative 5C	4	–
Alternative 5C	1	1
Proposed – Comparison Portion for Alternative 5D	–	–
Alternative 5D	9	8
Proposed – Comparison Portion for Alternative 5E	–	–
Alternative 5E	–	–

1/ “t” indicates values <0.1. Acreages are otherwise rounded to the nearest acre.

Segment 6

Segment 6 is an existing transmission line linking the Borah and Midpoint Substations; it is now operated at 345 kV but would be changed to operate at 500 kV. This segment has no Route Alternatives. Existing support structures would be used and impacts would be limited to within approximately one-quarter mile from each substation to allow for moving the entry point into the substation to the new 500-kV bay. Thirty-one acres of the expansion of the Borah and Midpoint Substations are attributed to Segment 6. Changes in the two substations would allow it to be operated at 500 kV (see Appendix A, Figure A-8).

Ground-disturbing activities along this segment would be limited to the immediate vicinity of the Borah and Midpoint Substations. Although these areas have already been disturbed by the past construction and operation of these substations, some wildlife may utilize adjacent habitats, and as such modifications made to these substations could temporarily disturb adjacent wildlife.

Of the TES species where quantitative species-specific data are available, habitat for the burrowing owl, Columbian sharp-tailed grouse, greater sage-grouse, northern leopard frog, and pygmy rabbit could occur along Segment 6. Modifications made to

the substations along Segment 6 would impact approximately 42 acres of burrowing owl habitat, 16 acres of Columbian sharp-tailed grouse habitat, 42 acres of greater sage-grouse habitat, 2 acres of northern leopard frog habitat, and 42 acres of pygmy rabbit habitat (Tables D.11-5 through D.11-8 in Appendix D).

Segment 7

Segment 7, as proposed, would link the Populus and Cedar Hill Substations with a 118.1-mile single-circuit 500-kV line. Forty-two acres of the expansion of the Populus and the construction of the Cedar Hill Substations and 1 acre for two regeneration sites are attributed to Segment 7. In addition to the Proposed Route, which is principally on private lands, Route Alternatives have been proposed by the BLM to avoid the Deep Creek Mountains (7A and 7B; which are 5 miles and 11 miles longer than the comparison portion of the Proposed Route), by local landowners (7C, 7D, 7E, 7F, and 7G, which all represent minor adjustments proposed to address local issues), by local landowners to avoid private agricultural lands (7I or the State Line Route, which is 55 miles longer than the Proposed Route and would require 0.5 acre for an additional regeneration site), and by the Proponents to avoid the State Line Route (7H, which is 10 miles longer than the Proposed Route). Alternative 7J, which is a variant of the State Line Route also proposed by local landowners, would not terminate at the Cedar Hill Substation. This alternative, referred to as the Rogerson Alternative, would require a different substation be constructed near a 345-kV existing transmission line (approximately 24 miles southwest of the Cedar Hill Substation; see Appendix A, Figure A-9). The tables and discussion in this document compare 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only. The most common habitat type along Segment 7 is agriculture (see Section 3.6 – Vegetation Communities).

Of the TES species for which quantitative species-specific data are available, the burrowing owl, Columbian sharp-tailed grouse, greater sage-grouse, northern leopard frog, pygmy rabbit, and the yellow-billed cuckoo could occur along Segment 7. Tables D11-3 through D.11-6 in Appendix D list the impacts to habitat for each species quantitatively assessed along Segment 7 and its Route Alternatives.

Tables 3.11-12a–f display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 7 would have a differential effect, where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. Alternatives 7A, 7D, 7E, 7H, 7I, and 7J would increase impacts to habitat (over the comparison portion of the Proposed Route) for all species assessed that occur along these routes (except for Alternative 7D, which would result in a 4-acre reduction in impacts to greater sage-grouse habitat, and Alternatives 7H and 7J, which would result in a minor reduction in yellow-billed cuckoo impacts). Alternative 7B would increase impacts to habitat for all species assessed that occur along these routes, except for the northern leopard frog and yellow-billed cuckoo, which would experience fewer impacts under this alternative compared to the comparison portion of the Proposed Route. Alternative 7C would increase impacts to burrowing owl, Columbian sharp-tailed grouse, and pygmy rabbit habitat, but would

result in fewer impacts to greater sage-grouse and northern leopard frog habitat. Alternative 7F would increase impacts to greater sage-grouse habitat, but would result in fewer impacts to burrowing owl and pygmy rabbit habitat. Alternative 7G would increase impact to burrowing owl, Columbian sharp-tailed grouse, northern leopard frog, and pygmy rabbit habitat, but result in fewer impacts to greater sage-grouse habitat. As some habitat for these species would be impacted in areas of the Proposed Route that do not currently contain a Route Alternative, selection of a Route Alternative would not result in a complete avoidance of impacts to any of these species' habitats found along this segment.

Some of the alternatives would substantially increase impacts over the comparison portion of the Proposed Route. Alternatives 7H, 7I, and 7J would substantially increase the impacts that would occur to greater sage-grouse habitats over those of the comparison portion of the Proposed Route. Alternatives 7H and 7I would substantially increase the impacts that would occur to Columbia sharp-tailed grouse and pygmy rabbit habitat. Alternative 7I would result in 6 acres of impacts to yellow-billed cuckoo habitat whereas the comparison portion of the Proposed Route as well Alternative 7J (which is coincident with much of Alternative 7I) would impact less than 1 acre of habitat. This substantial impact to yellow-billed cuckoo habitat along Alternative 7I is largely due to one tower pad and the ROW clearing of a forested wetland/riparian area along a portion of Alternative 7I that is located after Alternatives 7I and 7J diverge.

Alternatives 7H, 7I, and 7J would cross the Sawtooth NF (see Section 3.17 – Land Use). Alternative 7H would impact about 2 acres of burrowing owl habitat, 102 acres of Columbian sharp-tailed grouse habitat, 11 acres of greater sage-grouse habitat, 36 acres of pygmy rabbit habitat, 2 acres of northern leopard frog habitat, and less than 0.1 acre of yellow-billed cuckoo habitat on the Sawtooth NF. Alternative 7I would impact about 47 acres of burrowing owl habitat, 443 acres of Columbian sharp-tailed grouse habitat, 401 acres of greater sage-grouse habitat, 163 acres of pygmy rabbit habitat, 6 acres of northern goshawk habitat, less than 1 acre of northern leopard frog habitat, and about 2 acres of yellow-billed cuckoo habitat on the Sawtooth NF. Finally, Alternative 7J would impact approximately 27 acres of burrowing owl habitat, 251 acres of Columbian sharp-tailed grouse habitat, 112 acres of greater sage-grouse habitat, 74 acres of pygmy rabbit habitat, 0.2 acre of northern leopard frog habitat, and less than 0.1 acre of yellow-billed cuckoo habitat located on the Sawtooth NF.

Tables 3.11-12a–f. Alternative Comparison Tables for Segment 7

Table 3.11-12a. Acres of Suitable Burrowing Owl Habitat Impacted during Construction and Operations of Segment 7

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,025	134
Proposed – Comparison Portion for Alternatives 7A,B	311	25
Alternative 7A	337	37
Alternative 7B	456	47
Proposed – Comparison Portion for Alternative 7C	223	29
Alternative 7C	263	24
Proposed – Comparison Portion for Alternative 7D	66	8
Alternative 7D	79	10
Proposed – Comparison Portion for Alternative 7E	25	2
Alternative 7E	26	3
Proposed – Comparison Portion for Alternative 7F	89	12
Alternative 7F	85	12
Proposed – Comparison Portion for Alternative 7G	30	3
Alternative 7G	46	3
Proposed – Comparison Portion for Alternatives 7H,I	1,025	134
Alternative 7H	1,174	182
Alternative 7I	1,395	218
Proposed – Comparison Portion for Alternative 7J ^{1/}	1,330	176
Alternative 7J	1,830	273

Acres are rounded to the nearest acre.

1/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Table 3.11-12b. Acres of Suitable Columbian Sharp-Tailed Grouse Habitat Impacted during Construction and Operations of Segment 7

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,067	141
Proposed – Comparison Portion for Alternatives 7A,B	493	45
Alternative 7A	592	90
Alternative 7B	735	96
Proposed – Comparison Portion for Alternative 7C	232	30
Alternative 7C	278	26
Proposed – Comparison Portion for Alternative 7D	28	1
Alternative 7D	40	3
Proposed – Comparison Portion for Alternative 7E	0	0
Alternative 7E	0	0
Proposed – Comparison Portion for Alternative 7F	0	0
Alternative 7F	0	0
Proposed – Comparison Portion for Alternative 7G	41	4
Alternative 7G	56	3
Proposed – Comparison Portion for Alternatives 7H,I	1,067	141
Alternative 7H	1,444	237
Alternative 7I	1,893	322
Proposed – Comparison Portion for Alternative 7J ^{1/}	1,092	143
Alternative 7J	2,068	366

Acres are rounded to the nearest acre.

1/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	579	96
Proposed – Comparison Portion for Alternatives 7A,B	139	14
Alternative 7A	269	44
Alternative 7B	341	51
Proposed – Comparison Portion for Alternative 7C	105	14
Alternative 7C	77	8
Proposed – Comparison Portion for Alternative 7D	42	4
Alternative 7D	36	4
Proposed – Comparison Portion for Alternative 7E	44	4
Alternative 7E	51	7
Proposed – Comparison Portion for Alternative 7F	102	13
Alternative 7F	121	15
Proposed – Comparison Portion for Alternative 7G	28	3
Alternative 7G	12	0
Proposed – Comparison Portion for Alternatives 7H,I	579	96
Alternative 7H	1,346	227
Alternative 7I	1,658	291
Proposed – Comparison Portion for Alternative 7J ^{1/}	805	126
Alternative 7J	2,110	335

Acreages are rounded to the nearest acre.

1/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	8	<1
Proposed – Comparison Portion for Alternatives 7A,B	4	<1
Alternative 7A	4	<1
Alternative 7B	1	<1
Proposed – Comparison Portion for Alternative 7C	t ^{1/}	t ^{1/}
Alternative 7C	0	0
Proposed – Comparison Portion for Alternative 7D	3	t ^{1/}
Alternative 7D	3	t ^{1/}
Proposed – Comparison Portion for Alternative 7E	0	0
Alternative 7E	0	0
Proposed – Comparison Portion for Alternative 7F	<1	t ^{1/}
Alternative 7F	t ^{1/}	t ^{1/}
Proposed – Comparison Portion for Alternative 7G	t ^{1/}	t ^{1/}
Alternative 7G	<1	t ^{1/}
Proposed – Comparison Portion for Alternatives 7H,I	8	<1
Alternative 7H	9	1
Alternative 7I	15	2
Proposed – Comparison Portion for Alternative 7J ^{2/}	9	<1
Alternative 7J	16	2

1/ "t" indicates values <0.1. Acreages are otherwise rounded to the nearest acre.

2/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Table 3.11-12e. Acres of Suitable Pygmy Rabbit Habitat Impacted during Construction and Operations of Segment 7

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	606	93
Proposed – Comparison Portion for Alternatives 7A,B	140	11
Alternative 7A	226	26
Alternative 7B	240	28
Proposed – Comparison Portion for Alternative 7C	149	22
Alternative 7C	205	19
Proposed – Comparison Portion for Alternative 7D	56	7
Alternative 7D	71	9
Proposed – Comparison Portion for Alternative 7E	25	2
Alternative 7E	26	3
Proposed – Comparison Portion for Alternative 7F	65	8
Alternative 7F	60	8
Proposed – Comparison Portion for Alternative 7G	30	3
Alternative 7G	45	3
Proposed – Comparison Portion for Alternatives 7H,I	606	93
Alternative 7H	1,053	170
Alternative 7I	1,429	251
Proposed – Comparison Portion for Alternative 7J ^{1/}	910	135
Alternative 7J	1,925	298

Acres are rounded to the nearest acre.

1/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Table 3.11-12f. Acres of Suitable Yellow-Billed Cuckoo Habitat Impacted during Construction and Operations of Segment 7

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	<1	t ^{1/}
Proposed – Comparison Portion for Alternatives 7A,B	t ^{1/}	t ^{1/}
Alternative 7A	<1	<1
Alternative 7B		
Proposed – Comparison Portion for Alternative 7C		
Alternative 7C		
Proposed – Comparison Portion for Alternative 7D	<1	t ^{1/}
Alternative 7D	<1	t ^{1/}
Proposed – Comparison Portion for Alternative 7E		
Alternative 7E		
Proposed – Comparison Portion for Alternative 7F		
Alternative 7F		
Proposed – Comparison Portion for Alternative 7G		
Alternative 7G		
Proposed – Comparison Portion for Alternatives 7H,I	<1	t ^{1/}
Alternative 7H	t ^{1/}	t ^{1/}
Alternative 7I	6	5
Proposed – Comparison Portion for Alternative 7J ^{2/}	<1	t ^{1/}
Alternative 7J	t ^{1/}	t ^{1/}

1/ “t” indicates values <0.1. Acres are otherwise rounded to the nearest acre.

2/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Segment 8

Segment 8, as proposed, would link the Midpoint and Hemingway Substations. This 131-mile single-circuit 500-kV transmission line would stay north of the Snake River until crossing through the SRBOP parallel to an existing 500-kV transmission line before ending at the Hemingway Substation. Thirteen acres of the expansion of the Midpoint Substation and 0.5 acre for a regeneration site are attributed to Segment 8. There are five Route Alternatives: 8A, which follows the WWE corridor but crosses the Snake River and I-84 twice (while the Proposed Route would stay north of this area); 8B and 8C, which represent the old routes originally proposed by the Proponents but that have now been changed to avoid the cities of Kuna and Mayfield, respectively; 8D, which represents a small revision involving a rebuild of the existing transmission line to move both away from the National Guard Maneuver Area; and 8E, which was proposed by the BLM in order to avoid crossing the Halverson Bar nonmotorized portion of the Guffey Butte-Black Butte Historical Area (see Appendix A, Figure A-10). The most common habitat type along Segment 8 is disturbed grasslands and shrublands (see Section 3.6 – Vegetation Communities).

Of the TES species where quantitative species-specific data are available, the burrowing owl, Columbia spotted frog, greater sage-grouse, northern leopard frog, pygmy rabbit, and the yellow-billed cuckoo could occur along Segment 8. Tables D.11-5 through D.11-8 in Appendix D list the impacts to habitat for each species quantitatively assessed along Segment 8 and its Route Alternatives.

The Proposed Route would result in less than 0.1 acre of impact to Columbia spotted frog habitat, while Alternative 8B would increase impacts to about 7 acres of habitat. Alternative 8E would impact about 0.2 acre of Columbian spotted frog habitat; no other Route Alternative along this segment would impact Columbia spotted frog habitat.

