Appendix A

Gateway West Transmission Line Project Maps

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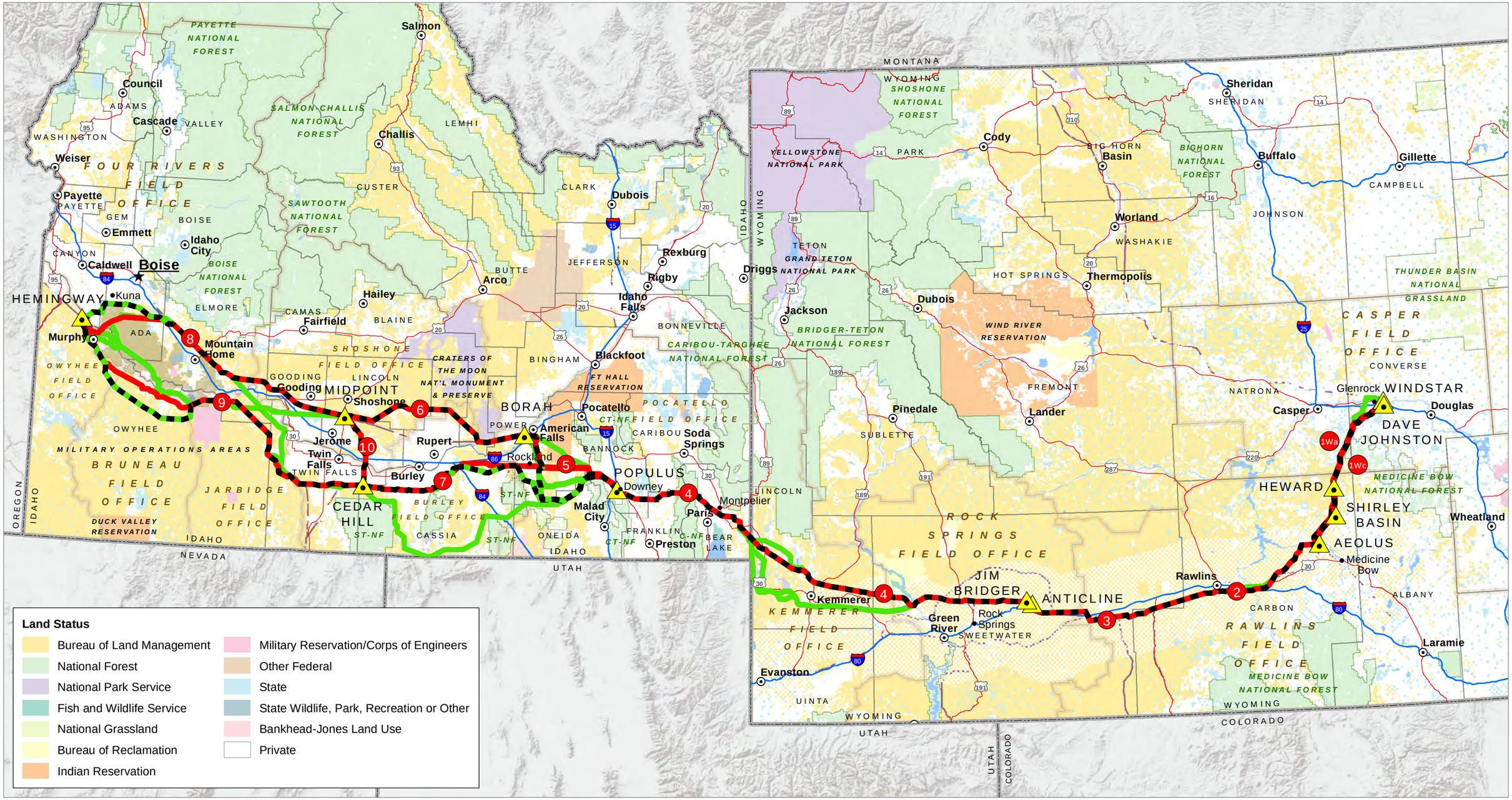
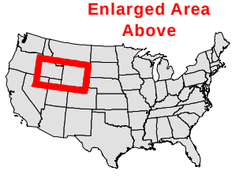


0 40
Miles
NAD 1983 UTM Zone 12N

Enlarged Area Above



Route Features
- BLM Preferred Alternative and Proponent Proposed
- BLM Preferred Alternative
- Proposed Route (Not BLM Preferred Alternative)
- Feasible Alternative

- Substation
- Segment Number

Other Features
- State Capital
- County Seat
- Other City/Town

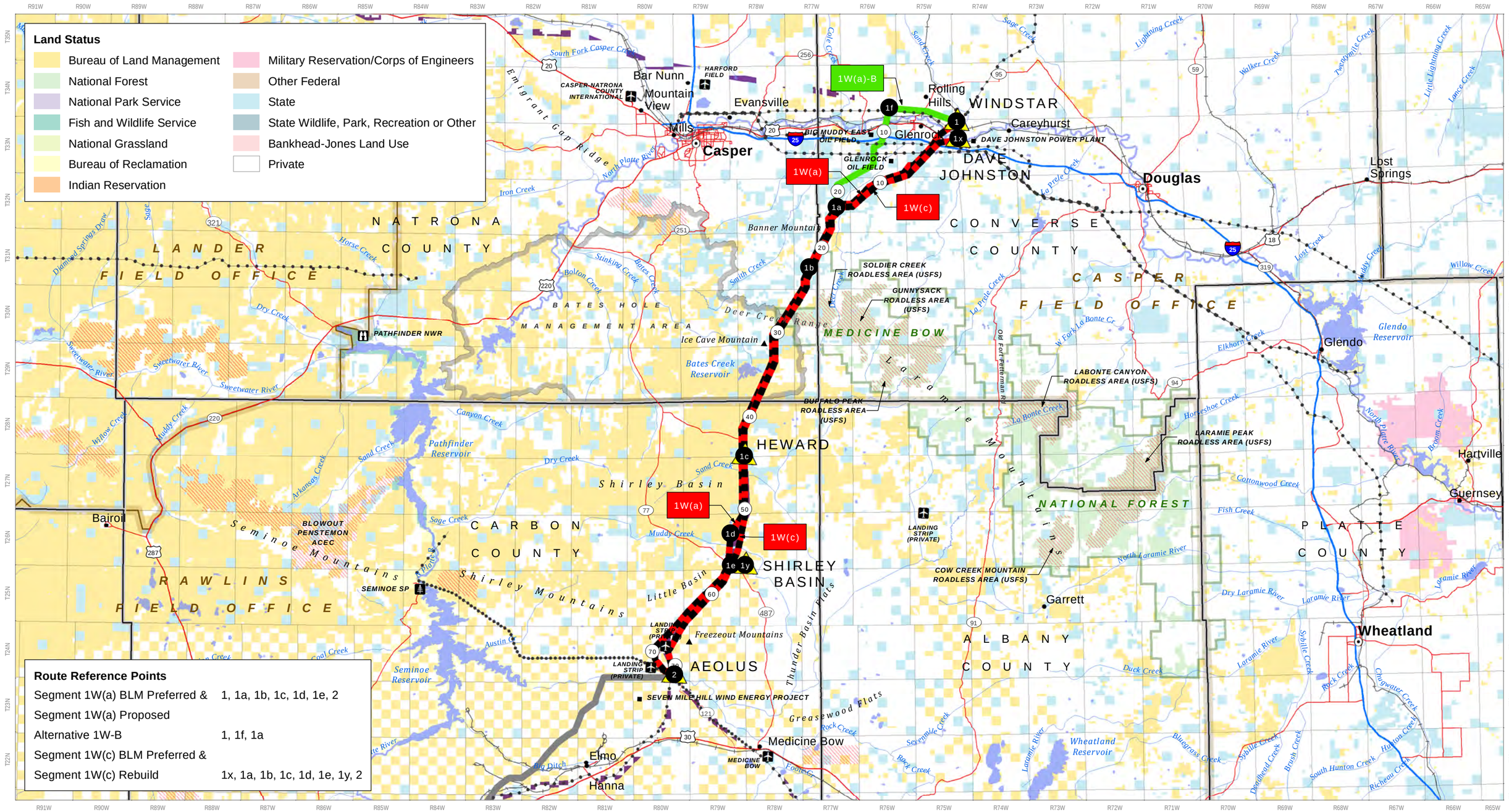
- County
- BLM Field Office
- National Forest
- Morley Nelson Snake River Birds of Prey NCA

Gateway West
Transmission Line Project

Project Overview
Figure A-1

Sources | BLM; USFS; ESRI

FEIS FIG A-1 Project Overview_20121112 scott.flinders 12/15/2012

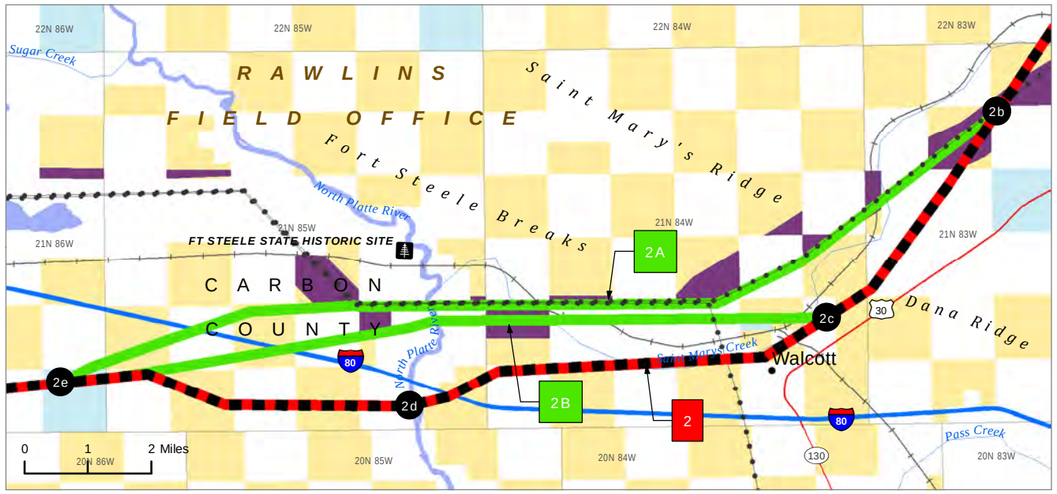


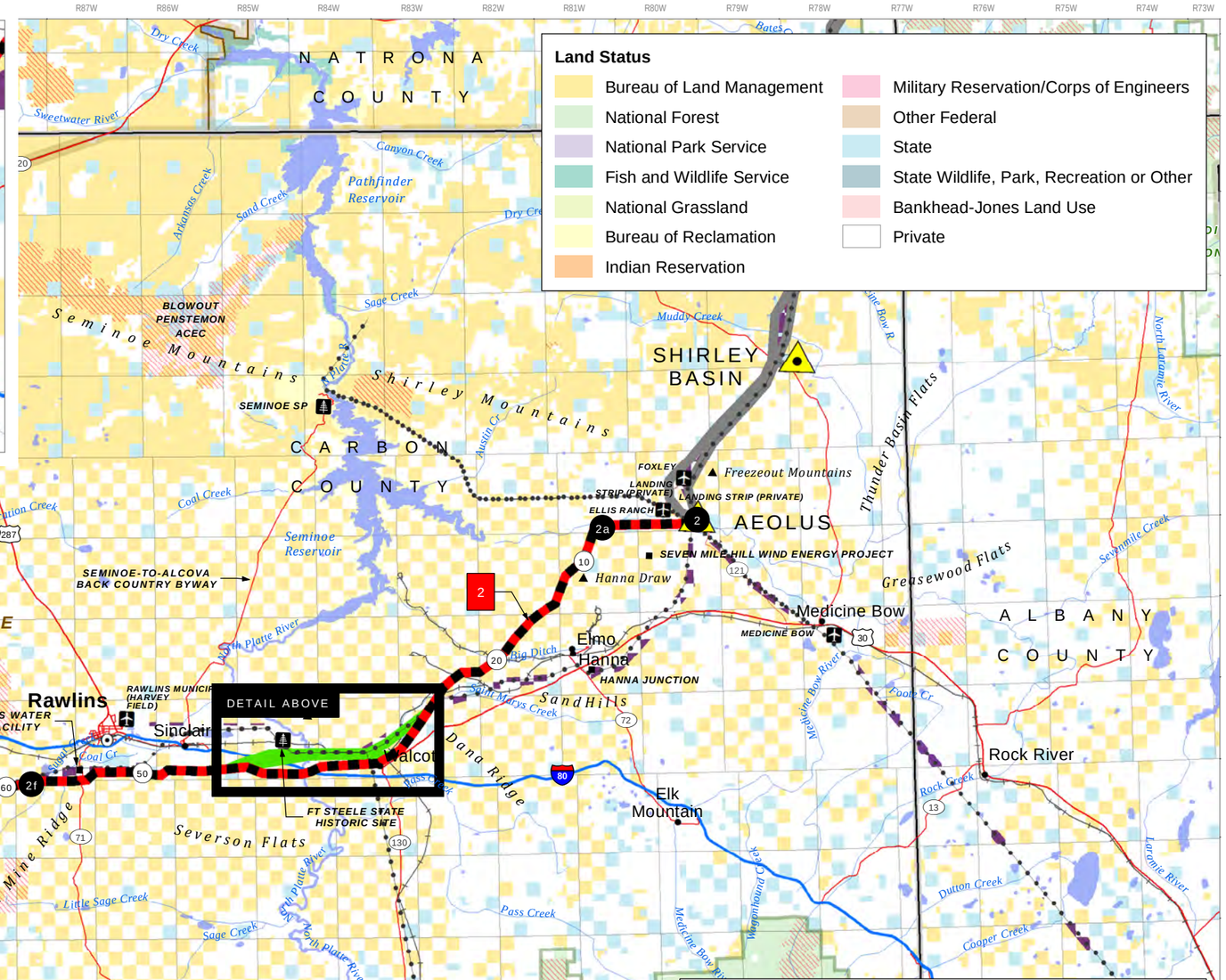
Gateway West
Transmission Line Project

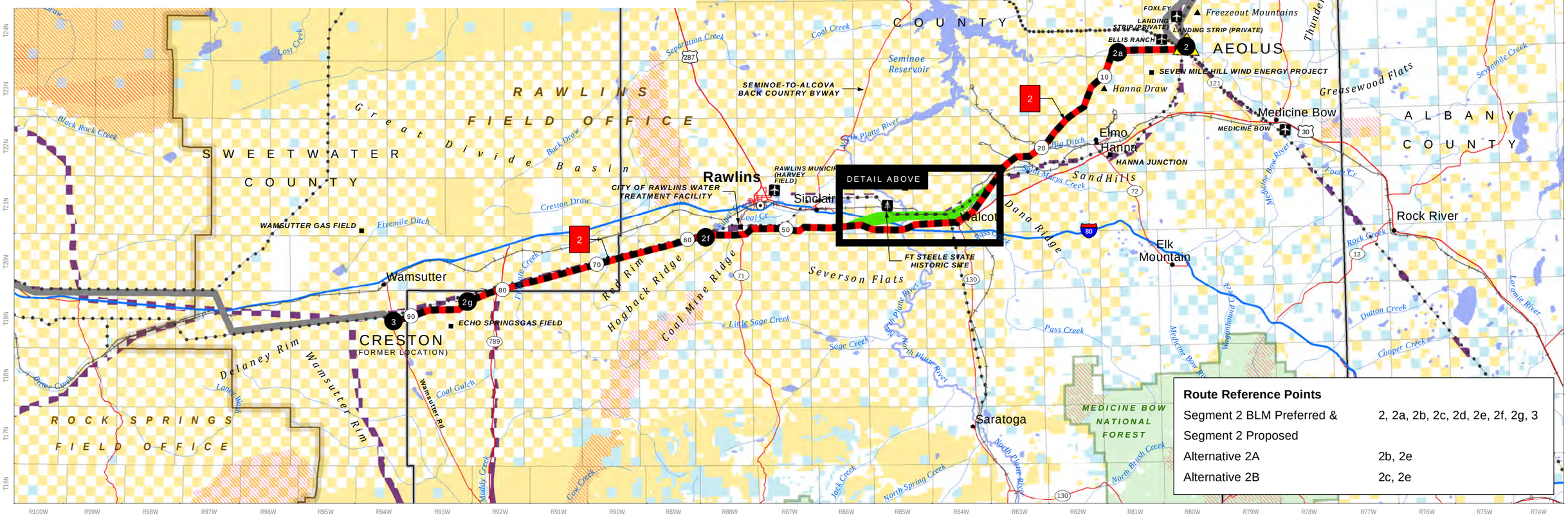
Segment 1W(a) / 1W(c)
Windstar/Johnston to Aeolus
Figure A-2