Tables 3.11-13a–e display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 8 would have a differential effect, where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. Alternative 8E would result in an increase (over the comparison portion of the Proposed Route) in impacts for all species assessed that occur along this route. Alternative 8A would result in an increase in impacts to burrowing owl habitat, but fewer impacts to pygmy rabbit, greater sage-grouse, and northern leopard frog habitat. Alternative 8B would result in increased impacts to northern leopard frog and yellow-billed cuckoo habitat, but fewer impacts to burrowing owl, greater sage-grouse, and pygmy rabbit habitat. Alternative 8C would result in fewer impacts to burrowing owl, greater sage-grouse, and pygmy rabbit. For the most part, Alternative 8D is proposed for areas that do not cross habitat for the assessed species, and that correspond to portions of the Proposed Route that do not cross habitat for the assessed species. However, Alternative 8D would result in increased impacts to burrowing owl and pygmy rabbit habitat, but decreased impacts to greater sage-grouse habitats. None of the Route Alternatives avoid all impacts to these species habitats, as some habitat for these species would be impacted in areas of the Proposed Route that do not currently contain a Route Alternative.

Alternative 8B would substantially increase the impacts that would occur to Columbia spotted frog and northern leopard frog habitats over those of the comparison portion of the Proposed Route.

Tables 3.11-13a–e. Alternative Comparison Tables for Segment 8

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,797	213
Proposed – Comparison Portion for Alternative 8A	591	77
Alternative 8A	594	80
Proposed – Comparison Portion for Alternative 8B	665	77
Alternative 8B	495	54
Proposed – Comparison Portion for Alternative 8C	135	15
Alternative 8C	107	15
Proposed – Comparison Portion for Alternative 8D	118	16
Alternative 8D	126	12
Proposed – Comparison Portion for Alternative 8E	76	8
Alternative 8E	268	25

^{1/}Acres are otherwise rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,174	144
Proposed – Comparison Portion for Alternative 8A	472	65
Alternative 8A	404	59
Proposed – Comparison Portion for Alternative 8B	364	44
Alternative 8B	287	34
Proposed – Comparison Portion for Alternative 8C	61	9
Alternative 8C	55	8
Proposed – Comparison Portion for Alternative 8D	43	7
Alternative 8D	43	4
Proposed – Comparison Portion for Alternative 8E	34	4
Alternative 8E	170	14

^{1/}Acres are otherwise rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	6	<1
Proposed – Comparison Portion for Alternative 8A	3	<1
Alternative 8A	2	<1
Proposed – Comparison Portion for Alternative 8B	<1	<1
Alternative 8B	8	<1
Proposed – Comparison Portion for Alternative 8C	<1	t ^{1/}
Alternative 8C	<1	t ^{1/}
Proposed – Comparison Portion for Alternative 8D	t ^{1/}	0
Alternative 8D	t ^{1/}	0
Proposed – Comparison Portion for Alternative 8E	0	0
Alternative 8E	t ^{1/}	0

^{1/} “t” indicates values <0.1. Acres are otherwise rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,768	209
Proposed – Comparison Portion for Alternative 8A	584	76
Alternative 8A	509	71
Proposed – Comparison Portion for Alternative 8B	647	75
Alternative 8B	470	53
Proposed – Comparison Portion for Alternative 8C	135	15
Alternative 8C	97	15
Proposed – Comparison Portion for Alternative 8D	118	16
Alternative 8D	126	12
Proposed – Comparison Portion for Alternative 8E	76	8
Alternative 8E	268	25

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	<1	<1
Proposed – Comparison Portion for Alternative 8A	<1	<1
Alternative 8A	<1	t ^{1/}
Proposed – Comparison Portion for Alternative 8B		
Alternative 8B	<1	<1
Proposed – Comparison Portion for Alternative 8C		
Alternative 8C		
Proposed – Comparison Portion for Alternative 8D		
Alternative 8D		
Proposed – Comparison Portion for Alternative 8E		
Alternative 8E		

1/ "t" indicates values <0.1. Acres are otherwise rounded to the nearest acre.

Segment 9

Segment 9, as proposed, would link the Cedar Hill and Hemingway Substations with a 161.7-mile single-circuit 500-kV transmission line which skirts the Jarbidge and Owyhee Military Operating Areas to the north, then follows the WWE corridor just north of the Saylor Creek Air Force Range, passing through Owyhee County before entering into the Hemingway Substation. Fifteen acres of the construction of the Cedar Hill Substation and 1 acre for two regeneration sites are attributed to Segment 9. There are eight Route Alternatives proposed, including 9A, which was the Proponents' Proposed Route until moving to avoid the Hollister area; 9B, which is being considered by the BLM because it follows the WWE corridor and parallels existing utility corridors; 9C, which was the Proponents' Proposed Route until moving to avoid the Castleford area; and 9D and 9E, proposed by the Owyhee County Taskforce, that cross more public lands north and south of the Proposed Route, respectively, than the Proposed Route. Most of Alternative 9D would be within the SRBOP. Alternatives 9F, 9G, and 9H were proposed to avoid crossing the nonmotorized area south of C.J. Strike Reservoir. Alternatives 9G and 9H provide an alternate route location south of Alternative 8E (see Appendix A,

Figure A-11). The most common habitat type along Segment 9 is disturbed or developed lands (see Section 3.6 – Vegetation Communities).

Of the TES species where quantitative species-specific data are available, the burrowing owl, Columbian sharp-tailed grouse, Columbia spotted frog, greater sage-grouse, northern leopard frog, pygmy rabbit, and the yellow-billed cuckoo could potentially occur along Segment 9. Tables D.11-5 through D.11-8 in Appendix D list the impacts to habitat for each species quantitatively assessed along Segment 9 and its Route Alternatives.

Approximately 26 acres of Columbian sharp-tailed grouse habitat would be impacted during construction of the Proposed Route. No Columbian sharp-tailed grouse habitat occurs along the Route Alternatives, or along the comparison portion of the Proposed Route. Therefore, selection of a Route Alternative would not have an effect on impacts to Columbian sharp-tailed grouse habitat.

Approximately 4 acres of Columbia spotted frog habitat would be impacted during construction of the Proposed Route. Selection of Alternative 9B would avoid less than 0.1 acre of this impact. Alternative 9D would almost completely avoid these 4 acres of impacts (reducing them to less than 0.1 acre of impacts). Alternative 9E would reduce impacts to Columbia spotted frog habitat by half (to 2 acres impacted).

Tables 3.11-14a–f display a comparison of the impacts to habitat for the species in which the various Route Alternatives in Segment 9 would have a differential effect, where quantitative data were available, and where the data were detailed enough that the discussion was best summarized in table format. Selection of Alternative 9A would increase impacts to habitat for the burrowing owl, greater sage-grouse, and pygmy rabbit compared to the comparison portion of the Proposed Route. Alternative 9B would result in increased impacts to northern leopard frog habitat, but fewer impacts to burrowing owl, greater sage-grouse, and pygmy rabbit habitat. Alternative 9C would result in fewer impacts to burrowing owl, greater sage-grouse, northern leopard frog, and pygmy rabbit habitat. Alternative 9D would result in an increase in impacts to burrowing owl and pygmy rabbit habitat, but fewer impacts to greater sage-grouse and northern leopard frog habitat. Alternative 9E would result in an increase in impacts to burrowing owl, greater sage-grouse, and pygmy rabbit habitat, but fewer impacts to northern leopard frog habitat. Alternatives 9F, 9G, and 9H would result in an increase in impacts for all species assessed that occur along these routes, except for the greater sage-grouse (each of these alternatives would result in fewer impacts to habitat) and the Columbia spotted frog (a decrease in impacts from 4 acres along the comparison portion of the Proposed Route to less than 1 acre along Alternative 9G).

The increase in impacts that would occur if Alternative 9B is selected would be substantial for the northern leopard frog, while the decrease in impacts would be substantial for the burrowing owl. Construction of Alternatives 9D and 9E would result in a substantial increase in impacts to pygmy rabbit habitat.

Tables 3.11-14a–f. Alternative Comparison Tables for Segment 9

Table 3.11-14a. Acres of Suitable Burrowing Owl Habitat Impacted during Construction and Operations of Segment 9		
Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	2,083	291
Proposed – Comparison Portion for Alternative 9A	100	13
Alternative 9A	111	16
Proposed – Comparison Portion for Alternative 9B	743	116
Alternative 9B	593	70
Proposed – Comparison Portion for Alternative 9C	221	23
Alternative 9C	189	25
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	649	76
Alternative 9D	733	71
Alternative 9E	844	112
Alternative 9F	783	76
Alternative 9G	763	74
Alternative 9H	794	79

Acres are rounded to the nearest acre.

Table 3.11-14b. Acres of Suitable Columbia Spotted Frog Habitat Impacted during Construction and Operation of Segment 9		
Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	4	<1
Proposed – Comparison Portion for Alternative 9A	0	0
Alternative 9A	0	0
Proposed – Comparison Portion for Alternative 9B	t ^{1/}	0
Alternative 9B	0	0
Proposed – Comparison Portion for Alternative 9C	0	0
Alternative 9C	0	0
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	4	<1
Alternative 9D	t ^{1/}	0
Alternative 9E	2	t ^{1/}
Alternative 9F	5	<1
Alternative 9G	<1	<1
Alternative 9H	5	<1

1/ "t" indicates values <0.1. Acres are otherwise rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,547	209
Proposed – Comparison Portion for Alternative 9A	64	7
Alternative 9A	88	10
Proposed – Comparison Portion for Alternative 9B	580	84
Alternative 9B	340	40
Proposed – Comparison Portion for Alternative 9C	207	24
Alternative 9C	146	18
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	451	54
Alternative 9D	394	38
Alternative 9E	711	86
Alternative 9F	442	44
Alternative 9G	418	39
Alternative 9H	445	45

Acres are rounded to the nearest acre.

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	5	1
Proposed – Comparison Portion for Alternative 9A	<1	t ^{1/}
Alternative 9A	<1	<1
Proposed – Comparison Portion for Alternative 9B	<1	t ^{1/}
Alternative 9B	4	<1
Proposed – Comparison Portion for Alternative 9C	<1	0
Alternative 9C	0	0
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	4	<1
Alternative 9D	3	t ^{1/}
Alternative 9E	2	<1
Alternative 9F	9	<1
Alternative 9G	5	<1
Alternative 9H	10	<1

"t" indicates values <0.1. Acres are otherwise rounded to the nearest acre.

Table 3.11-14e. Acres of Suitable Pygmy Rabbit Habitat Impacted during Construction and Operation of Segment 9

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	1,778	251
Proposed – Comparison Portion for Alternative 9A	100	13
Alternative 9A	111	16
Proposed – Comparison Portion for Alternative 9B	702	110
Alternative 9B	549	66
Proposed – Comparison Portion for Alternative 9C	180	17
Alternative 9C	164	23
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	413	46
Alternative 9D	720	70
Alternative 9E	820	107
Alternative 9F	737	70
Alternative 9G	728	71
Alternative 9H	725	71

"t" indicates values <0.1. Acreages are otherwise rounded to the nearest acre.

Table 3.11-14f. Acres of Suitable Yellow-Billed Cuckoo Habitat Impacted during Construction and Operation of Segment 9

Alternatives	Construction Impacts (acres)	Operations Impacts (acres)
Proposed – Total Length	t ^{1/2}	t ^{1/2}
Proposed – Comparison Portion for Alternative 9A		
Alternative 9A		
Proposed – Comparison Portion for Alternative 9B		
Alternative 9B		
Proposed – Comparison Portion for Alternative 9C		
Alternative 9C		
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H		
Alternative 9D	t ^{1/2}	t ^{1/2}
Alternative 9E		
Alternative 9F	t ^{1/2}	t ^{1/2}
Alternative 9G	t ^{1/2}	t ^{1/2}
Alternative 9H	t ^{1/2}	t ^{1/2}

"t" indicates values <0.1. Acreages are otherwise rounded to the nearest acre.

Segment 10

Segment 10, as proposed, would link the Cedar Hill and Midpoint Substations with a 33.6-mile single-circuit 500-kV line, following a WWE corridor for most of its distance. Twenty-eight acres of the expansion of the Midpoint Substation and of the construction of the Cedar Hill Substation are attributed to Segment 10. There are no Route Alternatives proposed along this segment (see Appendix A, Figure A-12). Most of the lands crossed by the segment consist of developed lands (see Section 3.6 – Vegetation Communities

Of the TES species where quantitative species-specific data are available, the bald eagle, burrowing owl, greater sage-grouse, northern leopard frog, and pygmy rabbit could potentially occur along Segment 10. There are no Route Alternatives proposed

along Segment 10. Tables D.11-5 through D.11-8 in Appendix D list the impacts to habitat for each species found within Segment 10.

Construction of Segment 10 would impact approximately 254 acres of burrowing owl habitat, 109 acres of greater sage-grouse habitat, 3 acres of northern leopard frog habitat, and 253 acres of pygmy rabbit habitat. Although Segment 10 would cross less than 0.1 mile of habitat located within 1 mile of a bald eagle winter roost, no direct habitat loss would occur, as this habitat would be spanned.

3.11.2.4 Design Variation

A Design Variation is being considered that would consist of constructing two single-circuit lines in Segments 2 through 4 instead of a single double-circuit line (which is the design assessed above). The disturbance footprint of the two single-circuit towers is greater than that of the double-circuit tower, in part because the requested ROW would be wider, but also because helicopter-assisted construction could be implemented in these areas due to the lighter weight of the towers, which would require additional fly yards. The additional ROW space and the fly yards would cause additional temporary disturbance during construction. Across Segments 2, 3, and 4, the additional disturbance of the single-circuit tower alternative ranges from 25 to 30 percent greater than the comparable portions of the double-circuit tower disturbance under the proposed design. The two single circuits require more ground disturbance, but would be designed and constructed to the same standards as the Proposed Action.

Tables D.11-12 and D.11-13 (in Appendix D) list the acres of impacts that would occur, due to the Design Variation, to habitats for ESA wildlife species as well as BLM and Forest Service Sensitive Species with available quantitative data.

An advantage of the Design Variation is that H-frame structures could be substituted if needed for site-specific mitigation. This would increase the options available to prevent or limit raptor use of the transmission line and pole structures.