Sources | BLM; USFS; ESRI

FEIS FIG A-2 Segment 1W_20121112 scott.flinders 11/14/2012

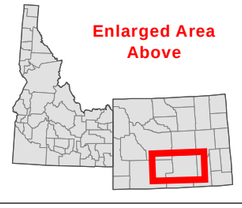






0 10 Miles

NAD 1983 UTM Zone 12N



Route Features

- BLM Preferred Alternative and Proposed Route
- Feasible Alternative
- Other Route
- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features

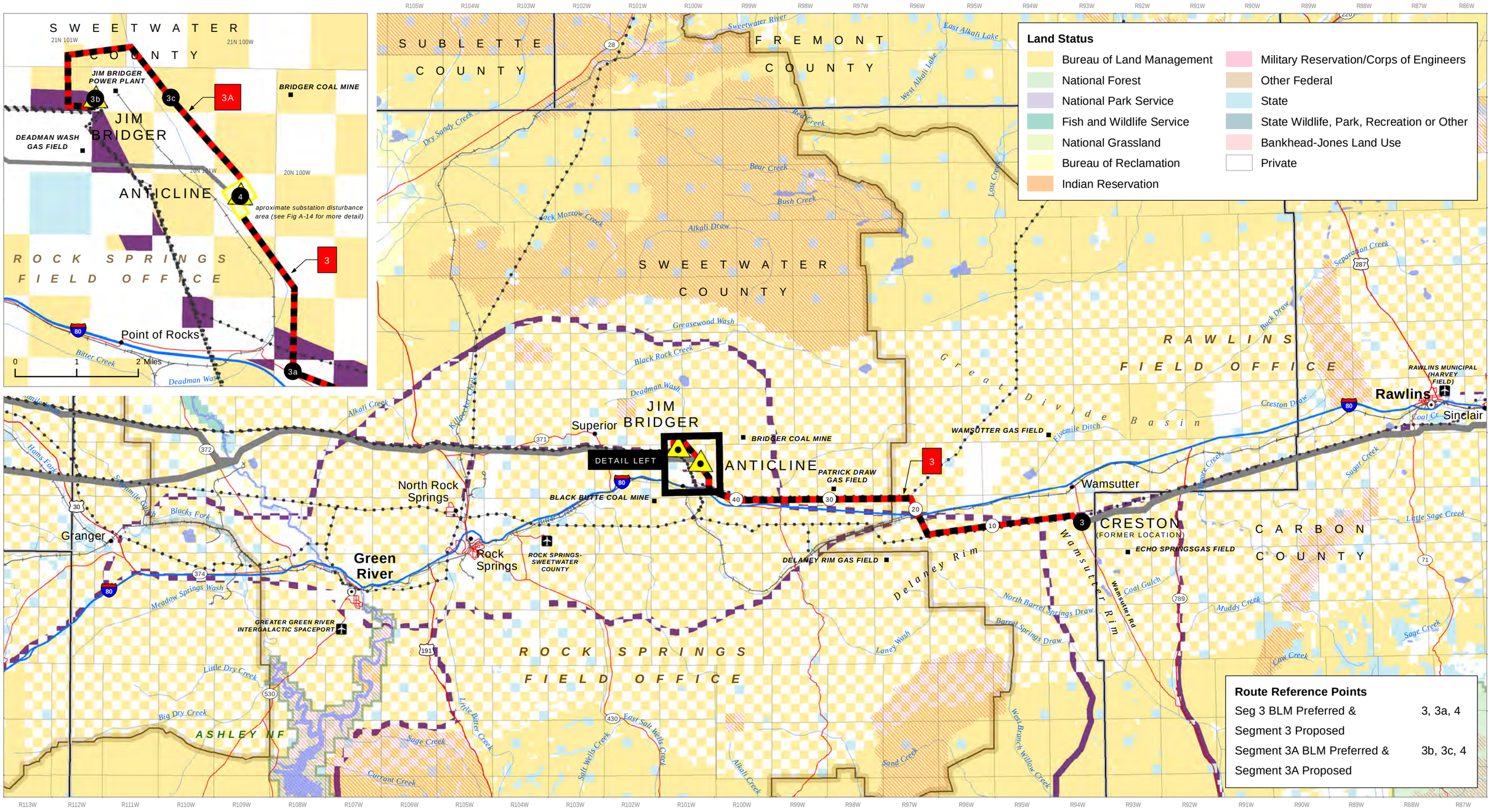
- BLM Field Office
- National Forest
- County
- Restricted Access (ACEC, WSA, roadless, etc)
- Railroad
- Interstate
- US Highway
- Secondary State or County Road
- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

Gateway West Transmission Line Project

Segment 2
Aeolus to Creston
Figure A-3

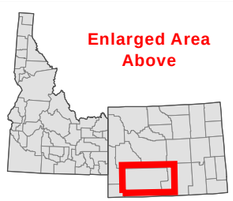
Sources | BLM; USFS; ESRI

FEIS FIG A-3 Segment 2_20121112 scott.flinders 11/14/2012



0 10 Miles

NAD 1983 UTM Zone 12N



Route Features
- BLM Preferred Alternative and Proposed Route
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

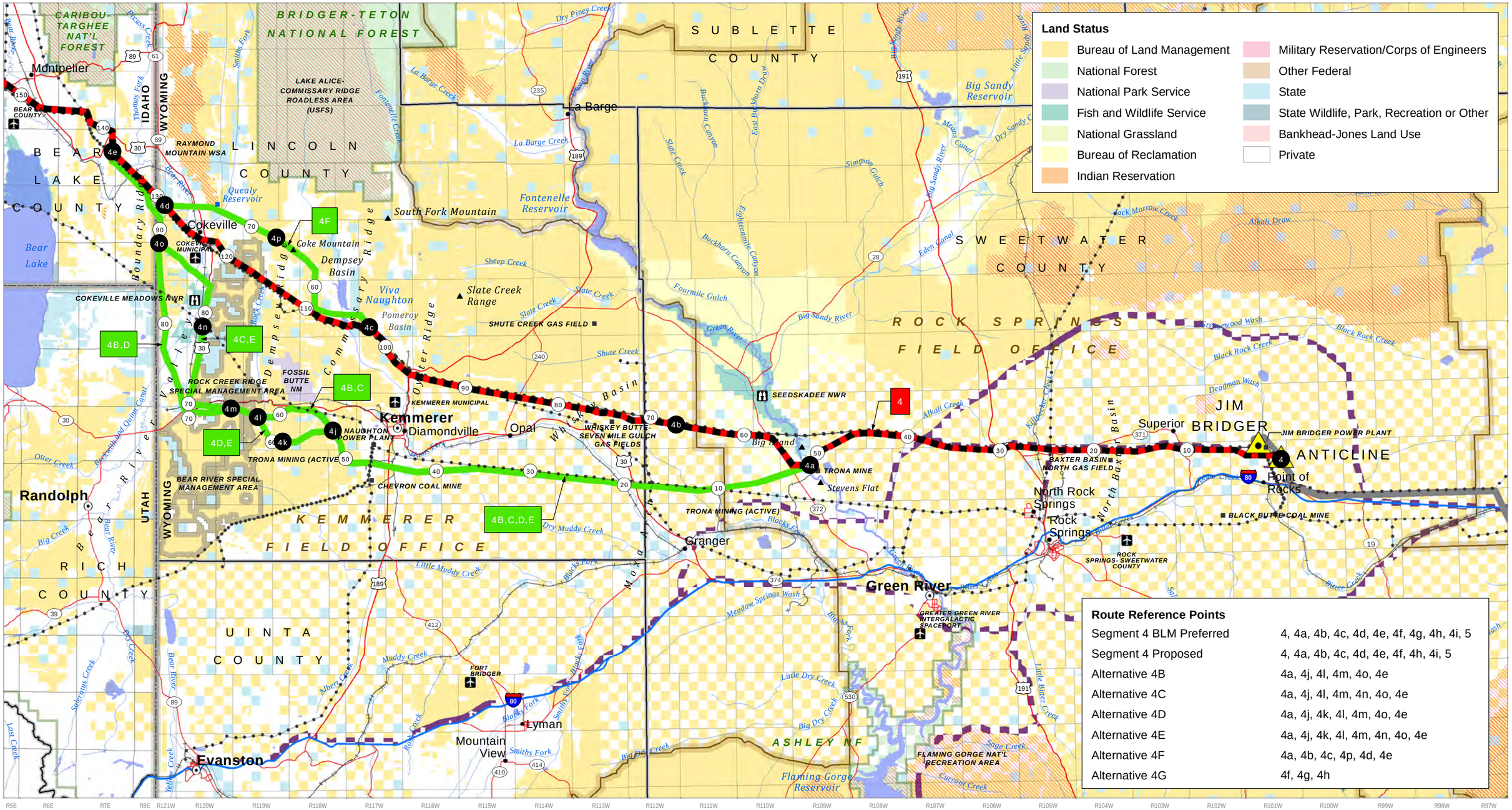
Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access (ACEC, WSA, roadless, etc)
- Railroad
- Interstate
- US Highway
- Secondary State or County Road
- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

Gateway West
Transmission Line Project

Segment 3
Creston to Anticline/Bridger
Figure A-4

Sources | BLM; USFS; ESRI

FEIS FIG A-4 Segment 3_20121112_v2 scott.flinders 11/14/2012

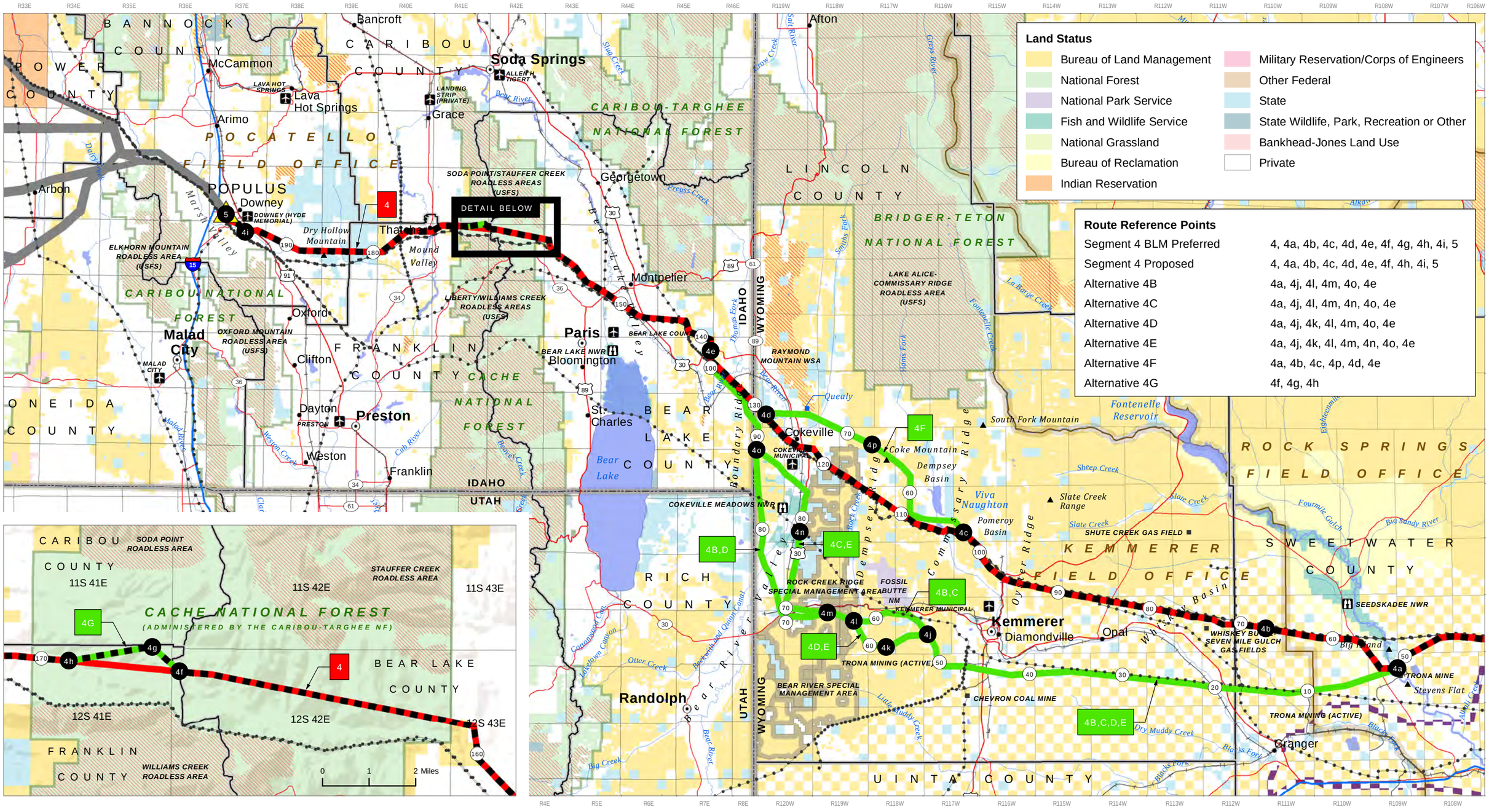


Gateway West
Transmission Line Project

Segment 4-WY
Anticline to Wyoming/Idaho
Figure A-5

Sources | BLM; USFS; ESRI

FEIS FIG A-5 Segment 4-WY_20121112 scott.flinders 12/15/2012



0 10
Miles
NAD 1983 UTM Zone 12N

Enlarged Area Above

Route Features
- BLM Preferred Alternative and Proposed Route
- BLM Preferred Alternative
- Proposed Route (Not BLM Preferred Alternative)
- Feasible Alternative
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

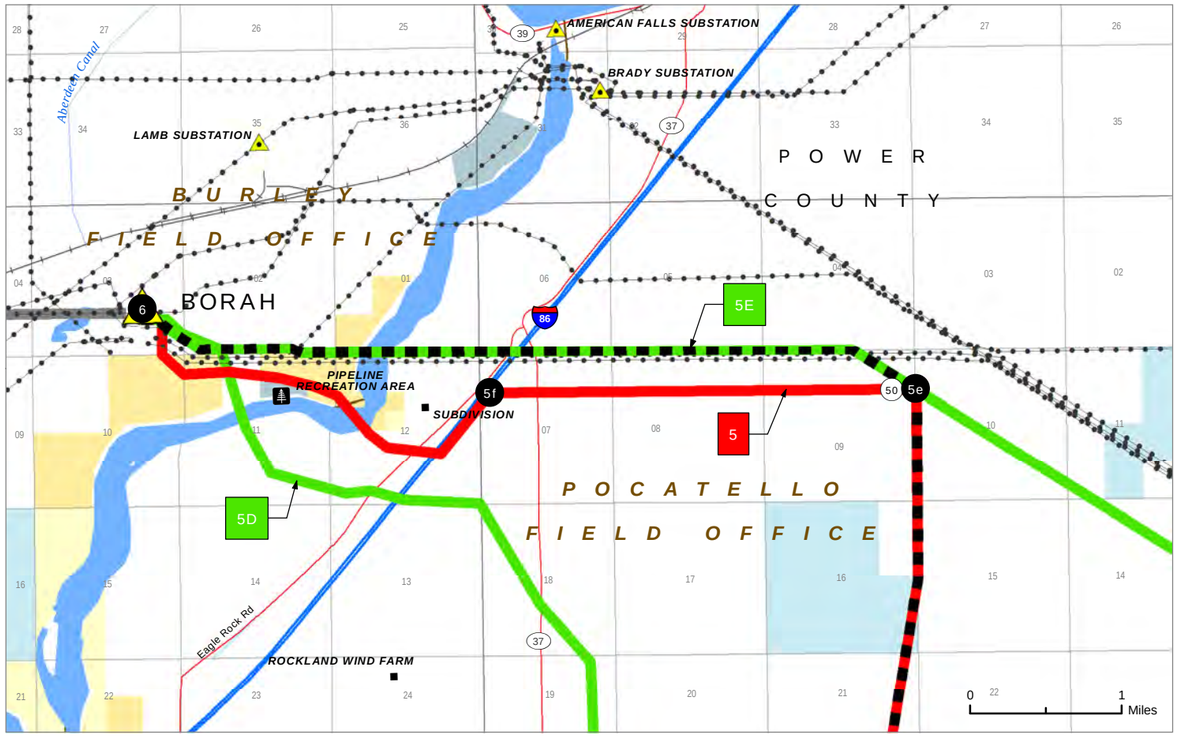
Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access (ACEC, WSA, roadless, etc)
- Railroad
- Interstate
- US Highway
- Secondary State or County Road
- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

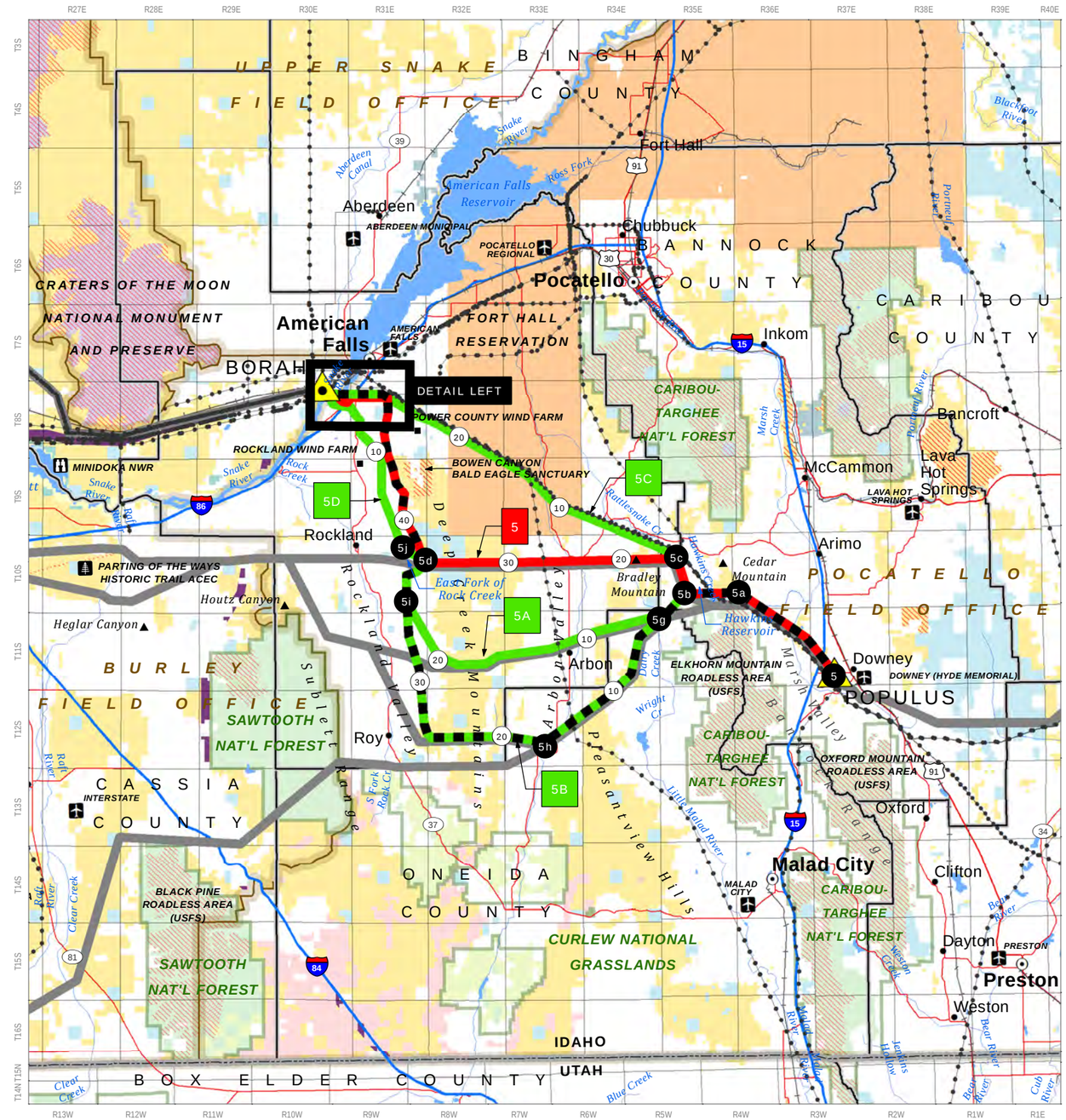
Gateway West
Transmission Line Project

Segment 4-ID
Wyoming/Idaho to Populus
Figure A-6

Sources | BLM; USFS; ESRI

FEIS FIG A-6 Segment 4-ID_20121112 scott.flinders 12/15/2012





Route Reference Points

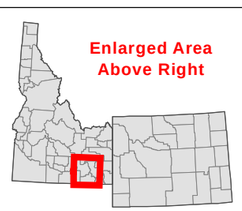
Segment 5 BLM Preferred	5, 5a, 5b, 5g, 5h, 5i, 5d, 5e, 6
Segment 5 Proposed	5, 5a, 5b, 5c, 5d, 5e, 5f, 6
Alternative 5A	5b, 5g, 5i, 5d
Alternative 5B	5b, 5g, 5h, 5i, 5d
Alternative 5C	5c, 5e
Alternative 5D	5d, 5j, 6
Alternative 5E	5e, 6

Land Status

- Bureau of Land Management
- National Forest
- National Park Service
- Fish and Wildlife Service
- National Grassland
- Bureau of Reclamation
- Indian Reservation
- Military Reservation/Corps of Engineers
- Other Federal
- State
- State Wildlife, Park, Recreation or Other
- Bankhead-Jones Land Use
- Private

0 10 Miles

NAD 1983 UTM Zone 12N



Enlarged Area Above Right

Route Features

- BLM Preferred Alternative and Proposed Route
- BLM Preferred Alternative
- Proposed Route (Not BLM Preferred Alternative)
- Feasible Alternative
- Other Route
- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features

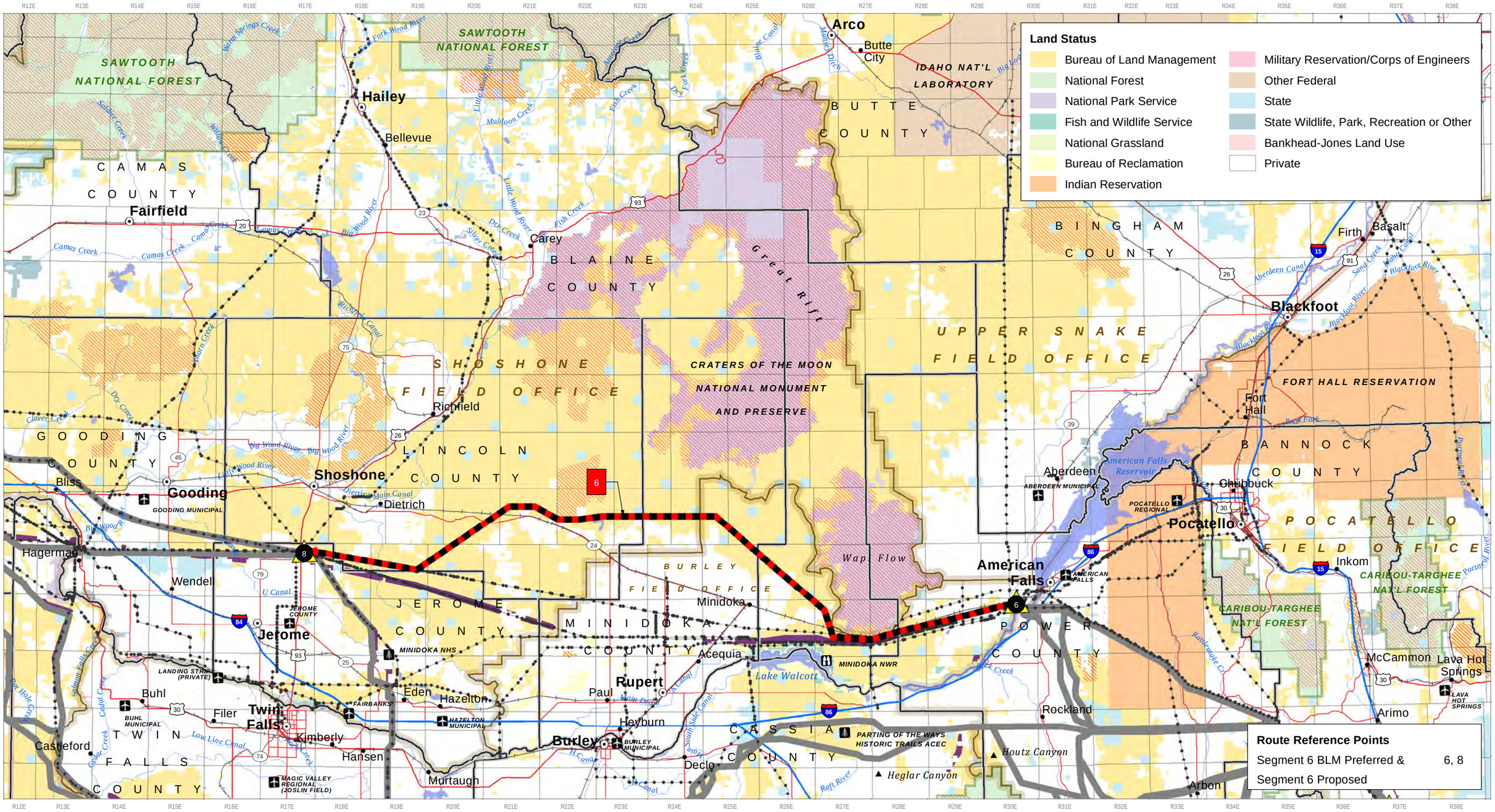
- BLM Field Office
- National Forest
- County
- Restricted Access (ACEC, WSA, roadless, etc)
- Railroad
- Interstate
- US Highway
- Secondary State or County Road
- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

Gateway West Transmission Line Project

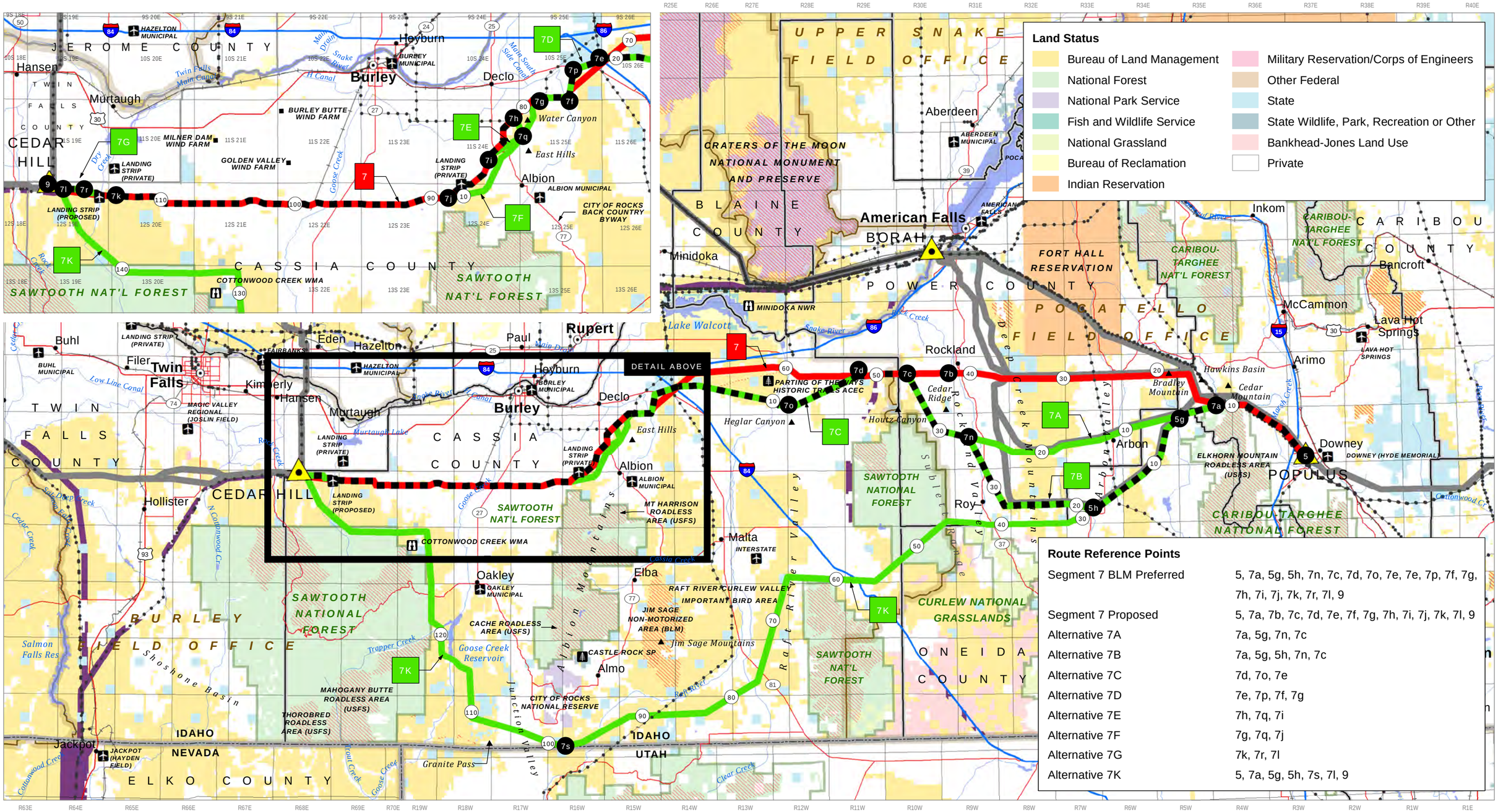
Segment 5
Populus to Borah
Figure A-7

Sources | BLM; USFS; ESRI

FEIS FIG A-7 Segment 5_20121112 scott.flinders 11/14/2012



Sources | BLM; USFS; ESRI



0 10
Miles
NAD 1983 UTM Zone 12N

Enlarged Area Above

Route Features
- BLM Preferred Alternative and Proposed Route
- BLM Preferred Alternative
- Proposed Route (Not BLM Preferred Alternative)
- Feasible Alternative
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

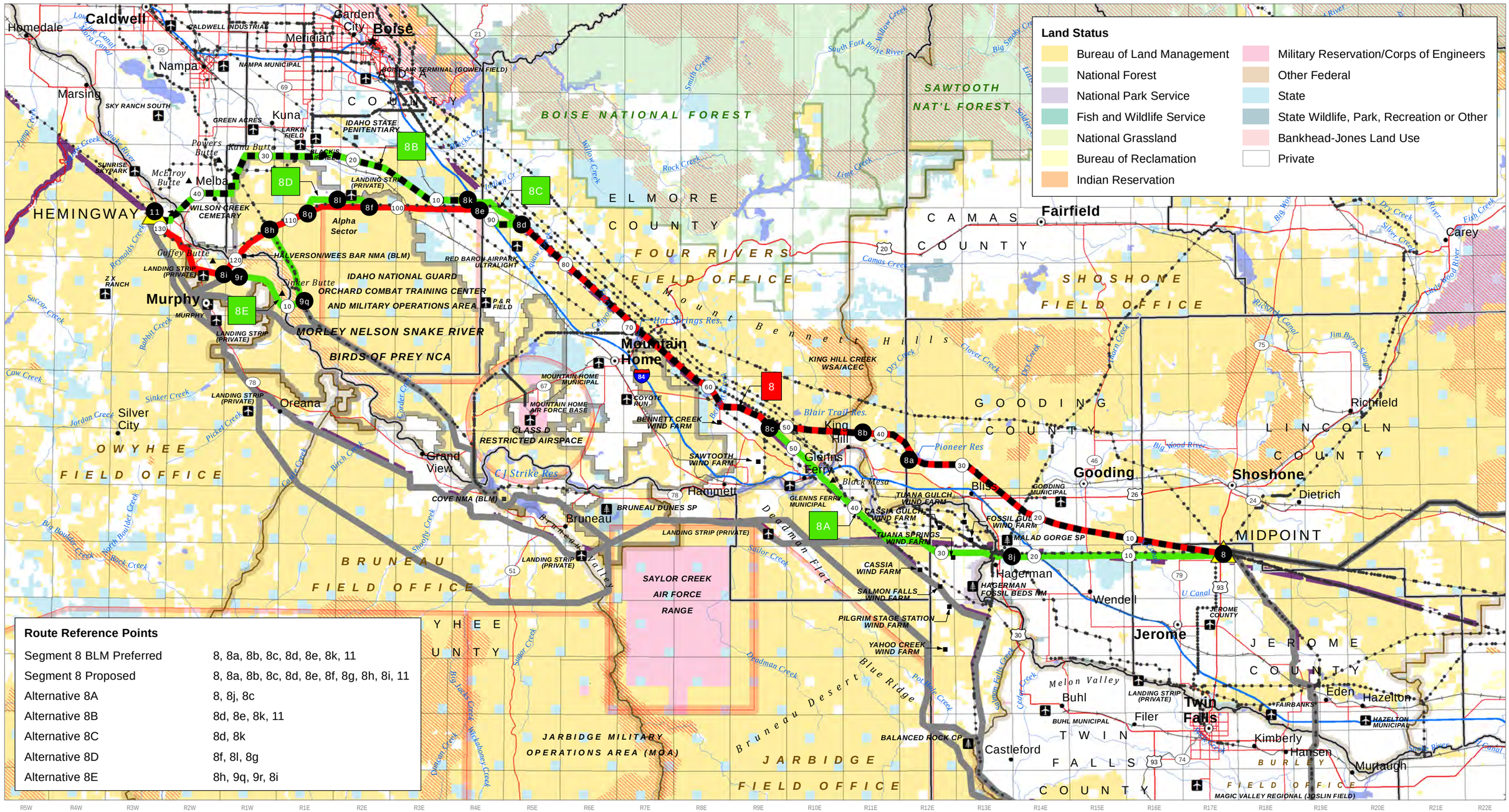
Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access (ACEC, WSA, roadless, etc)
- Railroad
- Interstate
- US Highway
- Secondary State or County Road
- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