3.11.2.5 Structure Variation

The proposed guyed Structure Variation would add four guy wires about 140 feet long from a point about 100 feet up in each tower to four guy anchors spaced in a square around the tower (Appendix B, Figure B-6). This would not change the amount of disturbance during construction or operations appreciably; however, these guy wires could add to the potential for avian collisions, especially during low visibility conditions. Extra care would be needed where towers are located near known concentrations of birds to avoid placing guy wires in these areas. As stated in the Proponents' Avian Protection Plan, any guy wires where mortality from collisions has been documented would be equipped with bird flight diverters. In addition, the Agencies have identified WILD-7, which states that all guy wires shall be marked with bird deterrent devices to avoid avian collisions with structures on public lands. Therefore, there would be not be an appreciable difference in impacts to birds from the use of this Structure Variation when compared to the use of self-supporting lattice towers.

Table D.11-3. Miles of Habitat Crossed for Federal ESA Wildlife Species with Available Quantitative Data

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Miles of Habitat Crossed							
			Black-Footed Ferret	Canada Lynx	Columbia Spotted Frog	Greater Sage-Grouse	Grizzly Bear	Mountain Plover	Northern Leopard Frog	Yellow-Billed Cuckoo
1E	Proposed – Total Length	100.6				62.0		64.3	2.1	
	Proposed – Comparison portion for Alternative 1E-A	17.6				9.7		12.4	0.3	
	Alternative 1E-A	16.1				6.9		11.3	0.4	
	Proposed – Comparison portion for Alternative 1E-B	37.9				27.8		33.3	0.7	
	Alternative 1E-B	59.3				39.7		39.7	0.8	
	Proposed – Comparison portion for Alternative 1E-C	75.4				49.3		48.6	1.7	
	Alternative 1E-C	48.7				35.5		36.8	0.5	
1W	1W(a) Proposed – Total Length	76.5				45.7		49.1	1.2	t ^{1/}
	Proposed – Comparison portion for Alternative 1W-A	20.3				8.7		12.3	0.2	
	Alternative 1W-A	16.2				5.5		10.9	0.6	
	1W(c) Proposed – Total Length	70.6				42.3		43.7	1.9	
2	Proposed – Total Length	96.7	14.5			86.0		68.6	1.1	
	Proposed – Comparison portion for Alternative 2A	28.8				24.4		19.5	0.6	
	Alternative 2A	28.4				24.9		21.4	0.6	
	Proposed – Comparison portion for Alternative 2B	7.0				6.1		4.4	0.1	
	Alternative 2B	6.2				5.0		5.5	0.3	
	Proposed – Comparison portion for Alternative 2C	28.4				25.5		18.1	0.2	
	Alternative 2C	24.4				23.7		14.2	0.2	
3	Proposed – Total Length	56.5	17.6			44.7	36.3	48.2	0.9	
4	Proposed – Total Length	203.0	41.7	10.3	1.5	144.0	139.9	76.5	7.2	
	Proposed – Comparison portion for Alternatives 4A-4F	90.2	29.8	10.3	1.5	69.7	78.6	43.0	2.5	
	Alternative 4A	85.2	24.4		2.3	69.1	71.3	36.4	3.3	
	Alternative 4B	100.2	30.1		1.3	85.3	18.9	39.4	2.1	
	Alternative 4C	101.6	30.1		0.7	83.2	31.1	39.4	1.5	
	Alternative 4D	100.8	30.1		1.2	84.9	18.9	39.4	2.1	
	Alternative 4E	102.2	30.1		0.6	82.8	31.1	39.4	1.5	
	Alternative 4F	87.5	24.4	4.5	1.8	69.1	76.0	36.4	2.8	
5	Proposed – Total Length	54.6				25.3			0.5	t ^{1/}
	Proposed – Comparison portion for Alternatives 5A,B	25.3				10.5			0.1	t ^{1/}
	Alternative 5A	33.7				17.8			t ^{1/}	t ^{1/}
	Alternative 5B	44.4				20.8			t ^{1/}	t ^{1/}
	Proposed – Comparison portion for Alternative 5C	33.2				16.1			0.2	
	Alternative 5C	26.1				12.9			0.2	t ^{1/}
	Proposed – Comparison portion for Alternative 5D	19.4				10.4			0.4	
	Alternative 5D	17.5				4.6			0.6	0.3
	Proposed – Comparison portion for Alternative 5E	5.8				1.7			0.3	
Alternative 5E	5.3				0.9			0.2		
6	Proposed – Total Length	0.5				0.5			t ^{1/}	

Note: Mileages have been rounded to the nearest tenth of a mile; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} "t" indicates only a trace amount (<0.1 mile) crossed

Table D.11-3. Miles of Habitat Crossed for Federal ESA Wildlife Species with Available Quantitative Data cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Miles of Habitat Crossed							
			Black-Footed Ferret	Canada Lynx	Columbia Spotted Frog	Greater Sage-Grouse	Grizzly Bear	Mountain Plover	Northern Leopard Frog	Yellow-Billed Cuckoo
7	Proposed – Total Length	118.1				43.4			0.3	
	Proposed – Comparison portion for Alternatives 7A,B	35.2				11.1			0.1	
	Alternative 7A	38.0				17.2			0.6	t ^{1/}
	Alternative 7B	46.4				22.8			t ^{1/}	
	Proposed – Comparison portion for Alternative 7C	20.1				7.6			t ^{1/}	
	Alternative 7C	20.3				6.0				
	Proposed – Comparison portion for Alternative 7D	6.2				3.1			t ^{1/}	
	Alternative 7D	6.8				2.6			t ^{1/}	
	Proposed – Comparison portion for Alternative 7E	3.8				3.2				
	Alternative 7E	4.5				3.9				
	Proposed – Comparison portion for Alternative 7F	10.5				7.5				
	Alternative 7F	10.8				8.3				
	Proposed – Comparison portion for Alternative 7G	3.1				2.4				
	Alternative 7G	3.2				0.3				
	Proposed – Comparison portion for Alternatives 7H,I	118.1				43.4			0.3	
	Alternative 7H	127.5				84.5			1.1	
Alternative 7I	173.4				106.4			0.9	0.2	
Proposed – Comparison portion 7/9 for Alternative 7J ^{2/}	143.9				58.8			0.4		
Alternative 7J ^{2/}	202.1				137.2			1.0		
8	Proposed – Total Length	131.0			t ^{1/}	73.6			0.8	t ^{1/}
	Proposed – Comparison portion for Alternative 8A	51.4				30.2			0.2	t ^{1/}
	Alternative 8A	53.6				25.6			0.6	
	Proposed – Comparison portion for Alternative 8B	45.3				22.2			0.2	
	Alternative 8B	45.8			0.2	16.9			0.4	t ^{1/}
	Proposed – Comparison portion for Alternative 8C	6.5				3.6			t ^{1/}	
	Alternative 8C	6.4				3.2				
	Proposed – Comparison portion for Alternative 8D	6.9				2.7				
	Alternative 8D	8.1				2.3				
	Proposed – Comparison portion for Alternative 8E	7.0				2.8			0.2	
Alternative 8E	18.5				0.1	9.7		0.1		
9	Proposed – Total Length	161.7			0.6	102.9			0.6	
	Proposed – Comparison portion for Alternative 9A	7.8				3.7			t ^{1/}	
	Alternative 9A	7.7				5.1			t ^{1/}	
	Proposed – Comparison portion for Alternative 9B	49.5			t ^{1/}	39.4			t ^{1/}	
	Alternative 9B	53.2				23.4			0.1	
	Proposed – Comparison portion for Alternative 9C	14.7				13.8			t ^{1/}	
	Alternative 9C	15.3				9.57			t ^{1/}	
	Proposed – Comparison portion for Alternatives 9D-9H	57.2			0.6	29.7			0.6	
	Alternative 9D	58.4			0.3	28.7			0.5	
	Alternative 9E	68.7			0.2	49.3			0.2	
	Alternative 9F	62.9			0.5	30.5			0.7	
Alternative 9G	56.4			0.3	28.3			0.5		
Alternative 9H	61.0			0.5	30.1			0.7		
10	Proposed – Total Length	33.6				6.9			0.4	

Note: Mileages have been rounded to the nearest tenth of a mile; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} "t" indicates only a trace amount (<0.1 mile) crossed

^{2/} Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Table D.11-5. Acres of Construction Impacts for Federal ESA Wildlife Species with Available Quantitative Data

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Construction Impacts							
			Black-Footed Ferret	Canada Lynx	Columbia Spotted Frog	Greater Sage-Grouse	Grizzly Bear	Mountain Plover	Northern Leopard Frog	Yellow-Billed Cuckoo
1E	Proposed – Total Length	100.6				731		791	9	
	Proposed – Comparison portion for Alternative 1E-A	17.6				122		163	<1	
	Alternative 1E-A	16.1				58		88	2	
	Proposed – Comparison portion for Alternative 1E-B	37.9				301		350	3	
	Alternative 1E-B	59.3				496		556	4	
	Proposed – Comparison portion for Alternative 1E-C	75.4				588		607	9	
	Alternative 1E-C	48.7				231		236	3	
1W	1W(a) Proposed – Total Length	76.5				379		408	7	<1
	Proposed – Comparison portion for Alternative 1W-A	20.3				96		133	<1	
	Alternative 1W-A	16.2				48		90	2	
	1W(c) Proposed – Total Length	70.6				486		615	12	
2	Proposed – Total Length	96.7	232			1,390		1139	12	
	Proposed – Comparison portion for Alternative 2A	28.8				331		277	3	
	Alternative 2A	28.4				384		351	6	
	Proposed – Comparison portion for Alternative 2B	7.0				88		65	<1	
	Alternative 2B	6.2				59		69	5	
	Proposed – Comparison portion for Alternative 2C	28.4				331		233	2	
	Alternative 2C	24.4				316		202	<1	
3	Proposed – Total Length	56.5	222			694	611	737	14	
4	Proposed – Total Length	203.0	549	302	9	2,073	1949	1125	66	
	Proposed – Comparison portion for Alternatives 4A-4F	90.2	408	302	9	973	1085	605	16	
	Alternative 4A	85.2	328		52	1,020	1043	502	59	
	Alternative 4B	100.2	443		36	1,240	287	575	48	
	Alternative 4C	101.6	443		28	1,203	423	575	40	
	Alternative 4D	100.8	443		32	1,241	301	576	44	
	Alternative 4E	102.2	443		28	1,198	424	576	40	
5	Alternative 4F	87.5	321	121	35	1,004	1087	496	43	
	Proposed – Total Length	54.6				436			11	<1
	Proposed – Comparison portion for Alternatives 5A,B	25.3				194			5	<1
	Alternative 5A	33.7				291			<1	<1
	Alternative 5B	44.4				314			<1	<1
	Proposed – Comparison portion for Alternative 5C	33.2				263			4	
	Alternative 5C	26.1				231			5	1
	Proposed – Comparison portion for Alternative 5D	19.4				187			6	
Alternative 5D	17.5				96			6	9	
6	Proposed – Comparison portion for Alternative 5E	5.8				54			3	
	Alternative 5E	5.3				36			2	
6	Proposed – Total Length	0.5				42			2	

Note: Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} "t" indicates only a trace amount (<0.1 acre) of impact

Table D.11-5. Acres of Construction Impacts for Federal ESA Wildlife Species with Available Quantitative Data cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Construction Impacts							
			Black-Footed Ferret	Canada Lynx	Columbia Spotted Frog	Greater Sage-Grouse	Grizzly Bear	Mountain Plover	Northern Leopard Frog	Yellow-Billed Cuckoo
7	Proposed – Total Length	118.1				579			8	<1
	Proposed – Comparison portion for Alternatives 7A,B	35.2				139			4	t ^{1/}
	Alternative 7A	38.0				269			4	<1
	Alternative 7B	46.4				341			1	
	Proposed – Comparison portion for Alternative 7C	20.1				105			t ^{1/}	
	Alternative 7C	20.3				77				
	Proposed – Comparison portion for Alternative 7D	6.2				42			3	<1
	Alternative 7D	6.8				36			3	<1
	Proposed – Comparison portion for Alternative 7E	3.8				44				
	Alternative 7E	4.5				51				
	Proposed – Comparison portion for Alternative 7F	10.5				102			<1	
	Alternative 7F	10.8				121			t ^{1/}	
	Proposed – Comparison portion for Alternative 7G	3.1				28			t ^{1/}	
	Alternative 7G	3.2				12			<1	
	Proposed – Comparison portion for Alternatives 7H,I	118.1				579			8	<1
	Alternative 7H	127.5				1,346			9	t ^{1/}
Alternative 7I	173.4				1,658			15	6	
Proposed – Comparison portion 7/9 for Alternative 7J ^{2/}	143.9				805			9	<1	
Alternative 7J ^{2/}	202.1				2,110			16	t ^{1/}	
8	Proposed – Total Length	131.0			<1	1,174			6	<1
	Proposed – Comparison portion for Alternative 8A	51.4				472			3	<1
	Alternative 8A	53.6				404			2	<1
	Proposed – Comparison portion for Alternative 8B	45.3			<1	364			<1	
	Alternative 8B	45.8			7	287			8	<1
	Proposed – Comparison portion for Alternative 8C	6.5				61			<1	
	Alternative 8C	6.4				55			<1	
	Proposed – Comparison portion for Alternative 8D	6.9				43			t ^{1/}	
	Alternative 8D	8.1				43			t ^{1/}	
	Proposed – Comparison portion for Alternative 8E	7.0				34				
Alternative 8E	18.5			<1	170			t ^{1/}		
9	Proposed – Total Length	161.7			4	1,547			5	t ^{1/}
	Proposed – Comparison portion for Alternative 9A	7.8				64			<1	
	Alternative 9A	7.7				88			<1	
	Proposed – Comparison portion for Alternative 9B	49.5			t ^{1/}	580			<1	
	Alternative 9B	53.2				340			4	
	Proposed – Comparison portion for Alternative 9C	14.7				207			<1	
	Alternative 9C	15.3				146				
	Proposed – Comparison portion for Alternatives 9D-9H	57.2			4	451			4	
	Alternative 9D	58.4			<1	394			3	t ^{1/}
	Alternative 9E	68.7			2	711			2	
	Alternative 9F	62.9			5	442			9	t ^{1/}
Alternative 9G	56.4			<1	418			5	t ^{1/}	
Alternative 9H	61.0			5	445			10	t ^{1/}	
10	Proposed – Total Length	33.6				109			3	

Note: Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} "t" indicates only a trace amount (<0.1 acre) of impact

^{2/} Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Table D.11-7. Acres of Habitat Occupancy during Operations for Federal ESA Wildlife Species with Available Quantitative Data