Gateway West
Transmission Line Project

Segment 7
Populus to Cedar Hill
Figure A-9

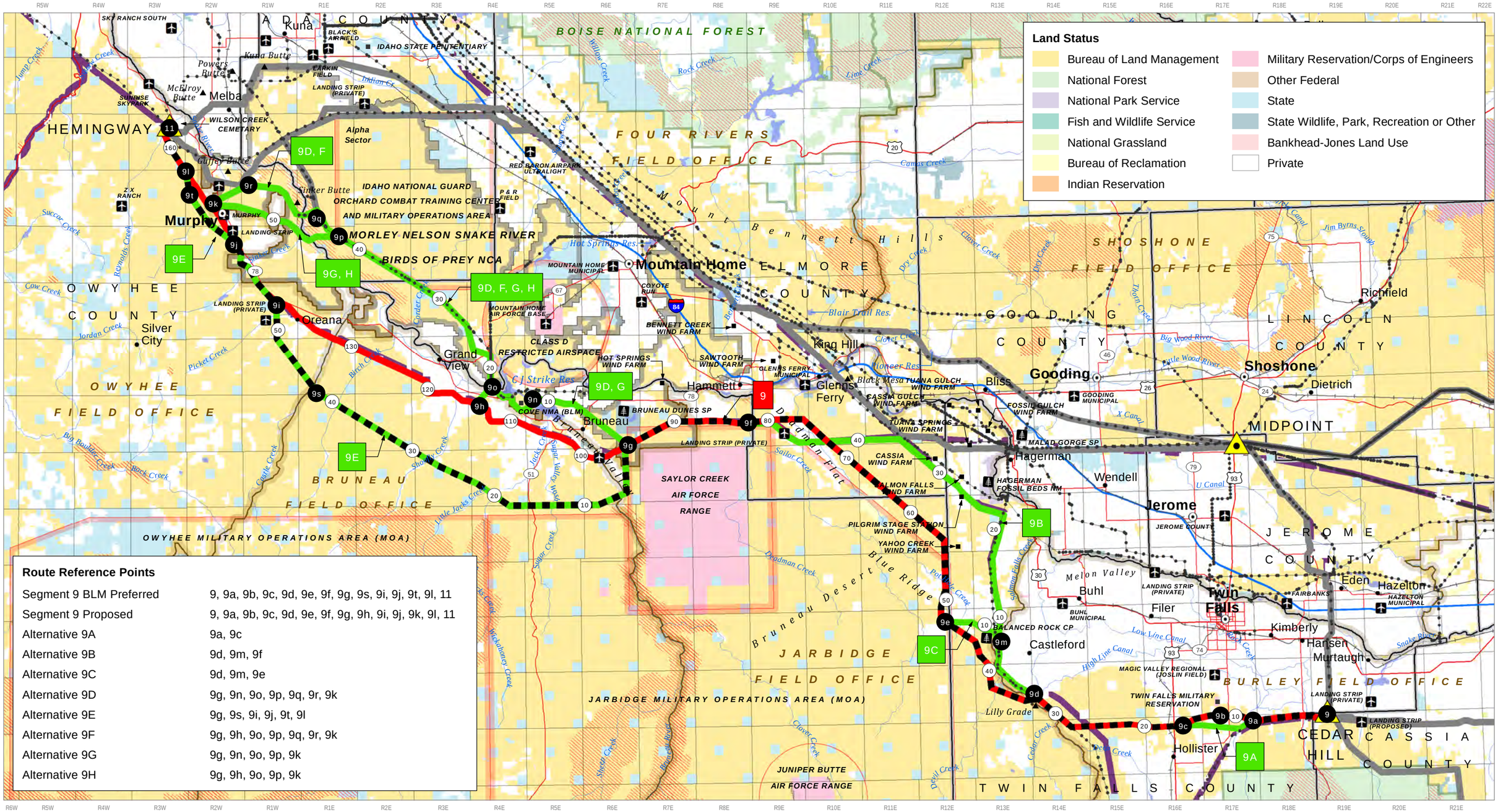
Sources | BLM; USFS; ESRI

FEIS FIG A-9 Segment 7_20121112_v2 scott.flinders 11/14/2012



Sources | BLM; USFS; ESRI

FEIS FIG A-10 Segment 8_20121112 scott.flinders 12/20/2012



Route Reference Points

Segment 9 BLM Preferred	9, 9a, 9b, 9c, 9d, 9e, 9f, 9g, 9s, 9i, 9j, 9t, 9l, 11
Segment 9 Proposed	9, 9a, 9b, 9c, 9d, 9e, 9f, 9g, 9h, 9i, 9j, 9k, 9l, 11
Alternative 9A	9a, 9c
Alternative 9B	9d, 9m, 9f
Alternative 9C	9d, 9m, 9e
Alternative 9D	9g, 9n, 9o, 9p, 9q, 9r, 9k
Alternative 9E	9g, 9s, 9i, 9j, 9t, 9l
Alternative 9F	9g, 9h, 9o, 9p, 9q, 9r, 9k
Alternative 9G	9g, 9n, 9o, 9p, 9k
Alternative 9H	9g, 9h, 9o, 9p, 9k

0 10
Miles
NAD 1983 UTM Zone 12N

Enlarged Area Above

Route Features
- BLM Preferred Alternative and Proposed Route
- BLM Preferred Alternative
- Proposed Route (Not BLM Preferred Alternative)
- Feasible Alternative
- Other Route
- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

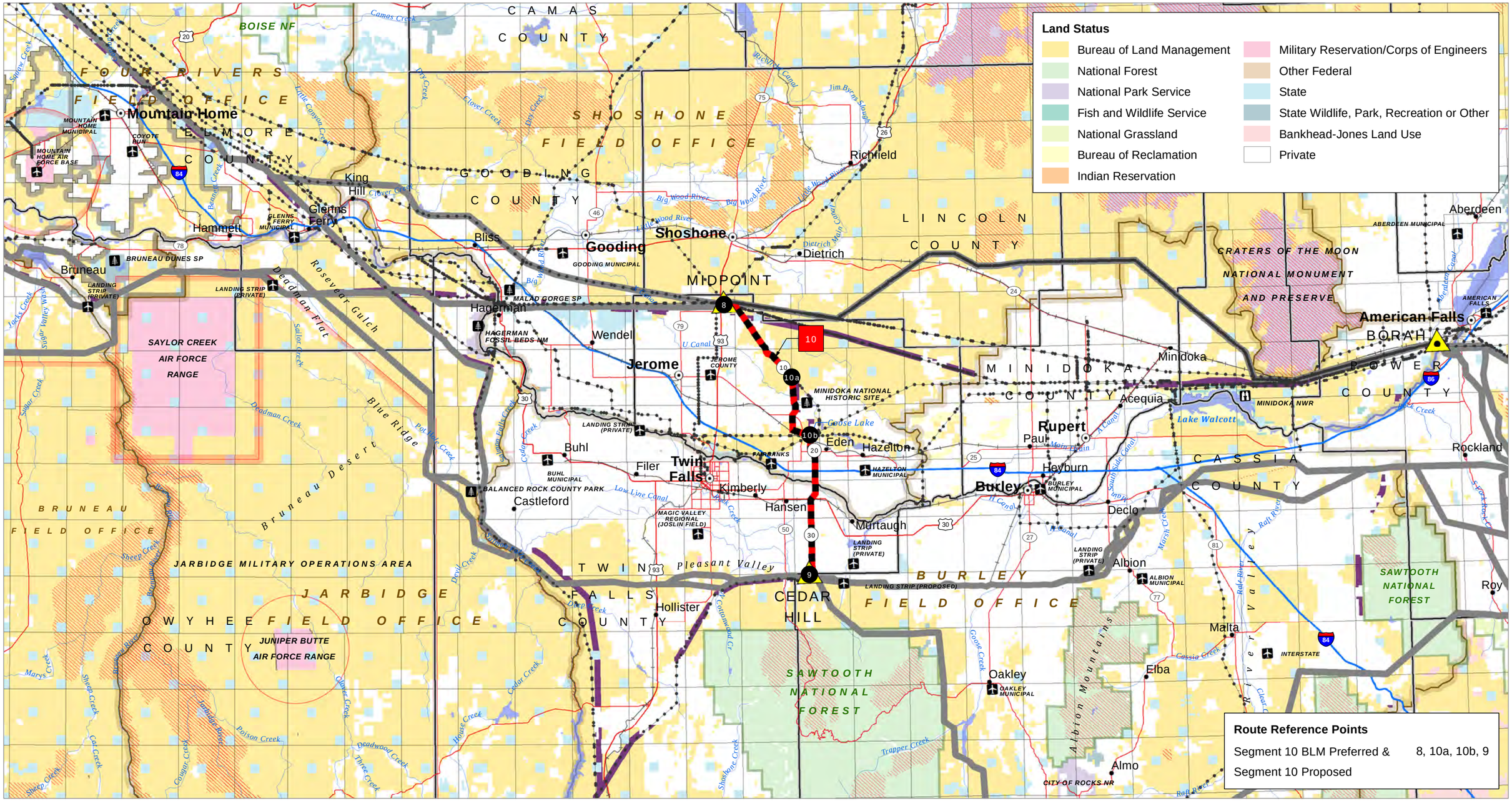
Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access (ACEC, WSA, roadless, etc)
- Railroad
- Interstate
- US Highway
- Secondary State or County Road
- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

Gateway West
Transmission Line Project

Segment 9
Cedar Hill to Hemingway
Figure A-11

Sources | BLM; USFS; ESRI

FEIS FIG A-11 Segment 9_20121112 scott.flinders 12/20/2012

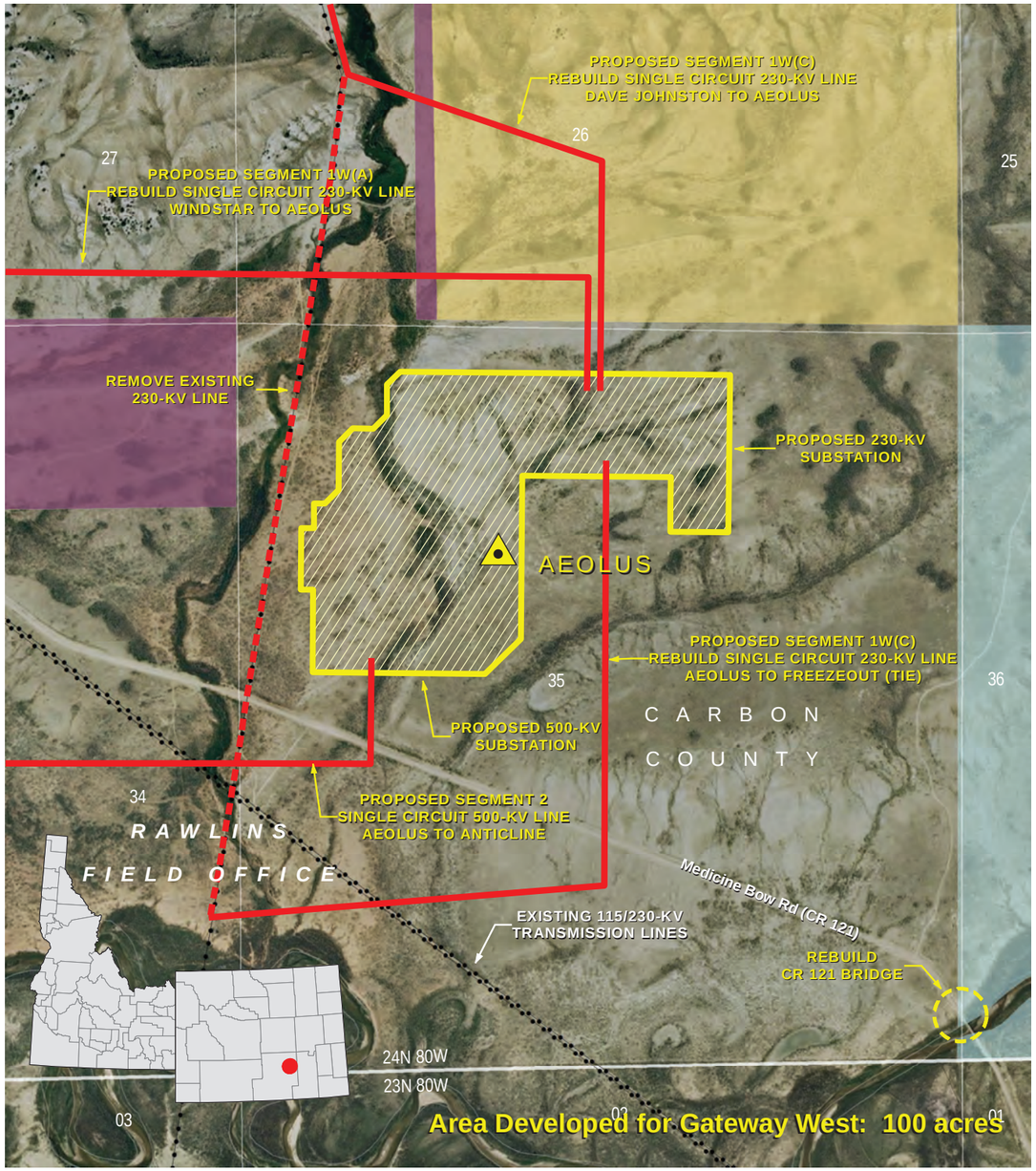


Gateway West
Transmission Line Project

Segment 10
Midpoint to Cedar Hill
Figure A-12

Sources | BLM; USFS; ESRI

FEIS FIG A-12 Segment 10_20121112 scott.flinders 11/14/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Remove Existing Line
- Substation (Development Area)
- Existing Transmission Line

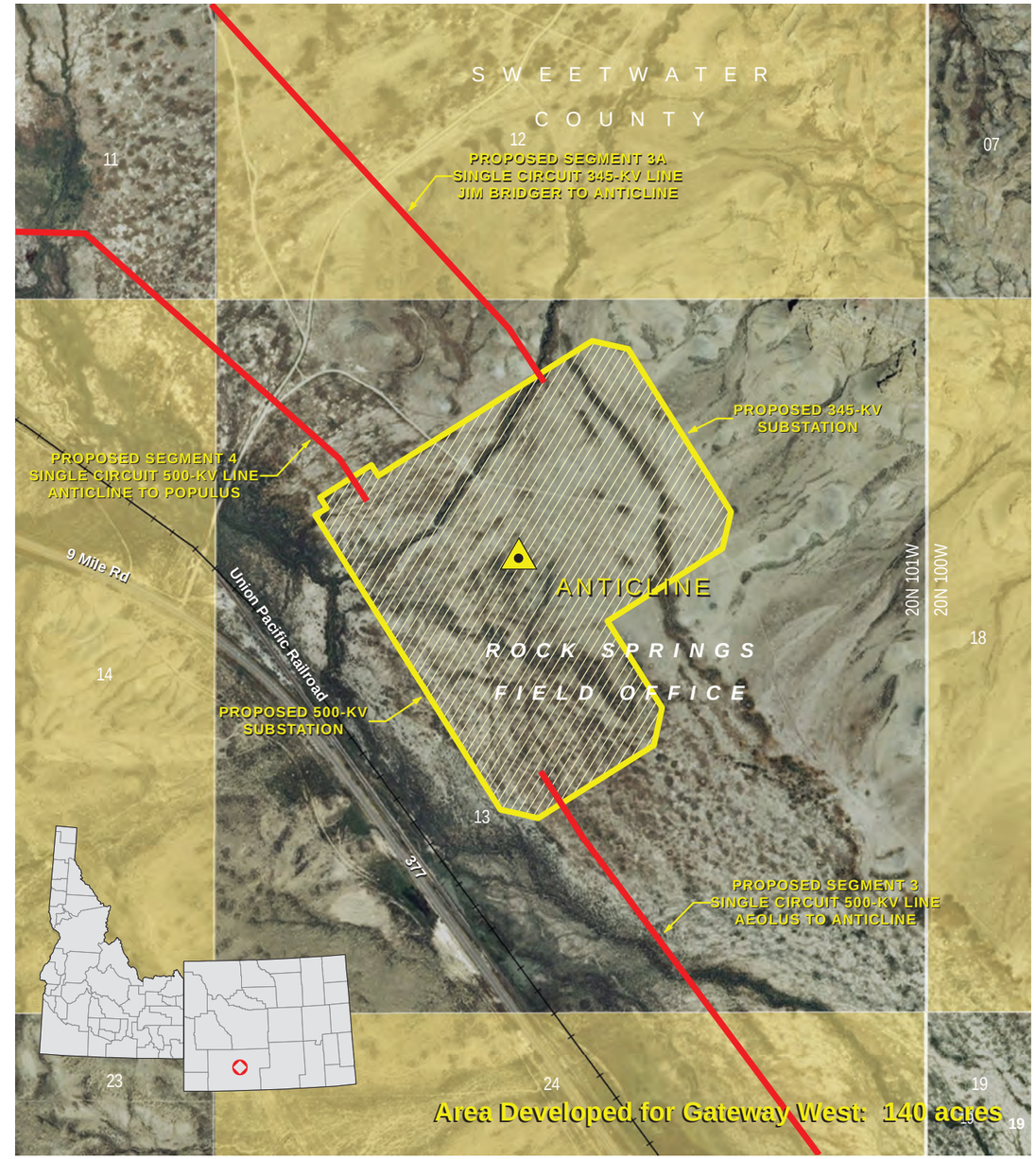
Land Status
- Bureau of Land Management
- State
- Private
- West-wide Energy Corridor (WWEC)

Gateway West
Transmission Line Project

Aeolus
230/500-kV Substation
Figure A-13

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Substation (Development Area)

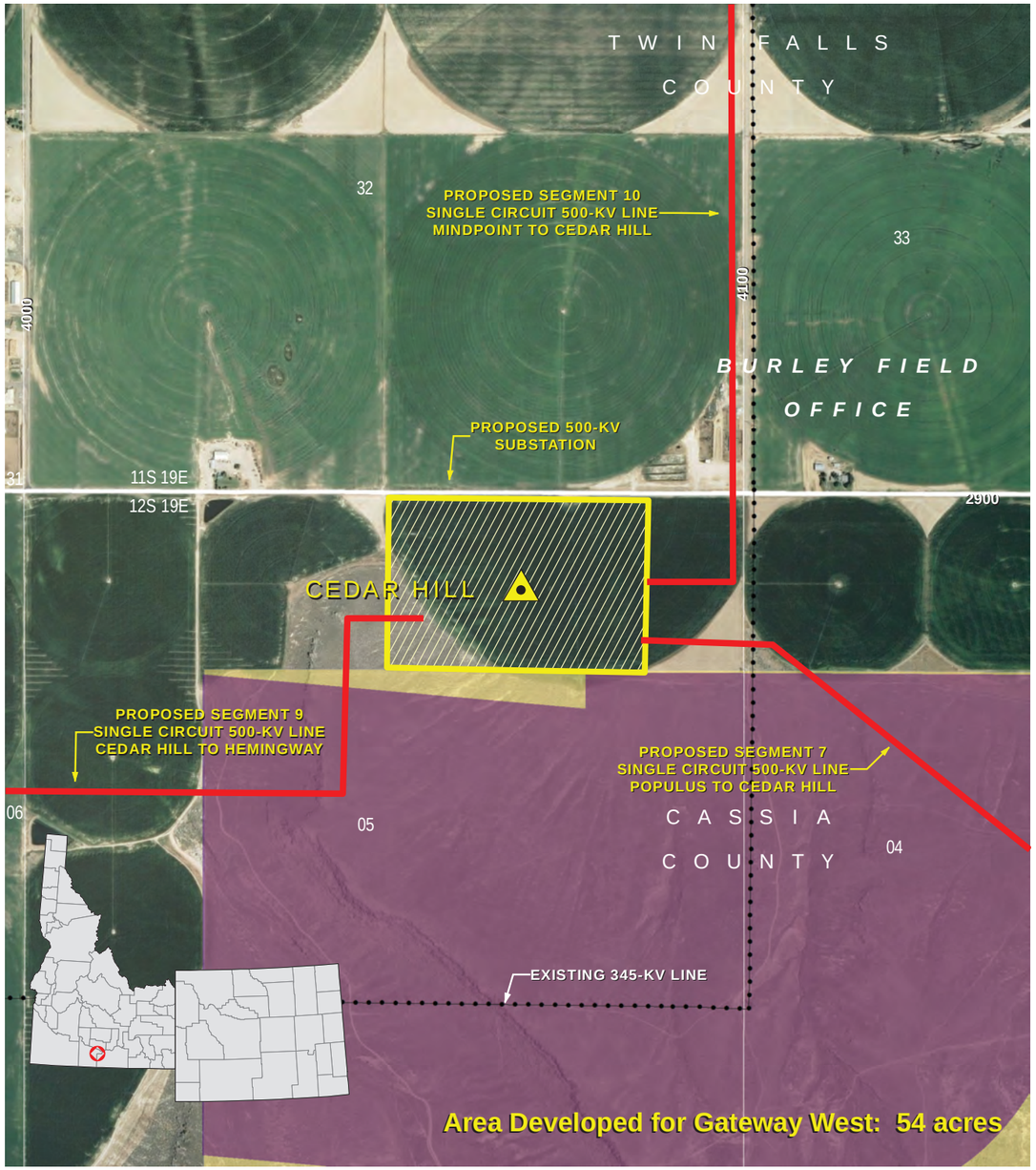
Land Status
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Anticline
345/500-kV Substation
Figure A-14

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Substation (Development Area)
- Existing Transmission Line

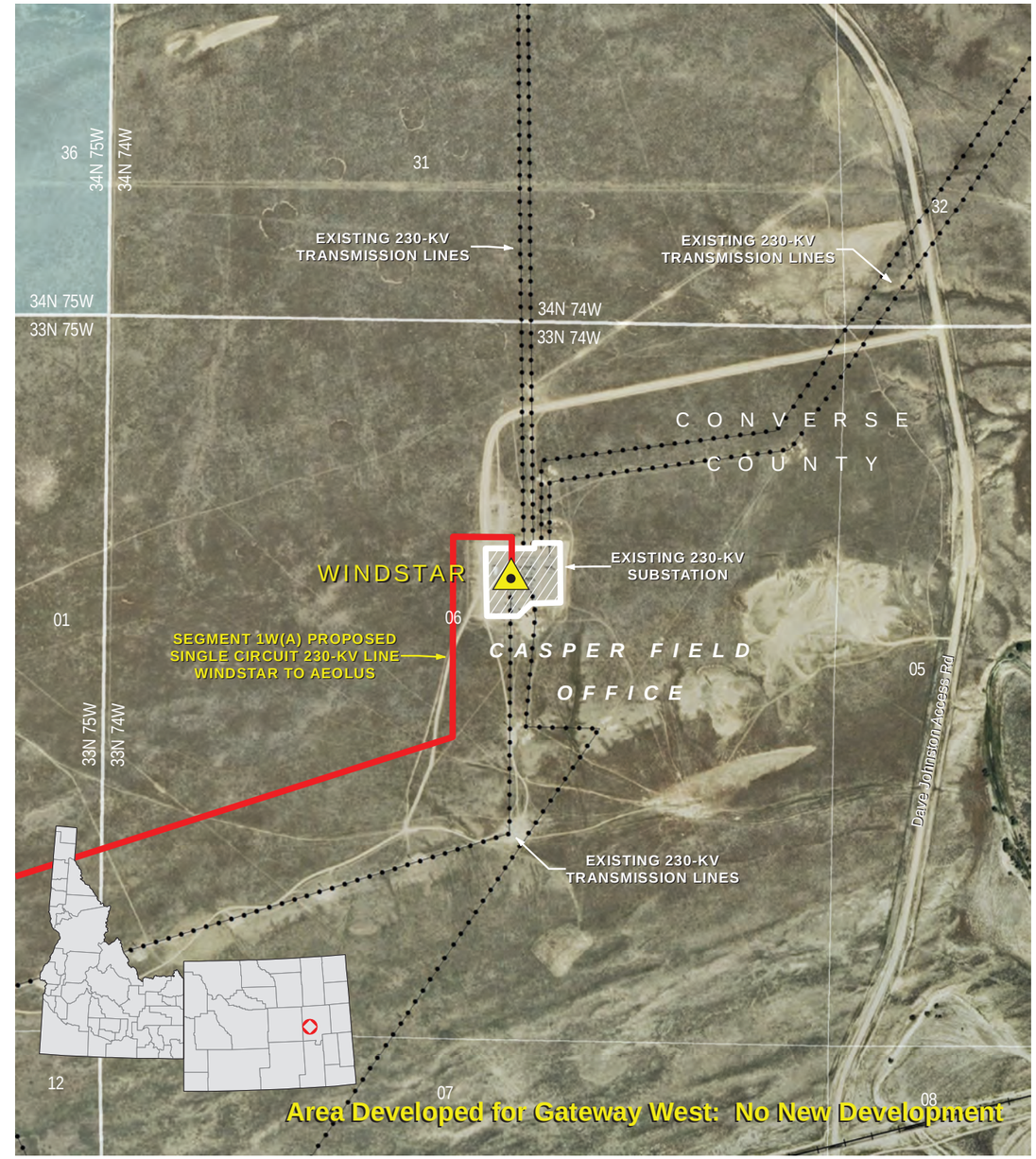
Land Status
- Bureau of Land Management
- Private
- West-wide Energy Corridor (WWEC)

Gateway West
Transmission Line Project

Cedar Hill
500-kV Substation
Figure A-15

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Substation (No New Development)
- Existing Transmission Line

Land Status
- State
- Private

Gateway West
Transmission Line Project

Windstar
230-kV Substation
Figure A-16

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012

0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Substation (No New Development)
- Existing Transmission Line

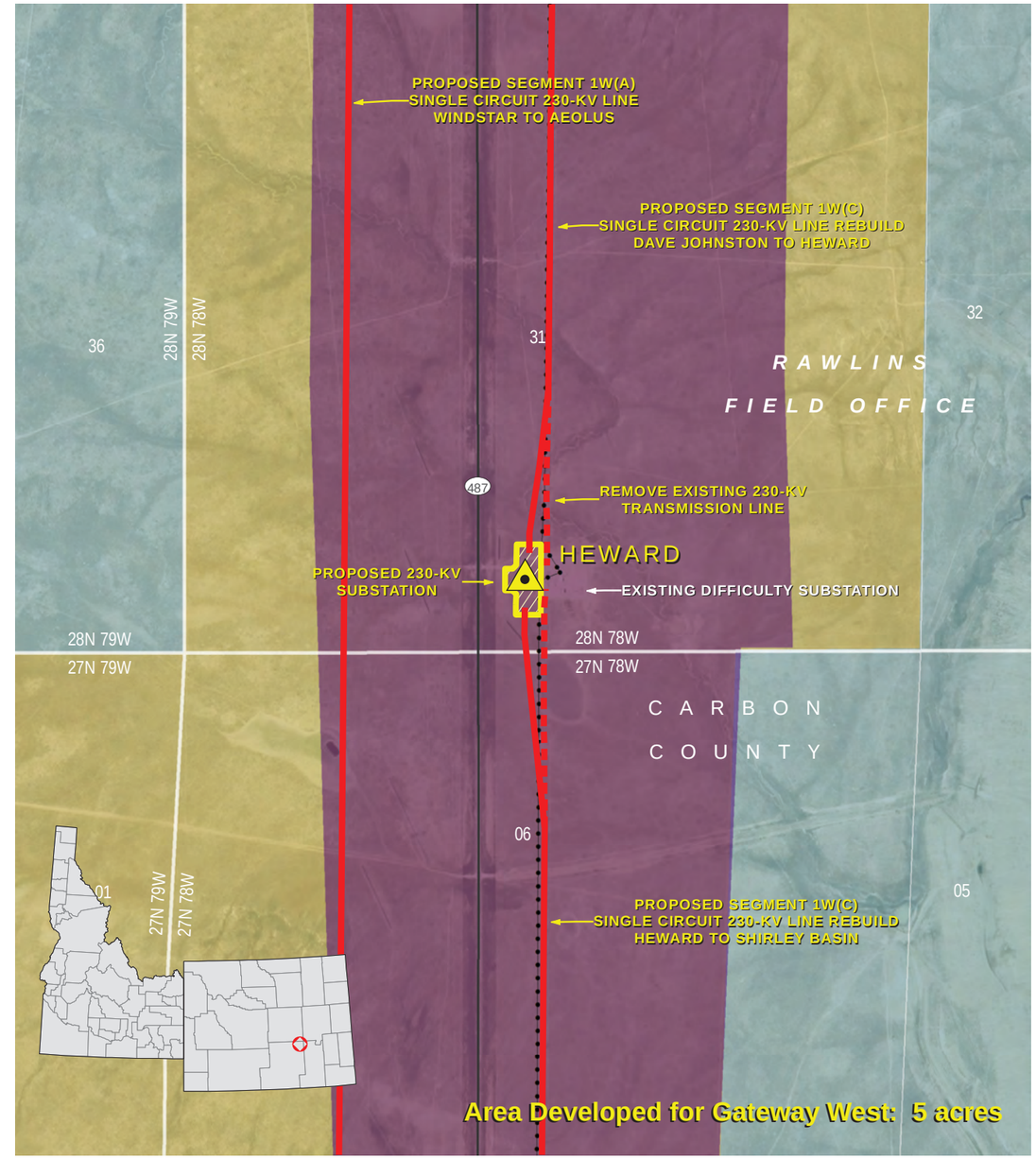
Land Status
- Private

Gateway West
Transmission Line Project

Dave Johnston 230-kV Substation
Figure A-17

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Remove Existing Line
- Substation (Development Area)
- Existing Transmission Line

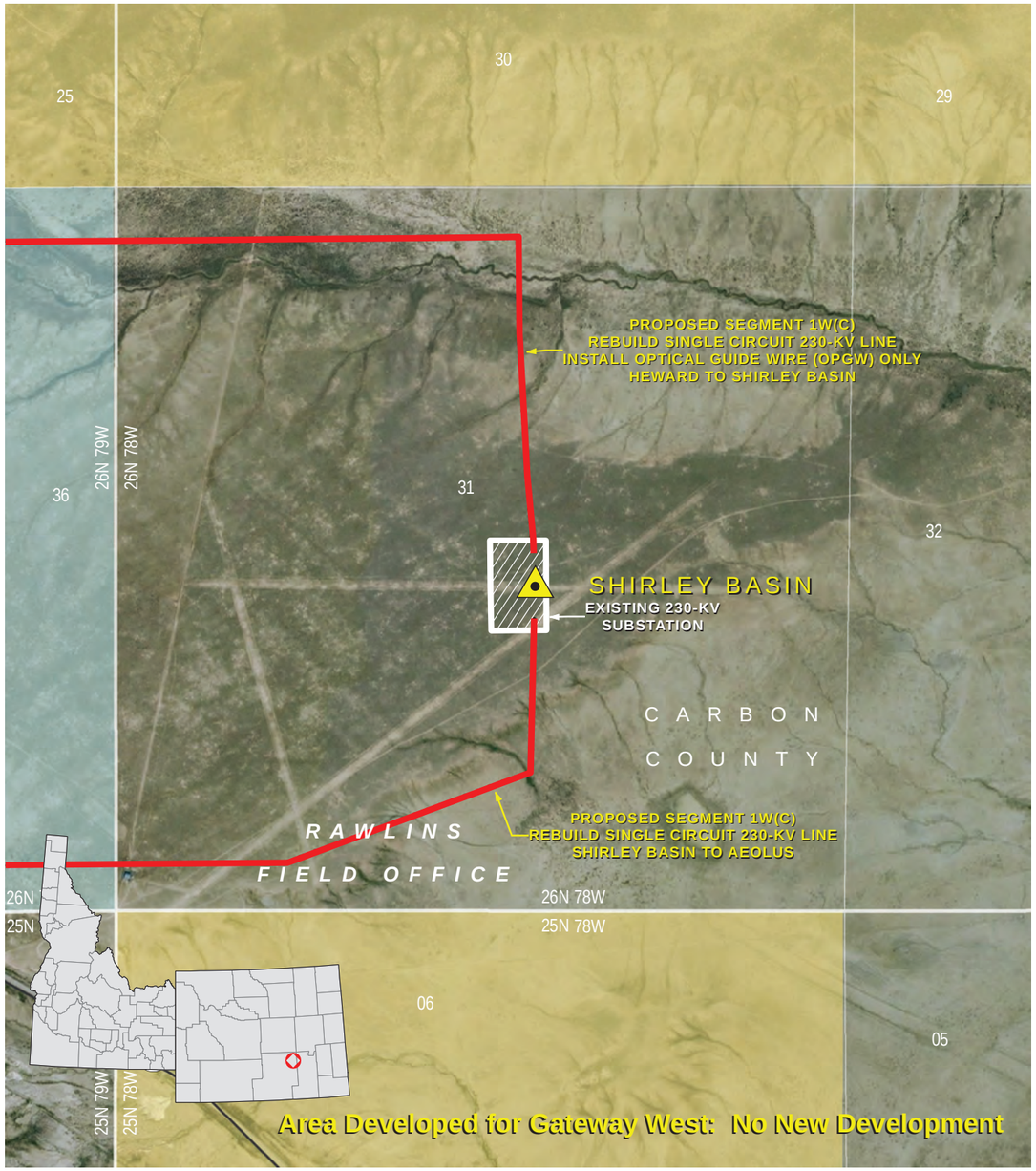
Land Status
- Bureau of Land Management
- State
- West-wide Energy Corridor (WWEC)