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Operation Impacts							
			Black-Footed Ferret	Canada Lynx	Columbia Spotted Frog	Greater Sage-Grouse	Grizzly Bear	Mountain Plover	Northern Leopard Frog	Yellow-Billed Cuckoo
1E	Proposed – Total Length	100.6				186		192	2	
	Proposed – Comparison portion for Alternative 1E-A	17.6				29		37	t ^{1/}	
	Alternative 1E-A	16.1				18		27	<1	
	Proposed – Comparison portion for Alternative 1E-B	37.9				68		78	<1	
	Alternative 1E-B	59.3				109		116	<1	
	Proposed – Comparison portion for Alternative 1E-C	75.4				150		149	2	
1W	Alternative 1E-C	48.7				70		73	1	
	1W(a) Proposed – Total Length	76.5				119		120	2	<1
	Proposed – Comparison portion for Alternative 1W-A	20.3				22		28	<1	
	Alternative 1W-A	16.2				14		26	<1	
2	1W(c) Proposed – Total Length	70.6				95		98	2	
	Proposed – Total Length	96.7	39			365		307	4	
	Proposed – Comparison portion for Alternative 2A	28.8				63		52	<1	
	Alternative 2A	28.4				78		68	1	
	Proposed – Comparison portion for Alternative 2B	7.0				14		11	t ^{1/}	
	Alternative 2B	6.2				14		16	<1	
3	Proposed – Comparison portion for Alternative 2C	28.4				69		49	<1	
	Alternative 2C	24.4				51		32	t ^{1/}	
4	Proposed – Total Length	56.5	52			184	162	188	2	
	Proposed – Total Length	203.0	113	233	2	486	449	260	14	
	Proposed – Comparison portion for Alternatives 4A-4F	90.2	85	233	2	203	232	119	3	
	Alternative 4A	85.2	72		6	232	234	109	7	
	Alternative 4B	100.2	111		3	295	64	139	4	
	Alternative 4C	101.6	111		2	284	90	139	3	
	Alternative 4D	100.8	111		3	297	65	139	5	
	Alternative 4E	102.2	111		2	283	90	139	4	
5	Alternative 4F	87.5	72	91	3	227	246	109	4	
	Proposed – Total Length	54.6				100			2	<1
	Proposed – Comparison portion for Alternatives 5A,B	25.3				34			<1	<1
	Alternative 5A	33.7				44			<1	<1
	Alternative 5B	44.4				50			<1	<1
	Proposed – Comparison portion for Alternative 5C	33.2				42			<1	
	Alternative 5C	26.1				30			<1	1
	Proposed – Comparison portion for Alternative 5D	19.4				35			2	
Alternative 5D	17.5				23			2	8	
6	Proposed – Comparison portion for Alternative 5E	5.8				17			1	
	Alternative 5E	5.3				16			1	
6	Proposed – Total Length	0.5				39			2	

Note: Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} "t" indicates only a trace amount (<0.1 acre) of occupancy

Table D.11-7. Acres of Habitat Occupancy during Operations for Federal ESA Wildlife Species with Available Quantitative Data cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Operation Impacts							
			Black-Footed Ferret	Canada Lynx	Columbia Spotted Frog	Greater Sage-Grouse	Grizzly Bear	Mountain Plover	Northern Leopard Frog	Yellow-Billed Cuckoo
7	Proposed – Total Length	118.1				96			<1	t ^{1/}
	Proposed – Comparison portion for Alternatives 7A,B	35.2				14			<1	t ^{1/}
	Alternative 7A	38.0				44			<1	<1
	Alternative 7B	46.4				51			<1	
	Proposed – Comparison portion for Alternative 7C	20.1				14			t ^{1/}	
	Alternative 7C	20.3				8				
	Proposed – Comparison portion for Alternative 7D	6.2				4			t ^{1/}	t ^{1/}
	Alternative 7D	6.8				4			t ^{1/}	t ^{1/}
	Proposed – Comparison portion for Alternative 7E	3.8				4				
	Alternative 7E	4.5				7				
	Proposed – Comparison portion for Alternative 7F	10.5				13			t ^{1/}	
	Alternative 7F	10.8				15			t ^{1/}	
	Proposed – Comparison portion for Alternative 7G	3.1				3			t ^{1/}	
	Alternative 7G	3.2				0			t ^{1/}	
	Proposed – Comparison portion for Alternatives 7H,I	118.1				96			<1	t ^{1/}
Alternative 7H	127.5				227			1	t ^{1/}	
Alternative 7I	173.4				291			2	5	
Proposed – Comparison portion 7/9 for Alternative 7J ^{2/}	143.9				126			<1	t ^{1/}	
Alternative 7J ^{2/}	202.1				355			2	t ^{1/}	
8	Proposed – Total Length	131.0			t ^{1/}	144			<1	<1
	Proposed – Comparison portion for Alternative 8A	51.4				65			<1	<1
	Alternative 8A	53.6				59			<1	t ^{1/}
	Proposed – Comparison portion for Alternative 8B	45.3			t ^{1/}	44			<1	
	Alternative 8B	45.8			t ^{1/}	34			<1	<1
	Proposed – Comparison portion for Alternative 8C	6.5				9			t ^{1/}	
	Alternative 8C	6.4				8			t ^{1/}	
	Proposed – Comparison portion for Alternative 8D	6.9				7				
	Alternative 8D	8.1				4				
Proposed – Comparison portion for Alternative 8E	7.0				4					
Alternative 8E	18.5				14					
9	Proposed – Total Length	161.7			<1	209			1	t ^{1/}
	Proposed – Comparison portion for Alternative 9A	7.8				7			t ^{1/}	
	Alternative 9A	7.7				10			<1	
	Proposed – Comparison portion for Alternative 9B	49.5				84			t ^{1/}	
	Alternative 9B	53.2				40			<1	
	Proposed – Comparison portion for Alternative 9C	14.7				24				
	Alternative 9C	15.3				18				
	Proposed – Comparison portion for Alternatives 9D-9H	57.2			<1	54			<1	
	Alternative 9D	58.4				38			t ^{1/}	t ^{1/}
	Alternative 9E	68.7			<1	86			<1	
Alternative 9F	62.9			<1	44			<1	t ^{1/}	
Alternative 9G	56.4			<1	39			<1	t ^{1/}	
Alternative 9H	61.0			<1	45			<1	t ^{1/}	
10	Proposed – Total Length	33.6				27			<1	

Note: Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} "t" indicates only a trace amount (<0.1 acre) of occupancy

^{2/} Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Table D.11-9. Number of Greater Sage-Grouse Leks within Specified Distances from Route Centerlines

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Buffer Distance and Active Status														
			0.25-mile Buffer		0.6-mile Buffer		1-mile Buffer		2-mile Buffer		3-mile Buffer		4-mile Buffer		11-mile Buffer		
			Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	
1E	Proposed – Total Length	100.6			1		1	3	5	3	8	3	11	5	55	9	
	Proposed – Comparison portion for Alternative 1E-A	17.6					1		2	2	2	2	3	2	13	3	
	Alternative 1E-A	16.1							1	2	3	2	3	2	12	3	
	Proposed – Comparison portion for Alternative 1E-B	37.9					1	1	3	1	5	1	6	2	23	5	
	Alternative 1E-B	59.3								2	2	1	2	3	3	26	7
	Proposed – Comparison portion for Alternative 1E-C	75.4					1	1	3	1	6	1	8	3	46	8	
Alternative 1E-C	48.7							2		4		6		35	5		
1W	1W(a) Proposed – Total Length	76.5			1		1	1	4	2	5	2	10	2	45	7	
	Proposed – Comparison portion for Alternative 1W-A	20.3					1		2	2	2	2	3	2	15	4	
	Alternative 1W-A	16.2							1	2	3	2	3	2	12	3	
	1W(c) Proposed – Total Length	70.6					1		2	2	7	2	10	2	40	6	
2	Proposed – Total Length	96.7			1		8		21		29	1	38	2	137	10	
	Proposed – Comparison portion for Alternative 2A	28.8					4		9		12	1	14	2	55	8	
	Alternative 2A	28.4			1		2		6	1	8	2	13	2	56	7	
	Proposed – Comparison portion for Alternative 2B	7.0									1		2		25	2	
	Alternative 2B	6.2									1		2		25	2	
	Proposed – Comparison portion for Alternative 2C	28.4					4		11		15	1	19	2	45	9	
	Alternative 2C	24.4						2	3	2	9	4	12	4	38	9	
3	Proposed – Total Length	56.5						1		3		4		62	3		
4	Proposed – Total Length	203.0			1		5	2	14	5	26	5	32	6	89	20	
	Proposed – Comparison portion for Alternatives 4A-4F	90.2			1		4		12	1	21	1	25	3	62	14	
	Alternative 4A	85.2			2	1	4	1	11	5	17	5	20	8	68	19	
	Alternative 4B	100.2			1		2		12		23	1	30	5	75	19	
	Alternative 4C	101.6			1		1		15		26	2	33	5	75	19	
	Alternative 4D	100.8			1		1		13		20	1	25	5	75	19	
	Alternative 4E	102.2							16		23	2	28	5	75	19	
	Alternative 4F	87.5			2	1	6	1	11	4	21	4	23	7	66	19	
5	Proposed – Total Length	54.6	1		1		1		1		1		1		2	3	
	Proposed – Comparison portion for Alternatives 5A,B	25.3	1		1		1		1		1		1		2	2	
	Alternative 5A	33.7									1		1	1	4	7	
	Alternative 5B	44.4								1		3	2	4	11	12	
	Proposed – Comparison portion for Alternative 5C	33.2	1		1		1		1		1		1		2	2	
	Alternative 5C	26.1											1		1	1	
	Proposed – Comparison portion for Alternative 5D	19.4													1		
	Alternative 5D	17.5													1		
6	Proposed – Total Length	0.5														7	

^{1/} Refers to leks that have been defined as occupied in Wyoming and Idaho, and all leks in Nevada

Table D.11-9. Number of Greater Sage-Grouse Leks within Specified Distances from Route Centerlines cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Buffer Distance and Active Status													
			0.25-mile Buffer		0.6-mile Buffer		1-mile Buffer		2-mile Buffer		3-mile Buffer		4-mile Buffer		11-mile Buffer	
			Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined	Occupied ^{1/}	Undetermined
7	Proposed – Total Length	118.1			2		2	3	3	3	4	7	6	10	39	31
	Proposed – Comparison portion for Alternatives 7A,B	35.2			1		1		1		1		1	1	2	4
	Alternative 7A	38.0							1		1		1	2	4	10
	Alternative 7B	46.4							1	2	2	4	2	7	14	14
	Proposed – Comparison portion for Alternative 7C	20.1								1		1	1	2	4	7
	Alternative 7C	20.3								2		2	1	2	4	7
	Proposed – Comparison portion for Alternative 7D	6.2									1	4	3	5	5	6
	Alternative 7D	6.8									1	4	3	5	5	6
	Proposed – Comparison portion for Alternative 7E	3.8					2		2		2	3		3	7	7
	Alternative 7E	4.5					2		2		3	3		3	7	8
	Proposed – Comparison portion for Alternative 7F	10.5						2	2		2	3		3	8	8
	Alternative 7F	10.8		1		1		2		3		3		3	9	8
	Proposed – Comparison portion for Alternative 7G	3.1							1		1	1	1	2	27	17
	Alternative 7G	3.2							1		1	1	1	2	27	17
	Proposed – Comparison portion for Alternatives 7H,I	118.1			2		2	3	3	3	4	7	6	10	39	31
Alternative 7H	127.5			2		4	3	11	13	15	23	21	27	87	57	
Alternative 7I	173.4					1	11	7	28	16	43	35	57	130	119	
Proposed – Comparison portion 7/9 for Alternative 7J ^{2/}	143.8			2		2	3	3	4	4	8	9	14	73	61	
Alternative 7J ^{2/}	202.1	4	1	5	3	17	16	33	35	45	51	73	76	238	203	
8	Proposed – Total Length	131.0								1	3	1	7	17	39	
	Proposed – Comparison portion for Alternative 8A	51.4								1	1	1	6	12	31	
	Alternative 8A	53.6										1	2	1	20	
	Proposed – Comparison portion for Alternative 8B	45.3												2	5	
	Alternative 8B	45.8												1	5	
	Proposed – Comparison portion for Alternative 8C	6.5														
	Alternative 8C	6.4														
	Proposed – Comparison portion for Alternative 8D	6.9														
	Alternative 8D	8.1														
	Proposed – Comparison portion for Alternative 8E	7.0													1	1
Alternative 8E	18.5													1	2	
9	Proposed – Total Length	161.7			1		1	1	2	1	7	7	13	53	69	
	Proposed – Comparison portion for Alternative 9A	7.8											1	22	8	
	Alternative 9A	7.7											1	22	8	
	Proposed – Comparison portion for Alternative 9B	49.5						1		1	1	2	4	11	22	
	Alternative 9B	53.2										1		7	16	
	Proposed – Comparison portion for Alternative 9C	14.7							1		1	2	3	10	21	
	Alternative 9C	15.3										1	1	8	21	
	Proposed – Comparison portion for Alternatives 9D-9H	57.2			1		1		1		3	1	5	13	22	
	Alternative 9D	58.4										1	1	3	6	
	Alternative 9E	68.7					2	2	5	7	8	14	9	18	15	28
	Alternative 9F	62.9											1	1	4	6
Alternative 9G	56.4											1	1	3	8	
Alternative 9H	61.0											1	1	4	8	
10	Proposed – Total Length	33.6		1		2		3		5		8	1	9	24	26

^{1/} Refers to leks that have been defined as occupied in Wyoming and Idaho, and all leks in Nevada

^{2/} Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Table D.11-11. Miles of Agency Designated Greater Sage-Grouse Habitat Crossed by the Route Centerlines

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Core Areas Crossed	Key Areas Crossed	R1 Habitats Crossed	R2 Habitats Crossed	R3 Habitats Crossed
1E	Proposed – Total Length	100.6	37.2				
	Proposed – Comparison portion for Alternative 1E-A	17.6	8.9				
	Alternative 1E-A	16.1	0.5				
	Proposed – Comparison portion for Alternative 1E-B	37.9	15.4				
	Alternative 1E-B	59.3					
	Proposed – Comparison portion for Alternative 1E-C	75.4	20.8				
	Alternative 1E-C	48.7	17.8				
1W	1W(a) Proposed – Total Length	76.5	34.0				
	Proposed – Comparison portion for Alternative 1W-A	20.3	8.5				
	Alternative 1W-A	16.2	0.7				
	1W(c) Proposed – Total Length	70.6	24.8				
2	Proposed – Total Length	96.7	44.5				
	Proposed – Comparison portion for Alternative 2A	28.8	14.9				
	Alternative 2A	28.4	16.8				
	Proposed – Comparison portion for Alternative 2B	7.0					
	Alternative 2B	6.2					
	Proposed – Comparison portion for Alternative 2C	28.4	27.7				
	Alternative 2C	24.4	24.1				
3	Proposed – Total Length	56.5					
4	Proposed – Total Length	203.0	43.8	14.2			
	Proposed – Comparison portion for Alternatives 4A-4F	90.2	31.9	2.6			
	Alternative 4A	85.2	28.4	2.6			
	Alternative 4B	100.2	44.0	4.9	0.3		
	Alternative 4C	101.6	56.4	4.9	0.3		
	Alternative 4D	100.8	44.6	4.9	0.3		
	Alternative 4E	102.2	57.0	4.9	0.3		
	Alternative 4F	87.5	27.0	2.6			
5	Proposed – Total Length	54.6					
	Proposed – Comparison portion for Alternatives 5A,B	25.3					
	Alternative 5A	33.7		2.9			
	Alternative 5B	44.4		9.1	0.8		
	Proposed – Comparison portion for Alternative 5C	33.2					
	Alternative 5C	26.1					
	Proposed – Comparison portion for Alternative 5D	19.4					
	Alternative 5D	17.5					
	Proposed – Comparison portion for Alternative 5E	5.8					
Alternative 5E	5.3						
6	Proposed – Total Length	0.5			0.3		

Note: Mileages have been rounded to the nearest tenth of a mile; therefore, numbers are inexact and columns/rows may not sum exactly

Table D.11-11. Miles of Agency Designated Greater Sage-Grouse Habitat Crossed by the Route Centerlines cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Core Areas Crossed	Key Areas Crossed	R1 Habitats Crossed	R2 Habitats Crossed	R3 Habitats Crossed
7	Proposed – Total Length	118.1		11.9	16.5		5.1
	Proposed – Comparison portion for Alternatives 7A,B	35.2					
	Alternative 7A	38.0		4.6			
	Alternative 7B	46.4		7.9	1.1		
	Proposed – Comparison portion for Alternative 7C	20.1		0.2	11.0		
	Alternative 7C	20.3			11.0		
	Proposed – Comparison portion for Alternative 7D	6.2		1.7	3.2		0.3
	Alternative 7D	6.8		2.5	1.7		0.3
	Proposed – Comparison portion for Alternative 7E	3.8		3.0	0.6		
	Alternative 7E	4.5		3.2			1.3
	Proposed – Comparison portion for Alternative 7F	10.5		5.1			1.4
	Alternative 7F	10.8		3.3			2.0
	Proposed – Comparison portion for Alternative 7G	3.1		3.1			
	Alternative 7G	3.2		3.2			
	Proposed – Comparison portion for Alternatives 7H,I	118.1		11.9	16.5		5.1
	Alternative 7H	127.5		41.1	26.7		9.2
Alternative 7I	173.4		67.8	41.5	1.8	14.2	
Proposed – Comparison portion 7/9 for Alternative 7J ^{1/}	143.8		16.8	17.7		5.1	
Alternative 7J ^{1/}	202.1		73.0	49.3	1.8	14.2	
8	Proposed – Total Length	131.0		13.2	21.2	11.3	
	Proposed – Comparison portion for Alternative 8A	51.4		6.0	20.4	8.7	
	Alternative 8A	53.6			15.6	5.7	
	Proposed – Comparison portion for Alternative 8B	45.3					
	Alternative 8B	45.8					
	Proposed – Comparison portion for Alternative 8C	6.5					
	Alternative 8C	6.4					
	Proposed – Comparison portion for Alternative 8D	6.9					
	Alternative 8D	8.1					
	Proposed – Comparison portion for Alternative 8E	7.0					
Alternative 8E	18.5						
9	Proposed – Total Length	161.7		11.5	10.0		
	Proposed – Comparison portion for Alternative 9A	7.8		0.2			
	Alternative 9A	7.7		2.2			
	Proposed – Comparison portion for Alternative 9B	49.5		6.6	8.7		
	Alternative 9B	53.2					
	Proposed – Comparison portion for Alternative 9C	14.7		5.3	8.6		
	Alternative 9C	15.3			0.9		
	Proposed – Comparison portion for Alternatives 9D-9H	57.2					
	Alternative 9D	58.4					
	Alternative 9E	68.7		18.2	6.9	15.2	
	Alternative 9F	62.9					
Alternative 9G	56.4						
Alternative 9H	61.0						
10	Proposed – Total Length	33.6		0.1	6.1	5.9	

Note: Mileages have been rounded to the nearest tenth of a mile; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles)

Table D.11-12. Acres of Two Single-Circuit Construction Impacts to ESA Wildlife Species with Available Quantitative Data, due to Construction of the Design Alternative

Segment Number ^{1/}	Proposed or Alternative Name	Segment Length (Miles)	Acres of Habitat Impacted by Construction							
			Black-Footed Ferret	Canada Lynx	Columbia Spotted Frog	Greater Sage-Grouse	Grizzly Bear	Mountain Plover	Northern Leopard Frog	Yellow-Billed Cuckoo
2	Proposed – Total Length	96.7	311			1786		1505	13	
	Proposed – Comparison portion for Alternative 2A	28.8			442		372	4		
	Alternative 2A	28.4			494		456	16		
	Proposed – Comparison portion for Alternative 2B	7.0			125		87	<1		
	Alternative 2B	6.2			83		92	15		
	Proposed – Comparison portion for Alternative 2C	28.4			442		333	2		
	Alternative 2C	24.4			410		269	<1		
3	Proposed –Total Length	56.5	286			858	756	938	17	
4	Proposed –Total Length	203.0	713	368	11	2675	2521	1526	90	
	Proposed – Comparison portion for Alternatives 4A-4F	90.2	529	368	11	1249	1397	819	31	
	Alternative 4A	85.2	425		56	1348	1366	683	77	
	Alternative 4B	100.2	574		38	1636	366	753	65	
	Alternative 4C	101.6	574		30	1563	557	753	57	
	Alternative 4D	100.8	574		33	1625	382	754	60	
	Alternative 4E	102.2	573		30	1547	558	754	56	
Alternative 4F	87.5	417	150	38	1324	1417	676	59		

Note: Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

^{1/} Only segments crossing habitats for federally-listed species are listed in this table

**Mitigation Information contained in the
Gateway West Transmission Line Project
Draft Environmental Impact Statement**

Includes:

Chapter 2, Pages 2-163 to 2-164, Table 2.7-1
Appendix C-5

This page intentionally left blank

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Columbia spotted frog	
Proponent Proposed EPMS	
	None proposed
Agency Proposed Mitigation Measures	
TESWL-1	See the description under TES Wildlife above
Yellow billed cuckoo	
Proponent Proposed EPMS	
	None proposed
Agency Proposed Mitigation Measures	
TESWL-13	A pre-construction survey for the yellow-billed cuckoo must be conducted at any proposed crossing of suitable habitat. If these birds are detected within 1 mile of the centerline (within existing habitat), construction must not occur until the young have fledged or the nest is abandoned. The crossing-specific plan must contain proposed monitoring measures to assure compliance with this measure.
Midget faded rattlesnake	
Proponent Proposed EPMS	
	None proposed
Agency Proposed Mitigation Measures	
TESWL-18	Pre-construction surveys for occupied or potential midget faded rattlesnake hibernacula (i.e., rock outcrops with south to east aspect) will be conducted.
Sage-Grouse	
Proponent Proposed EPMS	
PAC-7	All greater sage-grouse leks determined to be within 1 mile of the centerline of the Project would be surveyed using protocols, which have been approved by federal and state agencies, during the breeding season immediately prior to construction to determine whether the lek is active. The Proponents will provide survey results to the appropriate land management agency.
PAC-8	There would be no construction activities through Idaho's key and restoration greater sage-grouse habitats and Wyoming's core habitats within 1 mile of active leks from March 1 to May 15 between 6 p.m. and 9 a.m. Off-limit areas would be marked so that workers in the area are aware of these sensitive areas.
PAC-9	If no lek activity has been observed by April 25, construction activities may proceed.
PAC-10	Surface disturbance would be prohibited year-round within 0.25 mile of previously documented leks.
PAC-11	Notification would also be placed in areas frequented by on-site personnel (such as break rooms) to advertise the importance of complying with these restrictions.
PAC-12	Temporal and spatial restrictions do not apply when lek or nesting and brood rearing habitat is separated from Project activities by other forms of human disturbance (e.g., agriculture, highways) or by line of sight barriers.
Agency Proposed Mitigation Measures	
TESWL-14	Surface disturbance shall be avoided within 0.6 to 4 miles of occupied or undetermined greater sage-grouse leks from March 15 to July 15 in all portions of the Project except for Nevada. In Nevada, surface disturbance shall be avoided within view of or within 0.3 mile of all leks from March 1 to May 15; and within areas designated by Nevada as greater sage-grouse brood rearing areas from May 15 to August 15..
TESWL-15	There shall be no surface occupancy (NSO) within 0.6 mile of the perimeter of occupied greater sage-grouse leks. "No surface occupancy," as used here, means no surface facilities, including roads, shall be placed within the NSO area. Other activities may be authorized with the application of appropriate seasonal stipulations, provided the resource's protected area is not adversely affected.
TESWL-16	Requests for exceptions from greater sage-grouse closure periods and areas must be submitted by the Proponents to the appropriate land management agency office in which the exception is requested. Established exception processes on federally-managed lands must be followed (See WILD-1).

2-163

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
TESWL-19	There shall be no surface disturbances within areas designated as Winter Concentration Areas for the greater sage-grouse from November 1 through March 15.
TESWL-22	No structures that require guy wires would be used in occupied sagebrush obligate habitats within the area managed under the Kemmerer RMP.
TESWL-23	If the Kemmerer RMP is amended to allow Alternatives 4A, 4C, 4E, or 4F to be selected, existing fences within 1 mile of the portion of the Gateway West Project located on lands managed by the Kemmerer RMP shall be modified with FireFly Grouse Flight diverters (or a similar product) in order to prevent greater sage-grouse mortalities. Additional site-specific reclamation, such as transplanting sagebrush seedlings within previous disturbed habitats, may also be required to off-set the net loss of sagebrush habitats within the Rock Creek/Tunp management area.
Colorado River T&E Fishes	
Agency Proposed Measures Adopted by the Proponents	
TESWL-17	A payment of a one-time fee, based on a fee schedule provided by the USFWS, shall be made based on the amount of water used during construction of any segments that cross the Colorado River system.
MINERALS	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
MN-1	A geotechnical investigation will be conducted by the Proponents in areas where abandoned underground mines are known to occur to determine the presence of methane and the likelihood of subsidence.
MN-2	An accounting of damages will be conducted by the Proponents to current operators to determine the potential loss of mineral resources. There may be mining claims under the 1872 Mining Law that would have precedence over the Project. Similarly, federal and state mineral lease agreements provide rights to lessees that could interfere with the Gateway West Project. The Proponents will resolve mineral claim and lease agreements prior to Project initiation, as with site access agreements on private property.
PALEONTOLOGICAL RESOURCES	
Proponent Proposed EPMs	
CUL-1-3	[See description under Cultural Resources]
CUL-9	If significant fossil materials are discovered during Project construction, all surface-disturbing activities in the vicinity of the find will cease until notification to proceed is given by the authorized officer. The site will be protected to reduce the risk of damage to fossils and context. Appropriate measures to mitigate adverse effects to significant paleontological resources will be determined by the authorized officer.
Agency Proposed Mitigation Measures	
PALEO-1	The Proponents shall prepare a Paleontological Monitoring Plan for the Project, focusing on Segments 4, 7, 8, and 9 where the potential for adverse impacts is the greatest. This plan shall be submitted to appropriate agencies for review and approval prior to commencing construction. The plan should specify that: <ul style="list-style-type: none"> • Monitoring of excavation and grading in sensitive sediments, especially access roads and tower sites, must occur when construction is near or in those geologic formations. • Monitoring of excavations in sensitive sediments, screening the excavated spoils, and processing of bulk sediment samples for microvertebrate fossils must occur where there is a significant potential for data recovery from those spoils. • Monitoring must be performed by a qualified paleontologist and in consultation with a designated paleontologist in each state, NF, or BLM district. The Authorized Officer will designate the appropriate paleontologist depending on project location.
PALEO-3	Areas with Fossil Potential Classification sensitivity rankings of 3, 4, or 5 on NFS lands will be surveyed and posted.
Agency Proposed Mitigation Measures Adopted by the Proponents	
PALEO-2	Where fossil-bearing sediments are exposed by construction, the sediments must be covered with a 4-inch layer of soil where feasible to reduce unauthorized removal or disturbance of resources.

2-164

**Appendix C-5
Greater Sage-grouse Avoidance, Minimization, and Mitigation
Measures**

**(submitted to BLM by Idaho Power and Rocky Mountain Power
February 2009)**

Greater Sage-grouse Avoidance, Minimization, and Mitigation Measures: Gateway West Transmission Line Project

Contents

1.0 Introduction.....	1
1.1 Existing Greater Sage-grouse Plans and Conservation Direction.....	2
1.1.1 State and Local Working Group Plans.....	2
1.1.2 BLM Resource Management Plans	7
1.1.3 State of Wyoming Governor’s Order.....	7
1.2 Idaho Power GIS Analysis.....	8
2.0 Avoidance and Minimization Measures	10
2.1 Routing and Siting	10
2.2 Conformance with State-wide Plans.....	11
2.4 Temporal and Spatial Restrictions	13
3.0. Mitigation.....	14
4.0 References.....	18
Appendix A. Greater Sage-grouse Temporal and Spatial Restrictions by Bureau of Land Management Field Office	19

1.0 Introduction

This plan and its attached figures and tables are provided as a supplement to the August 2008 *Revised Plan of Development* (POD) for the Gateway West Transmission Line Project (Project). Idaho Power Company and Rocky Mountain Power (Companies) have developed this plan to identify:

- Specific measures that were applied during the development of the proposed corridor and route to avoid potential impacts to greater sage-grouse and their habitat¹;
- Environmental protection measures (EPM) that the Companies have incorporated into the Project description that will minimize impacts to greater sage-grouse and their habitat; and
- Mitigation measures the Companies will implement to mitigate for adverse impacts to greater sage-grouse habitat.

This plan also describes how the proposed corridor and avoidance and mitigation measures comply with, and differ from, state-wide sage-grouse conservation plan and Bureau of Land Management (BLM) resource management plan (RMP) protection measures. Where they are available and where appropriate, local working group (LWG) plan measures are also incorporated into this plan.

¹ For purposes of this document, sage-grouse habitat is defined as those areas designated in Idaho’s state-wide plan and core areas designated by the State of Wyoming. For Idaho, mapped sage-grouse habitats include key areas (K) and restoration areas (R1, R2, and R3). For Wyoming, mapped sage-grouse habitat includes the following core breeding areas (Version 2; 08/15/2008): East of Casper, Alcova, Hanna, NE Baggs, South Pass, Little America, and Sage.