Gateway West
Transmission Line Project

Heward 230-kV Substation
Figure A-18

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Substation (No New Development)
- Existing Transmission Line

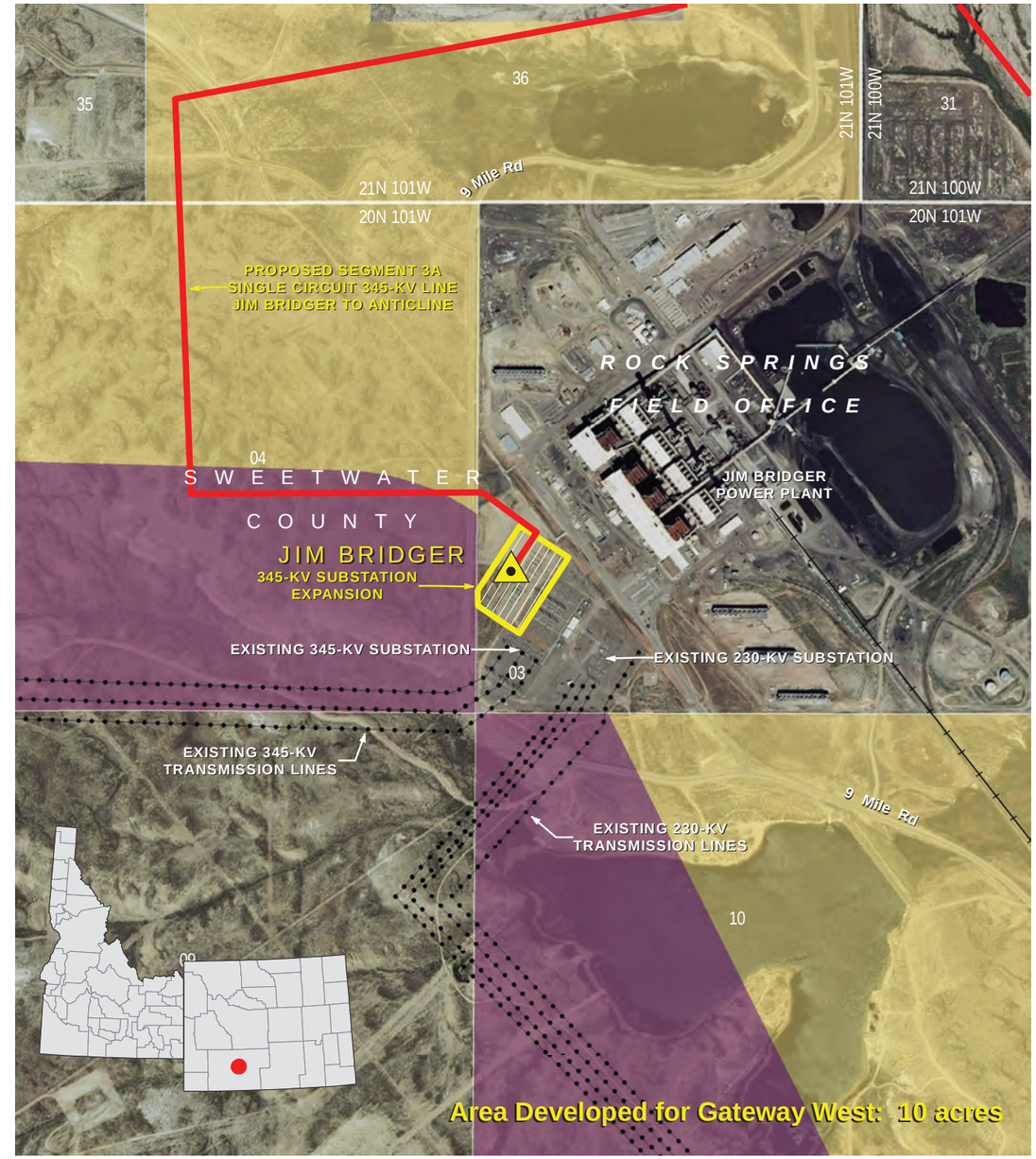
Land Status
- Bureau of Land Management
- State
- Private

Gateway West
Transmission Line Project

Shirley Basin
230-kV Substation
Figure A-19

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Substation (Development Area)
- Existing Transmission Line

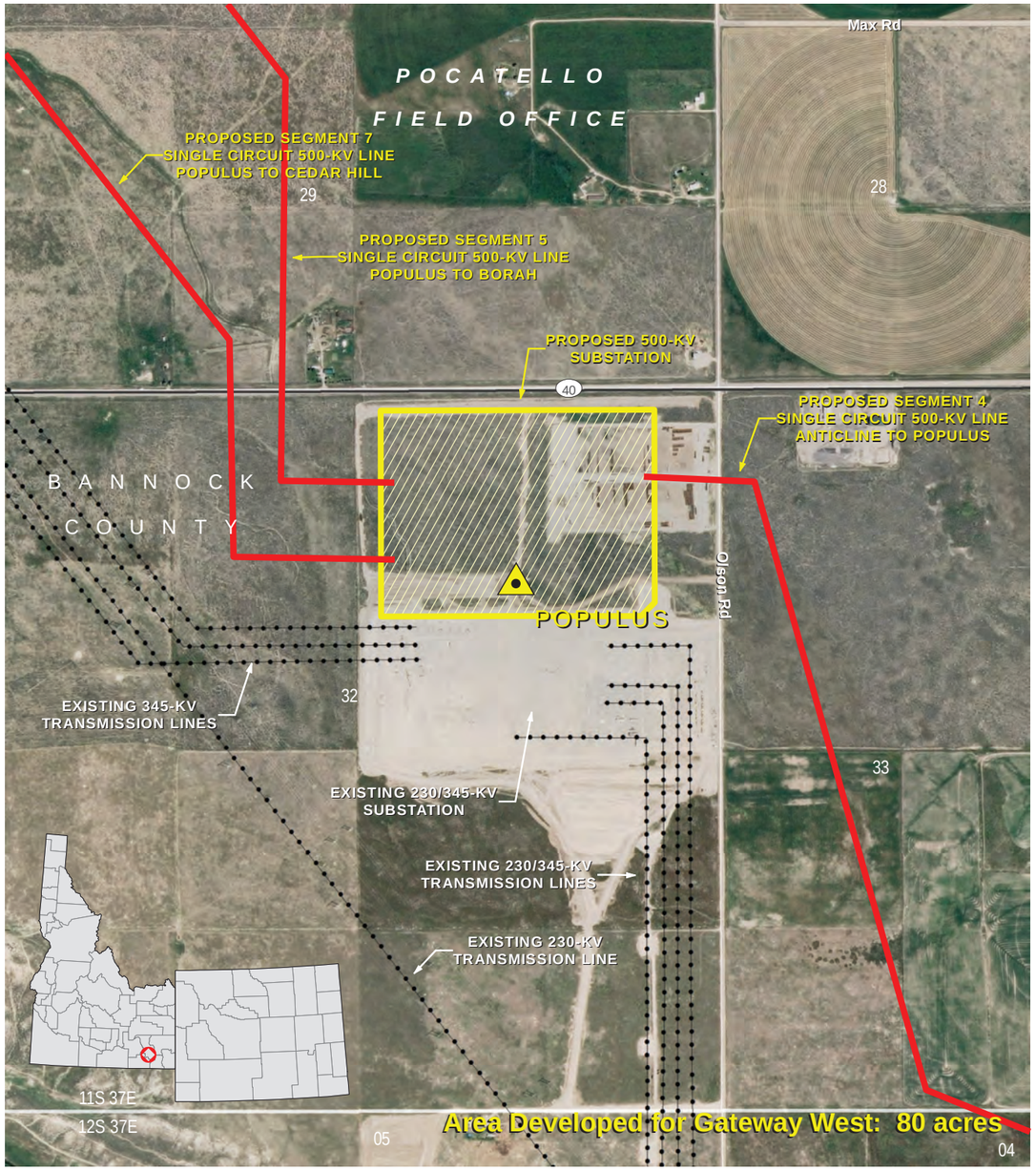
Land Status
- Bureau of Land Management
- Private
- West-wide Energy Corridor (WWEC)

Gateway West
Transmission Line Project

Jim Bridger
345-kV Substation
Figure A-20

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Substation (Development Area)
- Existing Transmission Line

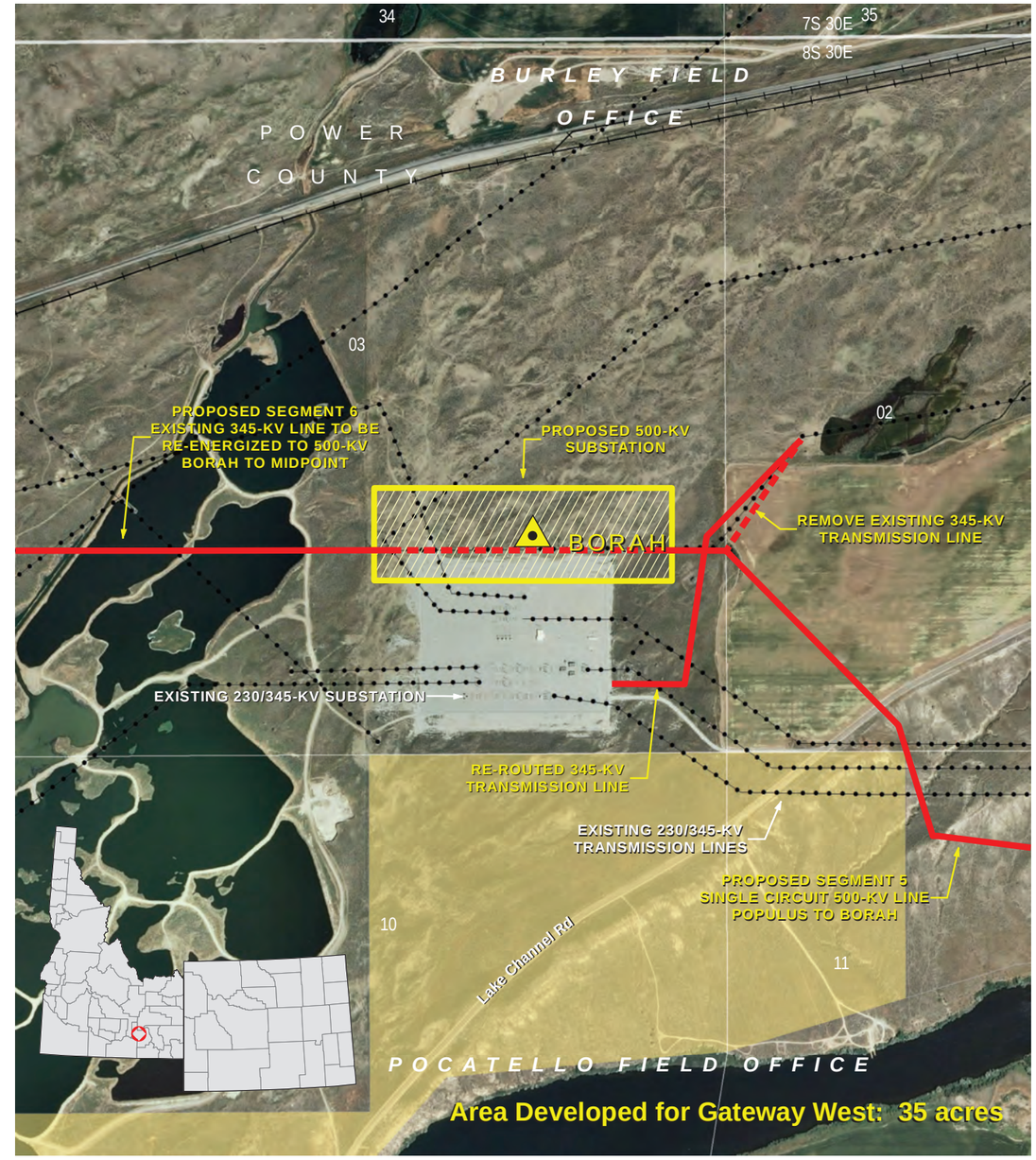
Land Status
- Private

Gateway West
Transmission Line Project

Populus
500-kV Substation
Figure A-21

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Remove Existing Line
- Substation (Development Area)
- Existing Transmission Line

Land Status
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Borah
500-kV Substation
Figure A-22

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

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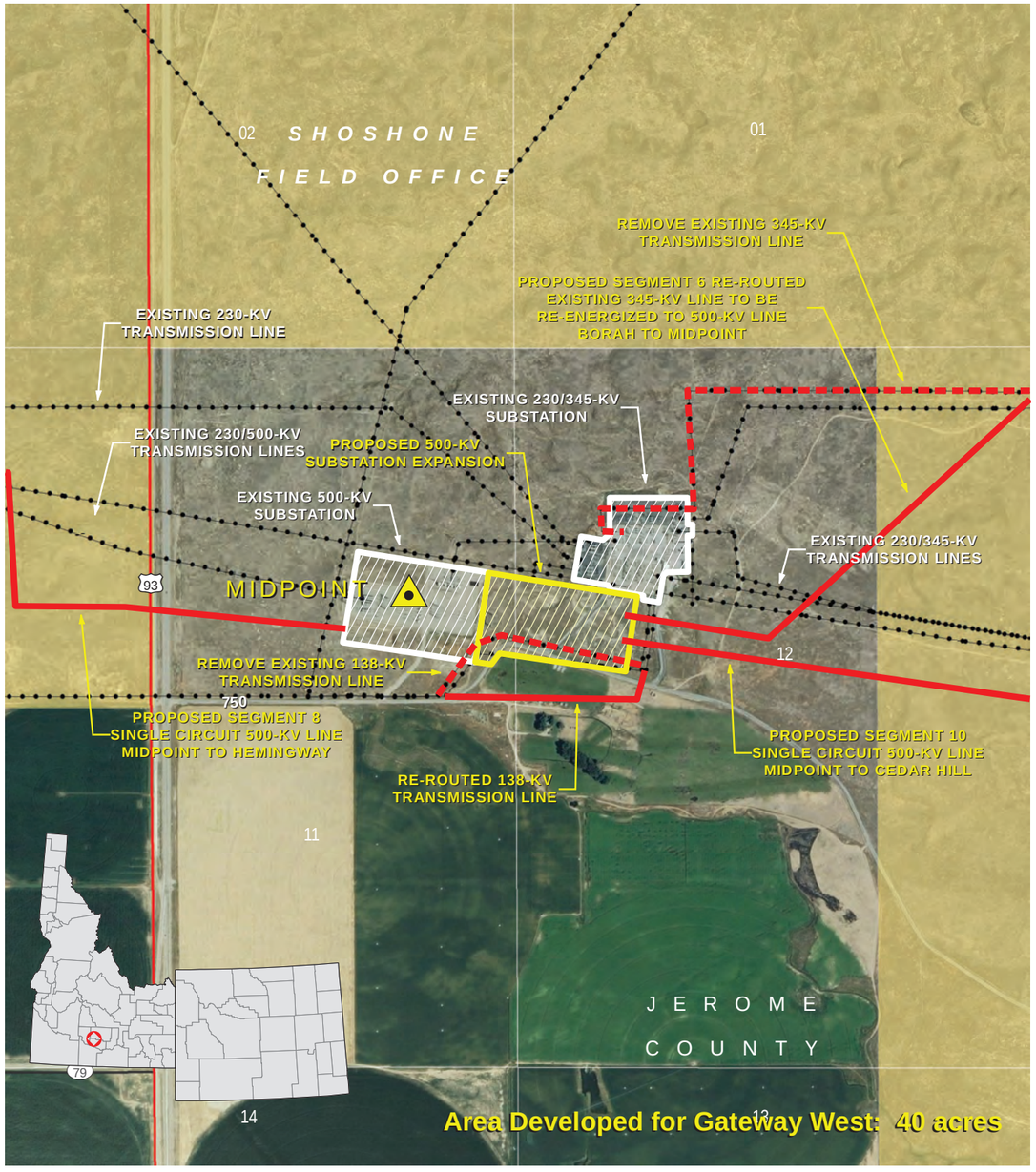


0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Remove Existing Line
- Substation (Development Area)
- Substation (No New Development)
- Existing Transmission Line