The overall goal for this plan and all of the Companies' EPMs is to allow for fiscally responsible and timely construction, operation, and maintenance of the Project while avoiding, minimizing, or mitigating impacts to greater sage-grouse and their habitat.

Identification of protection and mitigation measures is based on threats and conservation issues identified in state conservation plans, existing literature, and Idaho Power's geographic information system (GIS) analysis of existing greater sage-grouse lek and transmission line data.

In response to this plan, the Companies anticipate that the BLM Interdisciplinary (ID) Team and cooperating agencies will:

- Consider the proposed measures when determining if the Project will impact greater sage-grouse and their habitat and the level of significance of the impact; and
- Consider the Companies need to construct the Project in a timely and fiscally responsible manner.

1.1 Existing Greater Sage-grouse Plans and Conservation Direction

1.1.1 State and Local Working Group Plans

Idaho and Wyoming have developed state-wide conservation plans for the greater sage-grouse (Idaho Sage-grouse Advisory Committee. 2006. and Wyoming Greater Sage-grouse Conservation Plan. June 2003.). Key issues, concerns, and mitigation measures are summarized below. Local working group (LWG) plans are also incorporated where available and applicable. How the Project's POD conforms with or deviates from the guidelines is presented in italics after the guideline.

1.1.1.1 CONSERVATION PLAN FOR THE GREATER SAGE-GROUSE IN IDAHO

The Idaho state-wide plan identifies the following management guidelines for power lines:

1. Use of guywires should be avoided.
The proposed steel lattice structures are self-supporting and will not require a guy wire. The proposed H-frame steel structures are not expected to require guy wires, but guy wires may be necessary in very limited situations (e.g., steep topography).
2. Where existing utility lines, including smaller power distribution lines, telephone lines, or wireless communication towers are known to be causing adverse impacts locally, or where such impacts are likely, LWGs and/or land-management agencies should work closely with power companies and related entities in assessing problem areas and developing creative solutions.
The Companies have not implemented measures to address this since we are only proposing distribution lines to the substations and regeneration sites. These lines will traverse short distances and are not expected to cause adverse impacts.

3. New above ground major power transmission lines should be sited in a manner that avoids sage-grouse habitat to the extent possible, or they should be buried.
Refer to Section 2.1 for a detailed discussion of the measures that were implemented during development of the proposed corridor to avoid and minimize impacts to sage-grouse.

While the technologies are emerging for placing 500kV underground, the following disadvantages significantly outweigh the advantages:

- **Limited experience** – *Very little experience exists worldwide, let alone in the US for 500kV underground transmission.*
- **Less capacity and lengthy repairs** – *Underground cables carry far less capacity than overhead lines and when repairs are needed, greater time constraints are required to find, excavate and fix the problems.*
- **More equipment** – *Typically, more aboveground substations are required for underground lines.*
- **Environmental impact** – *Underground transmission lines require large excavations through all habitat types. The right-of-way needs to remain free of all types of woody vegetation to prevent interference to the underground lines from tree roots. Underground systems tend to be less reliable than overhead installations due to a variety of environmental factors. These can include conductor heat buildup, underground water, and even attacks from bacteria. Road right-of-ways also need to be maintained for maintenance and repair.*
- **Cost** – *Estimates vary widely, but the literature indicates costs could be as much as 10 to 20 times the cost of overhead transmission lines.*

4. New smaller distribution lines should be buried or sited as far as possible, preferably at least 3.2 km from occupied leks and other important sage-grouse seasonal habitats as determined locally.

The Companies are only proposing distribution lines to the substations and regeneration sites. The same criteria used during routing of the transmission line will be used during routing of the distribution lines. Lek buffers of 0.25 miles will be avoided and the Companies will attempt to avoid lek buffers of 0.65 miles.

5. The placement of raptor perch deterrents on power poles and other structures, such as telephone poles, should be considered on a site-specific basis in areas where population impacts from raptors and ravens is likely or is a documented problem.
To eliminate perching, all potential perching surfaces must have effective deterrents. There are currently no commercially available perch guards designed to keep raptors off an entire structure. Thus, perch deterrents reduce the number of birds perching, but do not completely eliminate perching (HawkWatch 2008, Lammers and Collopy 2007). The use of perch deterrents is not practicable on steel lattice structures. The Companies have also not proposed the use of perch deterrents on other structure types because the majority of the route is adjacent to other utilities and perch sites are not limited. This is consistent with HawkWatch (2008) which suggests that deterrent devices may be most

appropriate in extremely perch-limited (both natural and human-supplied) areas or to reduce use of specific pole perches in close proximity to a sage-grouse lek.

Two areas of concern in adding perch deterrents are 1) the lifespan of perch deterrents and 2) the increased safety risk associated with the addition of perch deterrents. Many of the products become brittle in the sunlight and break or can become contaminated and cause outages. Therefore, they require frequent maintenance. Transmission system configurations and loading often do not accommodate taking lines out of service for maintenance, therefore, maintenance personnel are often required to do cross arm and pole replacements with lines energized. This work, by nature, is extremely sensitive and requires high levels of skill and training. The introduction of additional attachments to structures complicates maintenance efforts and exposes personnel to a higher degree of risk. The normal maintenance process requires the attachment of lifting and stabilizing devices to unobstructed portions of the structure. Placement of these devices is dependent on load centers of gravity, required clearances from energized parts, and necessary component movements. Anything that restricts or prevents the proper placement or operation of these stabilizing devices has the potential to cause serious personnel injury or death. Crews will be required to remove or attempt to work around the deterrents, adding cost and risk to the job.

6. Utility companies should ensure access roads, rights-of-ways and disturbed areas associated with their facilities are managed in a manner that restores disturbed areas to perennial vegetative cover, and controls the spread of noxious weeds and invasive plant species. Coordinate with land-management agencies and others in selecting the most appropriate plant species. Consider the use of fire-resistant species in high fire frequency/cheatgrass areas. Encourage companies to participate in Coordinated Weed Management Areas. LWGs may be of assistance in helping to identify particular problem areas.

As described in Section 2.3, the Companies EPMs will address revegetation of disturbed areas, use of fire resistant species, and noxious weed control.

7. Inspections, maintenance work, and related human activities at or near (1 km or 0.6 miles) **occupied** leks that results in, or will likely result in, disturbance to lekking birds should be avoided from approximately 6PM to 9AM. Utility companies should work closely with Idaho Department of Fish and Game (IDFG), land management agencies and landowners in scheduling such activities to minimize disturbance. In general this guideline should be applied annually from approximately March 15 to May 1 in lower elevation, and March 25 to May 15 in higher elevations.

Section 2.4 describes the temporal and spatial measures the Companies have committed to implement.

Not all sage-grouse planning areas in Idaho have LWGs, and of those areas within the Project area that do have a LWG, only the Owyhee and Jarbidge LWGs have completed plans. The state-wide plan identifies threats on a broad scale and proposes measures that the LWG can use on a finer scale. The expectation is that where a LWG plan exists, it will be used for specific

guidance and the state-wide plan will be used when the LWG plan is silent on an issue or concern.

The Owyhee and Jarbidge sage-grouse conservation plans do not identify conservation measures specific to electric lines. The plans do identify the need for invasive and noxious weed control, habitat improvement, and predator control as tools to increase sage-grouse habitat and populations.

1.1.1.2 WYOMING GREATER SAGE-GROUSE CONSERVATION PLANS

The Wyoming state-wide plan identifies the following management guidelines for powerlines:

1. Avoid construction of overhead lines and other perch sites in occupied greater sage-grouse habitat. Where these structures must be built, or presently exist, bury the lines, locate along existing utility corridors or modify the structures to prevent perching raptors, where possible.

The Companies did consider greater sage-grouse habitat, lek locations and buffers, and existing utility corridors when developing routes (see Section 2.1). Please refer to Section 1.1.1.1 for a more detailed discussion of perch deterrents and the feasibility of placing the line underground.

2. Control dust from roads.

As described in Section 2.3, the Companies EPMs will address dust from roads and long-term BMPs.

LWG plans within Wyoming identified the following management guidelines:

Bates Hole/Shirley Basin Greater Sage-Grouse Conservation Plan

- Where possible, use the same corridor for all roads, pipelines and power lines. *The Companies utilized, to the extent practicable, the designated West-Wide energy Corridors and other existing corridors.*
- Raptor-proof power poles within 0.5 miles of any greater sage-grouse lek to prevent raptors from perching on the poles. *Please refer to Section 1.1.1.1 for a more detailed discussion of perch deterrents. In addition to the information presented in Section 1.1.1.1 regarding perch deterrents, it is stated in the Southwest Wyoming Sage-grouse Conservation Assessment and Plan that “more research needs to be done to determine effectiveness of anti-perch devices...” This suggests that perch deterrents may not be as effective as perceived and that other methods of mitigation may be appropriate.*
- Locate power line in areas to minimize potential avian collisions. Potential modifications include burying the lines, avoiding areas of high avian use (for example, wetlands, prairie dog towns, and grouse leks), and increasing the visibility of individual conductors.

Please refer to Section 1.1.1.1 for discussion regarding feasibility of placing the line underground. Refer to Section 2.1 for a detailed discussion of the measures that were implemented during development of the proposed corridor to avoid and minimize impacts to sage-grouse and other sensitive areas.

- When power lines are necessary within 3.4 miles of greater sage-grouse leks install underground power lines where feasible to minimize raptor perching/predation and collisions. Where practical, locate aboveground power lines at least 3.4 miles from any sage-grouse breeding or nesting grounds. *Please refer to Section 1.1.1.1 for a more detailed discussion of the feasibility of placing the line underground. The Companies do not feel that there is substantial scientific evidence to support this restriction (please see Section 1.2). The Companies also acknowledge that there is not sufficient information to support an assertion that power lines do not have any effect on greater sage-grouse; therefore, our mitigation proposal does address indirect impacts of lines within one km or less of greater sage-grouse habitat.*

Southwest Wyoming Greater Sage-Grouse Conservation Plan

- A controlled surface use stipulation is applied from March 1 to May 15 within 0.25 mile of the perimeter of active strutting grounds from 8 PM to 8 AM daily. Linear disturbances such as pipelines, seismic activity, could be granted exceptions. *Please refer to Section 2.4 for temporal and spatial restrictions the Companies will implement; these are more restrictive than what is included in this conservation plan.*
- Seasonal restrictions are applied through July 15, within an additional 1.75 mile (2 mile total) radius from the perimeter of leks to protect greater sage-grouse nesting habitat. Areas within that radius not used for nesting can be excepted, provided actual nesting areas are not affected. *Please refer to Section 2.4 for temporal and spatial restrictions the Companies will implement.*
- Seasonal stipulations for winter concentration areas can be applied on a case-by-case basis.
- Use common and existing corridors where possible to minimize overall disturbance to the landscape. *The Companies utilized, to the extent practicable, the designated West-Wide energy Corridors. Corridors are also located adjacent to existing corridors, which decreases adverse impact to greater sage-grouse and habitat. Refer to Section 2.2 for more discussion.*
- Install anti-perch structures in designated critical sage-grouse habitat. *Please refer to Section 1.1.1.1 for a more detailed discussion of perch deterrents.*

South Central Wyoming Greater Sage-Grouse Conservation Plan

- Avoid high profile structures from ¼ mile to 1 mile from lek perimeter (on case-by-case basis).
Structures will not be located within 0.25 miles of a known lek and will be sited 0.65 miles from a known lek where practicable. Please refer to Section 2.1 for more discussion on route siting.
- Avoid human activity adjacent to leks during the breeding season between hours of 8 p.m. and 8 a.m.
Please refer to Section 2.4 for temporal and spatial restrictions the Companies will implement.
- Avoid construction of overhead lines and other perch sites. Where these structures must be built, or presently exist, bury the lines, locate along existing utility corridors or modify the structures in key areas.
Please refer to Section 1.1.1.1 for a more detailed discussion of perch deterrents and the feasibility of placing the line underground.

1.1.2 BLM Resource Management Plans

BLM Field Office (FO) RMP measures are summarized in Appendix A. Measures typically include temporal and spatial restrictions and these vary between RMPs. The Companies are not proposing to adopt all BLM RMP restrictions because of the variability between RMPs and differences with state requirements. Rather, our proposal incorporates aspects of the restrictions where appropriate and where they will allow the Companies to construct the Project in a timely and fiscally responsible manner.

1.1.3 State of Wyoming Governor’s Order

On August 1, 2008 the Governor of Wyoming issued Executive Order (EO) 2008-2 entitled “Greater Sage-Grouse Core Area Protection.” The intent of this EO is to demonstrate that the State of Wyoming is taking steps to prevent the listing of the greater sage-grouse. The State of Wyoming created a Governor’s Sage-grouse Implementation Team, which developed a core population area strategy to consolidate the various efforts across the state to conserve the species.

The EO identifies 12 key objectives to the management of greater sage-grouse and the protection of its habitat. These objectives call for more restrictive measures when impacting habitat or the species within the core areas and encourage development outside the core areas. The most restrictive objective indicates that when development must occur within the core areas, it should only be authorized by the state agency when it demonstrates it will not cause declines in greater sage-grouse populations.

Stipulations for development in core sage-grouse population areas for transmission line rights of way states, “To the extent possible, new rights-of-way should be authorized parallel and adjacent to existing rights-of-way. Above ground towers should be designed to minimize raptor perching. Any new rights-of-way not sited parallel and adjacent to existing rights-of-way should be routed at least 750 m (0.5 miles) from the perimeter of occupied greater sage-grouse leks.”

1.2 Idaho Power GIS Analysis

Transmission siting distance recommendations vary widely between federal agencies, states, LWGs, and among industries. Recommendations range from 0.25 to 5 miles distance from leks. The most common siting distance recommendation is that new power lines should be built at least 2 miles (3.2 km) from sage-grouse habitat. Because the scientific community has little information regarding the impact of transmission lines to greater sage-grouse or their habitat and there are several petitions pending for the listing of the species with the federal Endangered Species Act, the tendency among regulatory agencies is to err on the side of caution.

In response to this lack of data and to better understand the effect of power lines on greater sage-grouse, Idaho Power Company (IPC) conducted a spatial analysis using a GIS to evaluate the relationship between lek status and distance from existing power lines for both distribution and transmission poles within the Idaho portion our service territory. IDFG lek locations were overlaid with IPC's spatial data for power structures. Only leks that have had surveys conducted since 1965 were included. As of 2007, 598 sage-grouse lek locations are known to exist in Idaho Power's service territory: 238 active, 115 inactive, and 245 of unknown status.

IDFG defines an active lek as a lek at which 2 or more sage-grouse have been observed attending in 2 or more of the previous 5 years. New leks (usually located during aerial surveys) receive an active status, even though they have not yet met the 5-year criteria. Some leks that are irregularly surveyed by air will receive an active status if displaying males are observed in at least 1 year out of 5. An inactive lek is one that was surveyed or censused at least 2 years in a 5 year period, but at which no male sage-grouse were observed. A lek with an unknown status does not meet either of the above criteria, usually because it is not regularly surveyed or censused. If a lek has not been surveyed in the past 5 years, it automatically receives an unknown status, regardless of its past status. Some leks with an unknown status were part of historical documents, for which the location or status of the leks has not been confirmed. All reported leks in IPC's service territory are within 18 km of a power line.

Forty-two active leks and 27 inactive leks occur within 1 km of a power line (Table 1). The percentage of leks with known status that are active, categorized by distance from the nearest power pole, ranges from 40-84% (Table 1).

Table 1. The number of active and inactive leks, categorized by increasing distances from the nearest powerpole, Idaho Power Service Territory.

Lek Status	Distance (km)										
	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-18
Inactive	27	18	18	15	10	4	5	9	3	3	2
Active	42	36	45	31	23	21	14	12	4	2	8
% active	61	67	71	67	70	84	74	57	57	40	80

IPC evaluated active leks within 3 km of a power line to determine how many years following construction of a line leks have remained active. Within 3 km of a line, 110 leks have remained active for greater than 20 years after a line was built (Table 2). Ten leks within 300 m of a powerline have remained active a minimum of 28 years after a line was built (8 leks active longer than 43 years). These data indicate that leks can remain active for long periods of time following construction of a powerline.

Table 2. Active leks within 1, 2 and 3 km of a powerline, categorized by years since the nearest power pole was built within IPC service territory.

# of years lek has remained active following construction of a line	0-1 km	1-2 km	2-3 km	Total 0-3 km
< 10 years	4	1	0	5
10-19 years	4	1	3	8
20-29 years	7	9	7	23
30-39 years	2	5	4	11
≥40 years	25	20	31	76
Total	42	36	45	123

The average number of males observed at active leks (5-year average) ranged from 10.6 to 15.2, with the highest number observed in leks near the power lines (Table 3).

Table 3. Average number of males (5-year average, 2003-2007) observed at active leks, by distance category.

Lek Distance from Power Line	Av. No. Males/Active Lek
0-1 km	15.2
1-5 km	14.0
5-10	14.2
10-18 km	10.6

IPC evaluated 27 leks within 1 km of a powerline that have become inactive. We compared the year that a powerline was built, the last year that a lek was active, the first year that a lek was observed inactive, the percentage of land within 3.2 km of a lek that had recently burned or was converted to agriculture, and highways in close proximity to the lek. Several patterns emerged. Four leks became inactive prior to a line being built, eight leks became inactive after a line was built, five became inactive following extensive fires, six were located in areas with extensive agriculture and roads, and four were active 38 years or longer after a line was built before becoming inactive. From these data it is clear that many factors contribute to a lek becoming inactive and additional research is necessary to determine the role of power lines in greater sage grouse decline.

IPC data, indicating leks have remained active many years following line construction and the average number of males found at a lek is similar across IPC's service territory regardless of distance to powerlines, contradict conventional wisdom that greater sage-grouse instinctively avoid tall structures or leks quickly disappear when power lines are built in close proximity. Based on IPC data, we believe that a lek located more than 1 km (0.65 mile) from the proposed powerline will be minimally affected by construction, operation, and maintenance.

2.0 Avoidance and Minimization Measures

The Companies, recognizing the importance of reducing or eliminating impacts to greater sage grouse habitat, took several important steps to avoid and minimize impacts, which are detailed in this section. In addition, the Companies are offering compensatory mitigation where all impacts could not be avoided or minimized. This mitigation is discussed in Section 3.0.

2.1 Routing and Siting

The first step in the routing and siting process was the collection of applicable data in order to identify opportunities and constraints in selecting a proposed corridor between fixed points such as substation locations. In January 2008, the Companies, with BLM approval and assistance, requested data from state and federal agencies and specific individuals. The most common data received were lek location and the most common original data source were state game and fish management agencies, often amended or supplemented by additional local data and redistributed by the BLM state, district, or field offices. In the Casper, Rock Springs, Rawlins, Kemmerer, Pocatello, Burley and Shoshone field offices, resource specialists felt existing data were not adequate and requested additional field surveys. Nearly 300 miles of protocol level aerial surveys were conducted in 2008 within the aforementioned field offices and did not identify any new lek locations (Tetra Tech, December 15, 2008).

In the routing and siting process, the data set used for greater sage-grouse leks included data on 1) active leks, 2) leks that had not been used for a number of years (inactive), and 3) leks known to be abandoned or "historic". Rather than attempt to sort the data set for active or recently active leks, all known lek location, including those known to be abandoned, were equally considered in the analysis and avoided, where possible, during the routing process. To avoid leks, the Companies applied a 0.25 mile buffer from the center of a lek to all leks and designated it as no surface occupancy (NSO). In other words, no land surface development or aerial encroachment could occur within 0.25 miles of the center of a lek. This buffer was applied to all mapped leks within the study areas and the Project was routed to avoid the buffered areas.

During the several months of the routing and siting process, the BLM staff indicated that a new Instructional Memorandum (IM) would be issued and that this would require a 0.65 mile buffer around leks. To avoid having to reroute once the IM was issued, the Companies applied a 0.65 mile radius buffer to each lek, and the routing made every attempt to avoid the larger area. Every proposed and alternate route the Companies presented to BLM for analysis in the EIS avoided, without exception, the 0.25 mile radius buffer on all mapped leks. In general, the proposed and alternate routes also avoided the 0.65 mile lek buffer, but there are cases where full avoidance was not practical given other constraints (e.g., residential or agricultural land use; visual resources). To date, the BLM has not issued an IM and a 0.65 mile buffer specific to transmission lines has not been established by the BLM.

Siting and routing are described in more detail in the *Siting Study* (Idaho Power and Rocky Mountain Power; September 2008) and an October 23, 2008 supplemental memo prepared by the Companies.

2.2 Conformance with State-wide Plans

Idaho and Wyoming state-wide plans identify the use of existing utility corridors and highway rights-of-way as a management guideline. As part of the routing and siting process, the Companies adopted an overall approach of conforming to existing rights-of-way unless there was a compelling reason not to. Table 4 summarizes the miles of the proposed corridor, by segment, that are within greater sage-grouse habitat and that are adjacent (within 1 km) to an existing corridor within greater sage-grouse habitat.

Of the approximately 1,144 miles of proposed corridor, 238.4 miles occur within designated greater sage-grouse habitat (either core in Wyoming or key and restoration in Idaho); this represents 21 percent of the total proposed corridor. Within designated greater sage-grouse habitat, 157 miles (66%) are adjacent to an existing transmission line and an additional 25.3 miles (11%) are adjacent to other corridors. Approximately 56.1 miles (23%) of the proposed corridor is not adjacent to an existing corridor within greater sage-grouse habitat.

Table 4. Sage-grouse habitat intersected by the Project corridor and adjacency to existing transmission lines and other corridors.

Line Segment	Total Segment Length(mile)	Total Length of Line w/in Designated Habitat (mile)	Adjacent to Other Transmission Line w/in Designated Habitat (mile)	Adjacent to Other Corridors w/in Designated Habitat ² (mile)	Greater than 1 km From Any Corridor w/in Designated Habitat (mile)
Seg 01E	87.7	0.26	0.26	0.00	0.00
Seg 01Wa	72.1	15.16	15.16	0.00	0.00
Seg 01Wb	72.8	16.82	11.62	0.00	5.20
Seg 01Wc	70.7	14.79	14.79	0.00	0.00
Seg 02	93.7	50.50	22.4	13.47	14.63
Seg 03	55.1	0	0	0	0
Seg 04	200.6	52.00	35.22	3.21	13.56
Seg 05	53	0	0	0	0
Seg 06	No construction proposed for this segment				
Seg 07	117.4	30.32	0.80	8.63	20.90
Seg 08	130.9	38.24	37.53	0.00	0.71
Seg 09	157.6	8.69	8.69	0.00	0.00
Seg 10	32.9	11.61	10.51	0.00	1.11
Total	1144.5	238.39	156.97	25.31	56.11

² Other corridors include pipelines, railroads, road/highway, or a combination of these, but does not include transmission lines.

2.3 Environmental Protection Measures (EPM)

Appendix B of the POD specifies EPMs that the Companies have incorporated as their BMPs and as part of the Project description. These measures have been developed by the Companies to maintain environmental quality and meet requirements of various land management plans. These measures are applicable Project-wide unless modified through negotiations with individual landowners or superseded by permits granted by federal, state, or local agencies. The Companies would be responsible to ensure their contractors and employees will implement these measures. These EPMs apply to construction, operation, and maintenance as appropriate. Implementation of the EPMs will help the Companies to avoid or minimize impacts to greater sage-grouse and their habitat.

Appendix B of the POD contains the following attachments:

Attachment A, Traffic and Transportation Management, includes measures that require compliance with federal policies and standards relative to planning, siting, improvement, maintenance, and operation of roads for the Project. This plan will address the following measures from the Wyoming state-wide greater sage-grouse conservation plan:

- Consider developing travel management plans that would allow seasonal closure of roads for all but permitted uses (i.e., recreation and hunting) and encourage the reclamation of unnecessary or redundant roads.
- Control dust from roads and other surface disturbances within the population's season habitats.

Attachment B, Reclamation, Revegetation, and Weed Management, addresses construction mitigation, reclamation, and revegetation for lands crossed by the Project. This plan also outlines measures to prevent accidental introduction or transport of noxious or invasive weeds.

This plan will address the following recommendations from the Idaho state-wide greater sage-grouse conservation plan:

“Utility companies should ensure access roads, right-of-ways and disturbed areas associated with their facilities are managed in a manner that restores disturbed areas to perennial vegetative cover, and controls the spread on noxious weeds and invasive plant species. Coordinate with land-management agencies and others in selecting the most appropriate plant species. Consider the use of fire-resistant species in high fire-frequency/cheatgrass areas. Encourage companies to participate in Coordinated Weed Management Areas”.

Attachment C, Stormwater Pollution Prevention, includes measures for temporary and permanent erosion and sediment control that will be used during construction, operation, and maintenance of the transmission line and ancillary facilities.

Attachment D, Spill Prevention, Containment, and Countermeasures, includes measures for spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response and incident reporting, and training requirements.

Attachment E, Cultural Resource and Paleontological Monitoring and Mitigation, describes the procedures undertaken to inventory, evaluate, and protect cultural resources, treatment of any eligible or listed resource that cannot be avoided, and inadvertent discoveries during construction, operation, and maintenance.

Attachment F, Blasting, outlines the procedures and safety measures for blasting activities.

Attachment G, Plant and Wildlife Species Conservation, outlines specific conservation measures to be implemented in the event state or federally listed species, BLM sensitive species, or Forest Service special status species or their habitat are identified within the Project area (including, but not limited to, this plan for greater sage-grouse).

Attachment H, Facility Maintenance, describes the standard maintenance practices to be used to maintain the transmission line and associated facilities during operation. EPMs will be incorporated in a Facility Maintenance Plan for these practices.

2.4 Temporal and Spatial Restrictions

Temporal and spatial restrictions (summarized in Appendix A) vary between RMPs and states and can include conflicting requirements within the same RMP. Therefore, the Companies have committed to the following restrictions for the construction of this project:

- All greater sage-grouse leks determined to be within 1 mile of the centerline of the Project would be surveyed using protocols, which have been approved by federal and state agencies, during the breeding season immediately prior to construction to determine whether the lek is active. The Proponents will provide survey results to the appropriate land management agency.
- There would be no construction activities through Idaho's key and restoration greater sage-grouse habitats and Wyoming's core habitats within 1 mile of active leks from March 1 to May 15 between 6 p.m. and 9 a.m. Off-limit areas would be marked so that workers in the area are aware of these sensitive areas.
- If no lek activity has been observed by April 25, construction activities may proceed.
- Surface disturbance would be prohibited year-round within 0.25 mile of previously documented leks.
- Notification would also be placed in areas frequented by on-site personnel (such as break rooms) to advertise the importance of complying with these restrictions.
- Temporal and spatial restrictions do not apply when lek or nesting and brood rearing habitat is separated from Project activities by other forms of human disturbance (e.g., agriculture, highways) or by line of sight barriers.

Adherence to these restrictions in conjunction with implementation of the EPMs and proposed mitigation is expected to protect greater sage-grouse and their habitat while still allowing for timely and fiscally responsible construction of the Project.

Except in times of emergency, operation and maintenance activities will be scheduled to avoid working within 0.65 mile of active leks during the spring mating season, defined to be between

March 1 and May 15 in Wyoming and March 15 to May 15 in Idaho, between the hours of 6 PM and 9 AM.

3.0. Mitigation

In developing this proposal to mitigate for possible impacts to greater sage-grouse and their habitat associated with the Gateway West project, the Companies considered the avoidance and minimization measures that were incorporated into the routing and siting process; conformance with state-wide conservation plan management measures; hypothesized impacts from transmission lines; and results of Idaho Power’s spatial analysis. Additionally, environmental protection measures identified in the August 2008 POD and this plan were considered.

The Companies are proposing an in-lieu fee payment for direct permanent impacts within mapped habitat. The Companies are not proposing any payment for temporary impacts within mapped habitat because temporary impacts will be restored. To acknowledge that current information does not clearly indicate the nature and extent of indirect impacts, the Companies have also proposed an in-lieu fee payment based on line miles within and adjacent (within one km) to mapped habitat. Mitigation funds will be paid to the Office of Species Conservation (OSC) in Idaho for impacts that occur in Idaho and to the Wyoming Wildlife and Natural Resource Trust (WWNRT) for impacts that occur in Wyoming. The OSC (ID) and WWNRT (WY) will disperse funds to sage-grouse local working groups that cover areas impacted by the project. These entities have not yet been contacted and their participation will need to be secured.

Mitigation was divided into two main categories: right-of-way located within mapped greater sage-grouse habitat and ROW adjacent to greater sage-grouse habitat. Within habitat occurs when any portion of the ROW is inside mapped greater sage-grouse habitat. Adjacent to habitat is defined as the ROW is outside of mapped habitat by a distance of 1 km or less. Within each of these categories, mitigation was further differentiated if the proposed corridor was located adjacent to an existing corridor (e.g., transmission line; major highway or road; railroad, gas pipeline); and if the impact was direct permanent or temporary and indirect.

Impacts will be quantified as follows:

ROW within greater sage-grouse habitat:	<ul style="list-style-type: none"> ▪ Direct permanent impacts will be quantified by acres. ▪ Indirect impacts will be quantified by line miles.
ROW adjacent to greater sage-grouse habitat:	<ul style="list-style-type: none"> ▪ No mitigation is proposed for direct permanent impacts. ▪ Indirect impacts will be quantified by line miles.