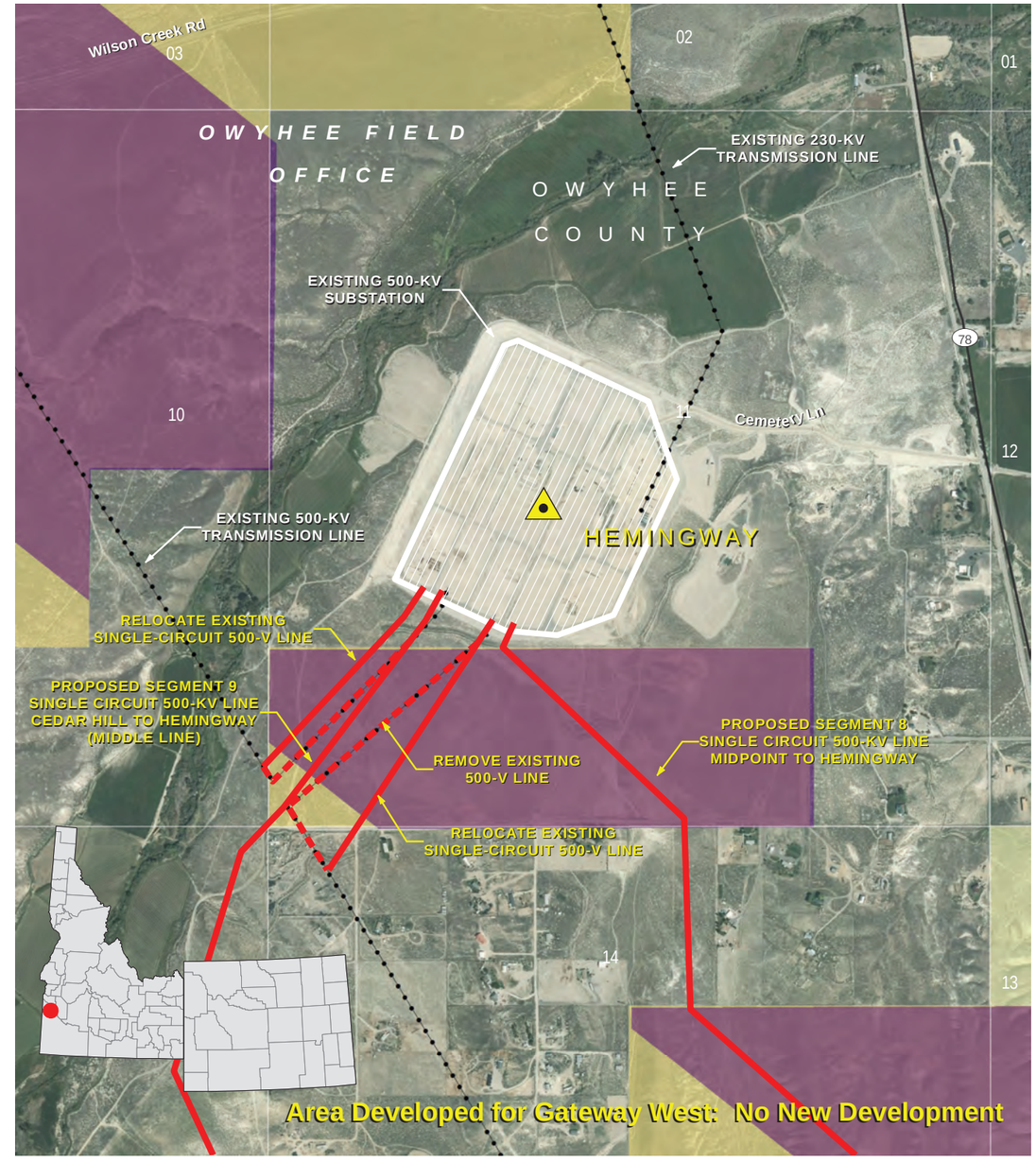
Land Status
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Midpoint
500-kV Substation
Figure A-23

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FEIS Appendix A Substations_20121206 scott.flinders 12/19/2012



0 1,000
Feet
NAD 1983 UTM Zone 12N

Project Features
- Proposed Action
- Remove Existing Line
- Substation (No New Development)
- Existing Transmission Line

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Private
- West-wide Energy Corridor (WWEC)

Gateway West
Transmission Line Project

Hemingway
500-kV Substation
Figure A-24

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

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Appendix B

Proponents' Plan of Development

Plan of Development

Gateway West Transmission Line Project

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January 2013

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<Appendices S through Y do not exist>

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ACRONYMS AND ABBREVIATIONS

AC	alternating current
ACEC	Area of Critical Environmental Concern
aMW	average megawatts
BES	Bulk Electric System
BLM	U.S. Bureau of Land Management
CR	County Route
Companies	PacifiCorp and Idaho Power Company
EIS	Environmental Impact Statement
EO	Executive Order
EPM	environmental protection measure
EPP	Environmental Protection Plan
FERC	Federal Energy Regulatory Commission
Forest Service	U.S. Forest Service
Gateway West	Gateway West Transmission Line Project
GIS	geographic information system
I	Interstate
IDANG	Idaho Army National Guard
IPUC	Idaho Public Utility Commission
IRP	Integrated Resource Plan
kV	kilovolt
MP	milepost
MW	megawatt
MWh	megawatt hours
NERC	North American Electrical Reliability Corporation
NF	National Forest
OATT	Open Access Transmission Tariff
POD	Plan of Development
Project	Gateway West Transmission Line Project
ROW	right-of-way
SR	State Route
SRBOP	Morley Nelson Snake River Birds of Prey National Conservation Area
SRMA	Special Recreation Management Area
VRM	Visual Resource Management
WECC	Western Electricity Coordinating Council
WGFD	Wyoming Game and Fish Department
WSR	Wild and Scenic River
WWE	West-wide Energy

1.0 INTRODUCTION

PacifiCorp (doing business as Rocky Mountain Power) and Idaho Power Company, collectively known as the Companies, applied to the Bureau of Land Management (BLM) for a right-of-way (ROW) grant to use the National System of Public Lands for portions of the Gateway West Transmission Line Project (Gateway West or Project) on May 7, 2007. The original application was revised in October 2007, August 2008, May 2009, and January 2010 to reflect changes and refinements in their proposed Project and in response to feedback from the public regarding routing alternatives. This application was assigned the case file numbers of IDI-35849 for Idaho, WYW-174598 for Wyoming, and NVN-089270 for Nevada. Because the BLM is no longer considering a route that crosses into Nevada, the Nevada application has been withdrawn.

The Companies are proposing to construct and operate approximately 990 miles of new 230-kilovolt (kV), 345-kV, and 500-kV alternating current (AC) electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho (see Appendix A, Figure A-1). Greater detail is shown for each segment in maps found in Appendix A, Figures A-2 through A-12. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving, access roads, multi-purpose yards, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), other federal agencies, and the states of Idaho and Wyoming.

The Plan of Development (POD) is intended to serve several purposes. It describes the Project, including its purpose and need, details of its construction and operation, and lists the measures the Companies have taken and will take to avoid, minimize, and mitigate for environmental impact. It provides the details needed to support the Companies' application to the BLM and other agencies for rights of way or easements across lands managed by those agencies. The Companies intend that the BLM and other agencies use the details supplied in this POD to support the analysis for and the development of all needed permits for the construction and operation of the Project.

The POD is organized as follows:

Section 1—Introduction and organizational structure

Section 2—Purpose and need for the project

Section 3—Details of the project description, including construction and operation procedures and protocols

Section 4—Plans that detail the Companies' commitment to avoidance, minimization, and mitigation of environmental impact and the proposed means of accomplishing this commitment.

The purpose of this version of the POD and the SF-299 (filed February 29, 2012) is to further supplement and revise information previously submitted through January 2010 and to support the analysis and publication of the BLM's Final Environmental Impact Statement (FEIS) analysis and publication. This POD revises and supplements routes, substation descriptions, ROW and structure configurations, construction timeframes, and environmental protection plans contained in the January 2010 POD and SF-299. These revisions reflect responses to comments on the Draft EIS and further negotiations with stakeholders along the Project alignment. It provides revisions in Section 2 to clarify the Companies' purpose and need; revises the project description in Section 3, and provides new and revised environmental protection plans in Section 4 and in the appendices to the POD.

This POD revision is submitted after the BLM has indicated its preferred route. An additional planning-level POD may be issued to support additional contracting and permitting once the route to be permitted has been finalized, and a final Construction POD (also known as a Construction, Operation, and Maintenance Plan for the Forest Service) will be issued as part of the Companies' request to the various agencies for permission to proceed to construction.

2.0 PROJECT PURPOSE AND NEED

The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project is principally necessary to serve the Companies' customers, though other markets may also be served. While the earliest phase of the Project needs to be in service by 2018, each segment has its own construction schedule. A more detailed description of the route, design, and construction schedule is presented in Section 3.1.

Under Federal Energy Regulatory Commission (FERC) tariff requirements, utilities must plan, design, construct, operate, and maintain an adequate electric transmission system that meets not only the customers' energy demands (measured in megawatt-hours) but also meet the customer's peak load demands (measured in megawatts). Both are important in determining the need for the project.

2.1 PacifiCorp (Rocky Mountain Power)

PacifiCorp is an electric utility that transmits electricity via a grid of transmission lines located throughout a six-state region and a distribution system that serves more than 1.7 million retail customers. Rocky Mountain Power, a business unit of PacifiCorp, delivers electricity to approximately 1 million customers in Utah, Wyoming, and Idaho. As an essential service provider, Rocky Mountain Power is required to operate under the oversight and regulatory controls of the Public Service Commission of Utah, the Wyoming Public Service Commission, and the IPUC. Pacific Power, another business unit of PacifiCorp, provides service to approximately 730,000 customers in Oregon, Washington, and California, and is subject to the regulatory oversight of the Oregon Public Utility Commission, the Washington Utilities and Transportation Commission, and the California Public Utilities Commission. Although the objectives of these multiple commissions vary somewhat, they do share a common goal of ensuring utilities such as Rocky Mountain Power provide safe, reliable, adequate, and efficient delivery of electricity.

PacifiCorp's system peak-hour load is forecast to increase from 10,450 MW in 2011 to 12,609 MW in 2020, a 2.1 percent average annual growth rate. The Company's eastern system peak is expected to continue growing faster than its western system peak, with average annual growth rates of 2.4 percent and 1.4 percent respectively, over the forecast horizon. PacifiCorp's system-wide average customer load is also forecasted to grow at a 2.1 percent annual rate from 2011 to 2020, increasing from 63,131,000 MWh in 2011 to 76,137,000 MWh in 2020. This average forecasted growth rate is moderately higher than the average growth rate experienced from 1995 to 2005 when the average increase per year was 1.6 percent. PacifiCorp's three highest state loads—Oregon, Utah and Wyoming (included in the MWh loads above)—are forecasted to grow at a rate of 1.4 percent, 2.4 percent, and 2.9 percent, respectively, through the same 2011–2020 period (PacifiCorp 2011). PacifiCorp's customer base in Wyoming is anticipated to increase by approximately 340 MW in the same timeframe. The growth rate is reflective of all customer loads.

PacifiCorp is a public utility under the jurisdiction of the FERC. PacifiCorp is obligated to expand its transmission system to provide requested firm transmission service and to construct and place in service sufficient capacity to reliably deliver resources to customers requesting service and existing customers as provided in their OATT under Sections 15.4, 28.2, and 28.3

(FERC 2008). PacifiCorp's Attachment K of the OATT also requires planning for the expansion of the system to ensure that its transmission system meets industry, regulatory, and reliability standards.

2.2 Idaho Power

Idaho Power is a wholly owned subsidiary of IDA-CORP, a holding company. Idaho Power is responsible for providing electrical service to its service area, which includes most of southern Idaho and a portion of eastern Oregon. The number of customers in Idaho Power's service area is expected to increase from around 492,000 in 2010 to over 650,000 by 2030. Firm peak-hour load (the peak hourly electricity that the system must supply when demand is at its highest) has increased from 2,052 MW in 1990 to over 3,000 MW in 2006, 2007, 2008, and 2009. In June 2008, the peak-hour load reached 3,214 MW, which was a new system peak-hour record.

Average firm load (the average annual demand from customers) has increased from 10,500,000 megawatt hours (MWh) in 1990 to 15,800,000 MWh in 2008 (excluding Astaris/FMC) (IPC 2011). While the economic downturn is expected to depress customer demand for electricity in the near term, Idaho Power forecasts that their average-system load will continue to grow at about 1.4 percent per year (29 average MW [aMW] annually) over the 20-year planning period. During the same 20-year planning period, the peak-hour load is expected to increase at 1.8 percent per year (69 MW annually) (IPC 2011).

Idaho Power is a regulated public utility under the laws of the State of Idaho whose mission is to provide reliable, responsible, fair-priced energy. Idaho Power operates under the oversight and regulatory controls of the Idaho Public Utility Commission (IPUC). Under Title 61 of the IPUC regulations, Idaho Power "shall furnish, provide and maintain such service, instrumentalities, equipment and facilities as shall promote the safety, health, comfort and convenience of its patrons, employees and the public, and shall be in all respects adequate, efficient, just and reasonable."

Idaho Power is also a public utility under the jurisdiction of the FERC. Idaho Power is obligated to expand its transmission system to provide requested firm transmission service, and to construct and place in service sufficient capacity to reliably deliver resources to network and native load customers as provided in their Open Access Transmission Tariff (OATT) under Sections 15.4 and 28.3 (FERC 2008). Idaho Power's OATT requires planning for the expansion of the transmission system in order to provide network integration transmission services that complies with regulatory reliability standards.

Idaho Power's 2011 Integrated Resource Plan (IRP) divides the 20-year planning horizon into two 10-year segments. The first 10-year period is analyzed first (2011-2020), followed by the second 10-year period (2021-2030). Idaho Power customer needs are largely met in the first 10-year period with the construction of the Boardman to Hemingway transmission line project.

For the second 10-year period, ten resource portfolios were analyzed in the IRP and some of these portfolios required Gateway West transmission capacity to deliver energy to major load centers in southern Idaho while others did not. The need for Gateway West capacity in each of these portfolios was driven by the assumed locations of the resources in each portfolio.

While the selected portfolio for the second 10-year period was marginally able to deliver energy to major load centers without additional transmission capacity across southern Idaho, many of the other portfolios analyzed did require additional transmission capacity. The selection of resources in the second 10-year period is largely an academic exercise, and is likely to change substantially every two years when the IRP is updated.

Without adequate transmission capacity across southern Idaho, the Company's ability to site future generation resources will be limited. The long lead time required to permit, design and construct high voltage transmission simply will not allow new transmission capacity to be built in conjunction with the construction schedule of a new generation resource. Therefore, Idaho Power believes it is prudent to continue to pursue additional transmission capacity across southern Idaho through the Gateway West project.

2.3 Team Constructional and Operational Responsibilities

Rocky Mountain Power and Idaho Power signed an agreement in 2007 to approach permitting the Project as a team. That teaming agreement is still in place, though RMP has taken the lead in the place of Idaho Power in the permitting effort as of January 12, 2012. Rocky Mountain Power is responsible for the construction and operation of Segments 1 through 4. Construction and operation of Segments 5 through 10 is still under discussion and has not been resolved as of the date of this POD. When this information is known, it will be provided in an update to the POD.

2.4 Federal Oversight of Transmission Planning

The Companies are subject to federal and state oversight and regulation for the planning, construction, operation, and maintenance of their energy transmission system. Under the FERC's authority, the Companies are required to conduct transmission planning necessary to reliably serve their native load customers and conduct planning for third-party transmission service requests in compliance with its FERC-approved Open Access Transmission Tariff (OATT). Procedures and processes for transmission planning for network customers and for third-party requests is documented in OATT Section III- Network Integration Transmission Service and subsections 28 through 33. Gateway West, as part of the larger Energy Gateway concept, has been developed, engineered, designed and will be constructed to reliably deliver designated network resources to network customer loads, both today and long-term.

FERC Order 890 presently provides the transmission planning requirements for public utility transmission providers nationwide, including all public utility transmission providers within WECC. Through Order 890, FERC requires that transmission providers participate in local planning processes as well as sub-regional and regional planning processes. PacifiCorp and Idaho Power both participate in the Northern Tier Transmission Group (NTTG), which is a sub-regional planning group comprised of transmission providers and customers. PacifiCorp and Idaho Power are also active in WECC regional transmission planning committees and studies.

FERC issued Order 1000 in July 2011 with the requirement that public utility transmission providers make compliance filings on most of the issues by October 2012. The following is a summary of FERC Order 1000, as stated in the Order:

> "The Federal Energy Regulatory Commission is amending the transmission planning and cost allocation requirements established in Order No. 890 to ensure that Commission-jurisdictional services are provided at just and reasonable rates and on a basis that is just and reasonable and not unduly discriminatory or preferential. With respect to transmission planning, this Final Rule: (1) requires that each public utility transmission provider participate in a regional transmission planning process that produces a regional transmission plan; (2) requires that each public utility transmission provider amend its OATT to describe procedures that provide for the consideration of transmission needs driven by public policy requirements in the local and regional transmission planning processes; (3) removes from Commission-approved tariffs and agreements a federal right of first refusal for certain new transmission facilities; and (4) improves coordination between neighboring transmission planning regions for new interregional transmission facilities.