The Companies consider structure locations, regeneration stations, substations, and new service and access roads as direct permanent impacts. The Companies distinguish between service roads and access roads. The sole purpose of service roads is to provide maintenance crews access to the transmission lines. These roads would not exist if the transmission lines did not exist. In contrast, access roads serve a broader purpose, such as contributing to the federal, county, or state road systems, thus their existence is independent of the transmission line. Access roads

provide direct or indirect access to the transmission lines, but that access is not their primary purpose. Existing access roads are not included as an impact and no mitigation is proposed for these. Service and new access roads that will be closed to public use will be revegetated as a best management practice to control erosion and sedimentation. Crested wheatgrass (*Agropyron cristatum*) and forage kochia (*Kochia prostrata*) will be used for revegetation. Both of these plant species are fire resistant, will resist noxious weeds, and will also provide habitat for upland birds, small mammals, and reptiles.

The Companies define areas used for storage or fly yards and areas disturbed within the ROW between structures during construction as temporary impacts. Temporary impacts will be restored in-kind (e.g., grassland will be restored to grassland) and no additional mitigation is proposed. Mitigation is summarized in Table 5.

Wyoming’s core breeding areas have been mapped at a large-scale and consequently, core areas include habitats that do not support sage-grouse (e.g., urban areas, roads, etc.) While this plan has quantified impacts within and adjacent to core breeding areas, it has not differentiated among habitat types within core breeding areas. Final impacts and mitigation will be based on greater sage-grouse habitat within core breeding areas and is likely to be less than described in this document. The vegetation and habitat maps that are being developed for this Project will be used to identify greater sage-grouse habitat in core breeding areas and that will be the basis for quantifying impacts. Impacts are also likely to change as the route centerline is defined within the 2-mile wide planning corridor.

Impacts will be quantified using as-builts that will be completed at the end of construction activities for each segment.

Potential temporary and permanent impacts are identified in Table 6 and the number of line miles adjacent (within 1 km) to greater sage-grouse habitat and an existing corridor are identified in Table 7.

Table 5. Mitigation for impacts to greater sage-grouse habitat³ associated with the Project.

ROW ⁴	Other Corridor ⁵	Mitigation
ROW w/in mapped habitat	Corridor present	<ul style="list-style-type: none"> ▪ Mitigate direct permanent impacts to sage-grouse habitat at 1:1 (acre) ▪ Mitigate indirect effects at 0.5:1 (line miles)
	Corridor absent	<ul style="list-style-type: none"> ▪ Mitigate direct permanent impacts to sage-grouse habitat at 1:1 (acres) ▪ Mitigate indirect effects at 0.75:1 (line miles)
ROW adjacent to mapped habitat	Corridor present	<ul style="list-style-type: none"> ▪ Mitigate indirect effects at 0.1:1 (line miles)
	Corridor absent	<ul style="list-style-type: none"> ▪ Mitigate indirect effects at 0.3:1 (line miles)

³ Habitat or mapped habitat refers to areas delineated in state-wide greater sage-grouse plans.

⁴ Within habitat occurs when any portion of the ROW is inside mapped greater sage-grouse habitat. Adjacent to habitat is defined as the ROW is outside of mapped habitat by a distance of 1 km or less.

⁵ Corridor refers to other linear features such as transmission line, highway or major road, railway, or gas line.

Table 6. Preliminary temporary and permanent impacts associated with the construction and operation of the Project.

Line Segment	Temporary Impact (acres)⁶	Permanent Impact (acres)⁷
Seg 01E	12.11	115.11
Seg 01W	52.49	0.00
Seg 01Wa	9.39	111.40
Seg 01Wb	43.84	144.29
Seg 01Wc	14.76	83.62
Seg 02 (1 DC) ⁸	261.47	583.06
Seg 02 (2 SC)	298.15	644.92
Seg 03	0	0
Seg 04 (1DC)	291.31	578.61
Seg 04 (2 SC)	346.88	641.65
Seg 05	0	0
Seg 06	0	0
Seg 07	204.53	319.86
Seg 08	211.27	358.79
Seg 09	119.83	174.04
Seg 10	91.16	115.72
Total Lines (1 DC)	1312.14	2584.49
Total Lines (2 SC)	1404.40	2709.40
Substations		
Aeolus	0	101.94
Cedar Hill	0	19.62
Midpoint	0	7.25
Total Substation		128.82

⁶ Temporary impacts include pulling and tensioning sites, fly yards, and staging areas.

⁷ Permanent impacts include structure pads, existing roads that need improvement, new roads, and substations.

⁸ Rocky Mountain Power is evaluating the following two options for construction in segments 2-4: one double circuit (1 DC) line or 2 single circuit (2 SC) lines. Only one of the options will be built.

Table 7. Summary of line miles adjacent to greater sage-grouse habitat and miles adjacent to an existing corridor.

Line Segment	Total Segment Length (miles) Adjacent to Mapped Habitat	Total Shared Corridor Length (miles) Adjacent to Mapped Habitat	Total Segment Length (miles) Adjacent to Mapped Habitat Outside a Corridor
Seg 01E	2.160	0.413	0.407
Seg 01Wa	5.318	4.381	0.936
Seg 01Wb	4.351	2.796	1.555
Seg 01Wc	4.800	3.864	0.936
Seg 02	3.131	1.807	1.324
Seg 03	2.293	0.77	1.523
Seg 04	13.140	2.739	10.401
Seg 07	16.759	0.775	13.702
Seg 08	28.252	2.511	25.741
Seg 09	17.557	2.316	15.241
Seg 10	13.298	1.717	11.581
Total	107.436	24.089	83.347

Table 8 summarizes the mitigation requirements based on the ratios proposed in Table 5, and the preliminary impacts identified in Tables 4, 6, and 7. Actual impacts and mitigation requirements will be calculated as previously described.

Table 8. Proposed mitigation ratios and estimated impacts.

ROW	Mitigation	
Within habitat	Restore temporary impacts:	1 Double Circuit option: 1,312 acres ----- 2 Single Circuit option: 1,404 acres
	Direct permanent impacts at 1:1	1 Double Circuit option: 2,584 acres ----- 2 Single Circuit option: 2,709 acres ----- Substations: 129 acres
	Indirect impacts adjacent to a corridor at 0.5:1	Adjacent to a transmission line corridor: 157 miles
	Indirect impacts greater than 1km from a corridor at 0.75:1	Outside a transmission line corridor: 25 miles ----- Outside any corridor: 56 miles
Adjacent to habitat	Indirect impacts adjacent to a corridor at 0.1:1	Adjacent to a corridor: 24 miles
	Indirect impacts greater than 1 km from a corridor at 0.3:1	Outside a corridor: 83 miles

Dollar amounts are based on published⁹ values and the Companies previous experience with other revegetation projects. Because of the wide range of activities that can be conducted (e.g.,

⁹ Average and a range of costs for a variety of activities are provided in Public Review Draft Recommendations for Development of Oil and gas resources within Crucial and Important Wildlife Habitats. Version 2.0. revised December 9, 2008. Wyoming Game and Fish Department.

<http://www.pinedaleonline.com/news/2008/12/OGWildlifeRecommendations.pdf>. Accessed January 15, 2009.

seeding, prescribed burning, fencing, guzzlers, etc.) to mitigate for impacts to greater sage-grouse and the wide variety of site conditions, cost estimates vary greatly. Costs in this proposal are based on average costs and the assumption that most mitigation activities would involve revegetation.

In-lieu fee payments will be calculated using the following formulas:

Direct permanent impacts:

Mitigation funding = (\$2,000/acre) (mitigation ratio) (acres of direct impact)

Indirect effects:

Mitigation funding = (\$20,000/line mile) (mitigation ratio) (line miles)

In-lieu fee payments will be paid over a ten-year period and will initially be estimated based on the proposed project. Ten percent of the cost will be paid each year and will be adjusted after as-builts are finalized.

4.0 References

HawkWatch International, Inc. 2008. Effectiveness of Raptor Perch Deterrents on an Electrical Transmission Line in Southwestern Wyoming. Salt Lake City UT. 24 p.

Idaho Power Company and Rocky Mountain Power. August 2008. Plan of Development. Gateway West Transmission Line Project.

Idaho Sage-grouse Advisory Committee. 2006. Conservation Plan for the Greater Sage-grouse in Idaho.

Lamers, W. M., and M. W. Collopy. 2007. Effectiveness of avian predator perch deterrents on electric transmission lines. *Journal of Wildlife Management* 71:2752-2758.

Southwest Wyoming Sage-grouse Conservation Assessment and Plan. July 2007.

Wyoming Greater Sage-grouse Conservation Plan. June 2003.

Appendix A. Greater Sage-grouse Temporal and Spatial Restrictions by Bureau of Land Management Field Office

Casper, Wyoming Field Office

Within Bates Hole/Fish Creek/Willow Creek:

- Occupied sage-grouse leks will have a ¾-mile CSU buffer to protect breeding habitats. Human activity will be avoided between 8 p.m. and 8 a.m. from March 1 to May 15 (TLS) within this buffer.
- Occupied sage-grouse leks will have a 4-mile buffer. Within this buffer, surface development or wildlife-disturbing activities will be restricted March 15 through July 15 (TLS). Also, within this 4-mile buffer (CSU), surface disturbing activities will avoid sagebrush stands of greater than 10 percent canopy cover. Within this 4-mile buffer, mitigate for power poles and other high profile structures that may provide raptor perches. Avoid placement of these structures if possible, or install devices to preclude raptor perching on the structures.
- As sage-grouse winter habitats are designated, a TLS will restrict activities from November 15 to March 14. Within the designated winter habitats, CSU for surface disturbing activities in sagebrush stands of greater than 20 percent canopy cover.
- The areas will have priority for vegetative treatments to improve sage-grouse habitats and for vegetation monitoring to ensure residual herbaceous vegetation is maintained for nesting cover on public lands.

Outside of Bates Hole/Fish Creek/Willow Creek:

- Avoid surface disturbance or occupancy within ¼ mile of the perimeter of occupied sage-grouse leks. Avoid human activity between 8 p.m. and 8 a.m. from March 1 to May 15 (TLS) within ¼ mile of the perimeter of occupied sage-grouse leks.
- Avoid surface-disturbing and disruptive activities in suitable sage-grouse nesting and early brood-rearing habitats within 2 miles of an occupied lek, or in identified sage-grouse nesting and early brood-rearing habitats outside the
- 2-mile buffer from March 15 to July 15 (TLS).
- Avoid surface-disturbing and disruptive activities in sage-grouse winter habitats from November 15 to March 14 (TLS).

Rawlins, Wyoming Field Office

- Prohibit surface disturbance or occupancy year round within ¼ mile of occupied leks, breeding, or nesting habitat.
- Disruptive activities prohibited March 1 to May 20, 6 pm to 9 am within ¼ mile of occupied leks, breeding, or nesting habitat.
- Avoid surface disturbing activities Mar 1 – July 15 within 2 miles of identified nesting/early brood rearing habitat.
- No surface disturbing or disruptive activities in winter concentration areas Nov 15 - March 14.
- Construction activities within 500 feet of open water and/or 100 feet of intermittent or ephemeral channels in potential or known habitat for T&E and Special Status Species will be avoided.

- High-profile structures (e.g., power lines and towers) would be authorized on a case by case basis from ¼ mile to 1 mile of an occupied lek.
- Requesting installation of antiperching devices - TBD.

Rock Springs, Wyoming Field Office

- Seasonal restrictions within ¼ mile radius of leks from March 1 to May 15.
- Seasonal restrictions within 2 mile radius of lek in nesting areas from March 15 to July 15.
- Prefer that entire line be outside of 2-mile buffer, but outside of ¼ mile from perimeter is acceptable.
- Requesting installation of antiperching devices - TBD.

Kemmerer, Wyoming Field Office

- Avoid surface disturbance or occupancy within ¼ mile of occupied leks.
- Avoid human activity from 8 pm and 8 am from March 1 to May 15 within ¼ mile of perimeter of occupied leks.
- Avoid surface disturbing and disruptive activity in suitable nesting and early brood-rearing habitats within 2 miles of occupied leks.
- Avoid surface disturbing and disruptive activity in identified nesting and early brood-rearing habitats outside the 2 mile buffer from March 15 to July 15.
- Avoid surface disturbance and disrupting activities in occupied winter habitats from Nov 15 to March 14.

Four Rivers (Cascade), Idaho Field Office

- RMP: No surface occupancy in winter range from December 1 to February 15.
- RMP: No surface occupancy in breeding grounds from February 15 to June 30.
- RMP: No surface occupancy within 2 miles of a lek from April 15 to June 30.
- Guidance for protection is addressed in the MOA in the 1997 Idaho Sage Grouse Management Plan, as follows:
 - Avoid disturbance within 0.6 miles of occupied leks from 6 PM to 9 AM from March 15 to May 1 in lower elevations and from March 25 to May 15 in higher elevations.
 - Use of guy-wires should be avoided.
 - The placement of perch deterrents should be considered on a site specific basis.
 - New structures should be sited at least 2 miles from occupied leks or other important seasonal habitats.

Four Rivers (Kuna), Idaho Field Office

- MFP: Refer to “Guidelines for Habitat Protection in Sage Grouse Range” as published by the Western States Sage Grouse Committee, June 1974.

Owyhee, Idaho Field Office

- Guidance for protection is addressed in the MOA in the 1997 Idaho Sage Grouse Management Plan, as follows:
 - Avoid disturbance within 0.6 miles of occupied leks from 6 PM to 9 AM from March 15 to May 1 in lower elevations and from March 25 to May 15 in higher elevations.
 - Use of guy-wires should be avoided.
 - The placement of perch deterrents should be considered on a site specific basis.
 - New structures should be sited at least 2 miles from occupied leks or other important seasonal habitats.

Bruneau, Idaho Field Office

- MFP: Restrict from March to May any intensive disturbance activities within 2 miles of sage grouse strutting grounds, and avoid the establishment of major roads within ½ mile.
- MFP: Restrict vehicular traffic to existing roads from November 1 to February 28 in sage grouse wintering habitats.
- Guidance for protection is addressed in the MOA in the 1997 Idaho Sage Grouse Management Plan, as follows:
- Avoid disturbance within 0.6 miles of occupied leks from 6 PM to 9 AM from March 15 to May 1 in lower elevations and from March 25 to May 15 in higher elevations.
- Use of guy-wires should be avoided.
- The placement of perch deterrents should be considered on a site specific basis.
- New structures should be sited at least 2 miles from occupied leks or other important seasonal habitats.