> Also, this Final Rule requires that each public utility transmission provider must participate in a regional transmission planning process that has: (1) a regional cost allocation method for the cost of new transmission facilities selected in a regional transmission plan for purposes of cost allocation; and (2) an interregional cost allocation method for the cost of certain new transmission facilities that are located in two or more neighboring transmission planning regions and are jointly evaluated by the regions in the interregional transmission coordination procedures required by this Final Rule. Each cost allocation method must satisfy six cost allocation principles."

NTTG members are in the process of identifying and modifying the existing compliance filings to address the requirements of Order 1000; however, it is believed that transmission planning process under the Order 1000 requirements will remain largely unchanged from the Order 890 requirements within the NTTG footprint. NTTG's current planning process evaluates the reliability of the transmission system 10 years into the future. Each load serving entity provides 10 year projections for load and generation. The load and resource projections serve as the basis for analysis. The adequacy of the existing transmission system is evaluated for the future projections. The adequacy of the future transmission system is then evaluated for various seasonal demand and generation scenarios with proposed transmission improvements.

An Order 1000 modification of note, as differentiated from Order 890 requirements, is that the NTTG regional transmission plan must identify transmission facilities that "more efficiently or cost-effectively" meet the region's reliability, economic and Public Policy Requirements. In other words, a project's relative benefit and cost will now be analyzed as part of the transmission planning process, and the transmission plan (a single plan) will be a compilation of proposed projects that most "efficiently and cost-effectively" meet a region's needs.

The Gateway West project is one of the projects in the 2011 NTTG Biennial Transmission Plan and will most certainly be included in the 2012-2013 NTTG regional planning process. Once NTTG adopts the requirements of Order 1000, the transmission planning process will evaluate the efficiency and cost effectiveness of projects within the plan and consider any proposed alternatives that may address regional needs more efficiently or cost effectively than the projects proposed by the transmission providers in local transmission plans. It is too early to predict the Order 1000 implications on the Gateway West project with much certainty; however, Order 1000 will not undermine the previously established load service need that the project is intended to address.

FERC granted the Company incentive rate treatment, but equally important, the commission issued a 4-0 decision in which FERC stated:

> "…we find that PacifiCorp has adequately demonstrated that the Project (with the exception of segment A) will ensure reliability and reduce transmission congestion… We find that segments B through H of the Project would establish for the first time a backbone of 500 kV transmission lines in PacifiCorp's Wyoming, Idaho and Utah regions. This would provide a platform for integrating and coordinating future regional and sub-regional electric transmission projects being considered in the Pacific Northwest and the Intermountain West, connection existing and potential generation to loads in an efficient manner, thus reducing the cost of delivered power. Also, the Petition cites the 2006 DOE National Electric Transmission Congestion Study and the 2004 Rocky Mountain Area Transmission Study in stating that that proposed Project will reduce congestion or maintain reliability in the Western Interconnection. Additionally, the project would establish a direct link between PacifiCorp's east and west control areas, providing numerous benefits including increasing transfer capability, reducing the need for curtailments, and reducing transmission congestion."

WECC 10-Year Regional Transmission Plan was approved by the WECC Board of Directors September 22, 2011 and Plan Summary can be found at: (http://www.wecc.biz/library/StudyReport/Documents/Plan_Summary.pdf). Energy Gateway, including

Gateway West, is an integral part of the Foundational Transmission Project identified for the Regional Plan as shown in Section 3.2.3-Transmission. Independent stakeholders involved in data input, development and review of the plan are identified in Section 6-Organizations Involved in Development of the Plan.

2.5 State Regulation of Transmission

The state commissions involved in the review of Gateway West are Utah, Wyoming, Idaho, Oregon, California and possibly Washington. These are the states where the Companies serve retail customers. Each state has approved regulatory processes to review and determine the prudence and usefulness of any investment made on behalf of the Companies' 2.2 million customers. Although each state has slight variations in the regulatory process, essentially approval of investments occurs in the following two steps.

1. Each company files for a Certificate of Public Convenience and Necessity (CPCN) in the states physically impacted by the investment. For Gateway West, the Companies will file in Idaho and Wyoming. This process determines that an investment proposed by the Company is in the public interest and is necessary to provide safe, adequate and reliable electric service. The Companies will initiate this process when the BLM publishes the final EIS.

2. The Companies file for cost recovery of an investment through a rate case. This step occurs after the investment is made and the respective project is constructed and placed in service. This review focuses on prudence of project alternative selection, cost control, customer benefits and usefulness of the facilities resulting from the investment. Funds expended in advance of this prudency review and rate change approval by each state are 'at risk' as transmission projects are rarely "preapproved" by the states before they are initiated. There is no uniform pre-approval process for investments or for approval of project development investments in all states.

These regulatory processes change occasionally to facilitate additional and more comprehensive review by commissions and stakeholders. As an example, Rocky Mountain Power agreed in its recent 2010 Wyoming rate case settlement to provide additional justification for Gateway West and other Gateway segments through future regulatory filings in Wyoming. This will give the Wyoming commission and Wyoming customers additional information and insight into the need and benefits of these transmission investments prior to the Companies initiating construction. PacifiCorp sees this as a positive development for the company, the commission and customers.

In support of this two-step process the Companies engage in a series of regional activities to inform commissions and stakeholders about its projects, their purpose and need and investment requirements. The IRPs are examples of this informational process. As regulated utilities, both Idaho Power and Rocky Mountain Power are required to produce and periodically update an IRP for each state in which they operate, with the exception of Wyoming. The Public Utilities Commissions of the states where these utilities operate review and acknowledge these IRPs and their updates.

2.6 Demand Side Management

Part of the planning process that results in the IRPS and their updates includes addressing conservation and other means of reducing or controlling the growth of the demand for electricity among the utilities' customers. When the Public Utilities Commission for a given state acknowledges the IRP, it is agreeing that the balance of demand-side measures and

development of additional generation resources, including associated transmission, is appropriate to meet the needs of the customers of its state while complying with the various laws and regulations on renewable energy requirements, carbon emissions, and other energy-related issues.

The Companies have detailed their demand-side management in their respective IRPs, which have been acknowledged by the Public Utilities Commissions for which they were written (RMP 2011; IPC 2011).

2.7 Existing Transmission System Reliability Constraints

Transmission systems in the United States must be planned, operated, and maintained under the North American Electrical Reliability Corporation (NERC)[1] reliability performance standards. These mandatory national standards govern the level of performance and reliability of the Bulk Electric System (BES) operated within the United States. Additionally, the Companies are governed by the Western Electricity Coordinating Council (WECC)[2] policy procedures, criteria, and standards that may be more stringent than those required by NERC. In compliance with the above standards, transmission systems must be planned, designed, built, and continually operated with sufficient levels of redundancy to enable the transmission system to reliably operate in the event of the loss of any single element (i.e., generation unit, transmission line segment or substation equipment) or loss of multiple elements, thereby providing adequate service to Customers and to other interconnected utilities. Adding new transmission facilities to a network provides not only new transmission capacity but also levels of backup to each other during outage conditions when elements of the system are taken out of service during both planned and unplanned events.

Transmission paths consist of single lines or combinations of lines operated together as a single transmission unit to maximize capacity of the system and to maintain reliability. Path capacities are usually limited by the line in the path with the least capacity. The capacity ratings of the paths are based on maintaining established reliability criteria. The existing path capacity "bottlenecks" and how the path rating will increase with the Gateway West segments in place are shown Table 2.7-1.

[1] NERC's mission is to improve the reliability and security of the bulk power system in North America. To achieve that, NERC develops and enforces reliability standards; monitors the bulk power system; assesses future adequacy; audits owners, operators, and users for preparedness; and educates and trains industry personnel. NERC is a self-regulatory organization that relies on the diverse and collective expertise of industry participants. As the Electric Reliability Organization, NERC is subject to audit by the FERC and governmental authorities in Canada (NERC 2012).

[2] WECC and the nine other regional reliability councils were formed due to national concern regarding the reliability of the interconnected bulk power systems, the ability to operate these systems without widespread failures in electric service, and the need to foster the preservation of reliability through a formal organization. The Western Interconnection encompasses a vast area of nearly 1.8 million square miles. It is the largest and most diverse of the eight regional councils of the NERC. WECC's territory extends from Canada to Mexico. It includes the provinces of Alberta and British Columbia, the northern portion of Baja California, Mexico, and all or portions of the 14 western states in between (WECC 2011).

Table 2.7-1. Rating and Capacity of Paths with and without the Gateway West Project

Path Name [2/]	Path Rating Limit (Present Operational Maxima) (MW)	Existing Available Transmission Capacity (MW)	Proposed Gateway West Parallel Segments [1/]	Planned Rating/Capacity Increase from Gateway West (MW)	Proposed Path Rating/Capacity with Gateway West (MW)
TOT 4A (WY Northeast to WY Central)	937	0	Segments 1W Windstar-Aeolus	838	1,775
Aeolus West (WY Central to WY Southwest)	NA	NA	Segments 2 and 3, Aeolus-Anticline plus existing lines	2,670	2,670
Bridger West	2,400	0	Segment 4 Jim Bridger-Populus	1,700	4,100
Borah West	2,557	0	Segments 5, 6, and 7 Populus-Borah, Borah-Midpoint, and Populus-Cedar Hill	1,893	4,450
Midpoint West	2,287	0	Segments 8, 9 and 10 Cedar Hill-Midpoint, Midpoint-Hemingway and Cedar Hill-Hemingway	2,113	4,400

1/ Refer to Figure A-1 for segments and substations.
2/ Each of the paths listed in Table 2.7-1 is part of the Gateway West Project and is dependent on the others to move power from east to west (Wyoming to Idaho).

In siting new transmission facilities, the Companies are obliged to be prudent and site and install facilities to avoid a potential “common mode failures” where system element failures or outages can impact other elements during a single outage event (lines adjacent to each other on a common transmission tower or two parallel transmission lines in close proximity to each other). Common mode failures include, but are not limited to, a snagged lighting protection shield wire from one line being dragged into the adjacent line, an aircraft flying into more than one line, smoke from a fire across the ROW shorting out more than one line, lightning strikes affecting more than one line, high winds, dust storms, ice storms, blizzards, landslides, earthquakes, vandalism, and equipment failure.

As a minimum requirement, NERC/WECC reliability performance standards require that a multiple contingency analysis (an analysis of the simultaneous failure of two adjacent lines) must be performed to evaluate the BES impact resulting from the loss of multiple transmission lines to the remaining transmission system. For the Gateway West analysis, the electrical power flowing on the two transmission lines, once removed from service, must now flow across the remaining transmission system in the area and subsequently overloads portions of the remaining system or the electric system enters an unstable operating state and shuts down. The useable system capacity limit is consequently reduced to protect the remaining system from this overload or unstable operating condition.

When transmission lines are separated from each other, common mode failures pose a significantly reduced risk and the NERC/WECC reliability standards only requires evaluation of one line out of service at a time. Constructing transmission lines physically separated from each other allows the Companies to operate their interconnected electric system at a higher electrical capacity than would otherwise be possible. The net result of line separation is that fewer transmission lines are needed overall to adequately serve Customers' energy needs.

Due to the high transfer capacity requirements necessary for the Gateway West Project, high-capacity lines must be located on separate corridors to increase reliability and to provide the highest capacity possible.

The WECC Board of Directors approved a regional transmission planning criterion (TPL [001-004]-WECC-1-CR), on April 18, 2008. This planning criterion specifies that utilities must plan for two lines to be out of service at the same time if they are located adjacent to each other unless those lines are separated by at least "the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits" (WECC 2008). This criterion has subsequently been revised, but the initial siting study for Gateway West was based on this criterion.

In that study, the longest span was assumed to be 1,500 feet, thereby dictating the minimum distance between existing and proposed transmission lines. In the final design, the separation distance could increase where existing line spans are determined to be greater than 1,500 feet thereby requiring Gateway West to be located the maximum span distance away when adjacent to longer spans. This criterion in itself does not guarantee transmission system reliability or future system performance. Utilities are expected to use their history of experience and prudent judgment in planning, siting, and designing transmission systems to ensure the reliability of the interconnected grid. Utilities can and do elect to provide wider separation or select an alternate transmission line route to reduce the risk of multiple line outages along common routes used by high-capacity lines.

The recent WECC revision of this criterion affects only one of many criteria that need to be considered when planning transmission projects. Specifically, WECC has relaxed its definition of a common corridor from the greatest span or 500' from an existing line to a minimum of 250' from an existing line. The remaining criteria still obligate a transmission provider to take into consideration the potential impacts to reliability. For Gateway West, the originally planned minimum separation is still needed when taking into consideration potential impacts to reliability of siting the proposed project closer than the span distance of that adjacency. The Companies' approach remains the same, and consistent with others, who have stated that 'by far the most cost effective preemptive strategy against multiple simultaneous line loss involves ensuring adequate distance separation between lines at the planning stage' (West Wide Energy Corridor EIS, ANL 2008).

Even though the WECC separation criterion has been revised, the WECC/NERC requirements to provide reliable electricity have remained the same. Acts of nature such as fires or micro bursts or other acts such as vandalism or required fire suppression management may impact the reliability of the bulk transmission system if lines are sited in close proximity. Common corridor outages, in particular outages caused by smoke and fire, are prevalent through the open areas of Wyoming and Idaho. During the drier parts of the year, fires can ignite and move extremely fast. When heavy smoke rises to the level of the conductors, the air between the conductors loses some of its insulation properties, and the conductor will begin to conduct electricity to ground, or "fault"; protective instrumentation will disconnect the transmission line from the electrical system. If Gateway West transmission lines are constructed close to other

transmission lines and the two lines disconnect in rapid succession, major problems may result for the electrical grid, potentially leading to wide-spread outages (area blackouts).

There have been numerous occurrences of fire, wind, geological and other related corridor outages. If a major event did occur, preparation for a future similar outage would likely be mandated. The first step toward preparing for a similar occurrence would be to reduce the rating and capacity of the facilities, resulting in a project that is vastly inferior to the purpose and need. For example, following the WECC west wide disturbance in 1996 PacifiCorp was required to make a significant reduction in transmission system capacity ratings on its WECC rated Path C between southeast Idaho and northern Utah. A significant system capacity reduction, from 1,000 MW to 600 MW, was a direct result of the disturbance investigation by WECC, to reduce the stress on the system and gain more reliability. As a result PacifiCorp constructed the Populus to Terminal transmission line to restore reliability. The project sponsors believe the first step to avoid a common corridor outage is to locate the lines as far apart as feasibly possible, without creating additional undue impact to the environment and surrounding areas. Forcing the Gateway West project into close proximity to other lines undermines the overall purpose and need of the project.

If BLM were to consider an alternative for Gateway West that studied the consequences of siting the proposed Gateway West only 250 feet from existing transmission in one or more corridors along the proposed Project route, the Companies could not build that alternative because it would not meet minimum standards for reliability. The Companies received WECC approval to carry the proposed load found in the Purpose and Need for the Project based on the average separation distance, among several other factors, for the proposed Gateway West alignment.

There were several instances where outages on systems operated by the Companies and others have led to serious consequences. In 2007, a fire burned through the Jim Bridger transmission line ROW resulting in an outage of all three 345-kV lines and three of the four Jim Bridger generating units (Gerrard 2010). Also in 2007, a fire caused the Mona – Huntington and Mona – Bonanza 345-kV lines in Central Utah to de-energize (Gerrard 2010). In California, two adjacent 500-kV line towers failed in 2005, leaving an estimated 5.2 million customers in California, Nevada, Oregon, and Texas without power (California ISO Corporation 2005).

To further ensure reliability requirements are met, the Companies have proposed that a permanent service road to each transmission structure be retained (see Appendix B, Section 2.5, for further detail) to control vegetation in the ROW for safe operation and for periodic inspections and maintenance (IPC and RMP 2011).

2.8 Purpose of the Gateway West Project

This Project is designed to provide for the delivery of up to 1,500 MW to the service areas of the Companies and possibly other markets. From Windstar to Populus, Gateway West will deliver up to 1,500 MW of primarily wind energy for transmission to markets south and west of Populus, including the Wasatch Front.

Idaho Power forecasts a peak-hour load growth of 69 MW per year over the next 10 years. PacifiCorp forecasts the megawatt-hour growth between 2010 and 2019 for Utah, Wyoming, and Oregon will be 6.8 million, 3.7 million, and 1.1 million megawatt-hours, respectively. These forecasts are based on the IRPs prepared by each company as required to fulfill the regulatory requirements and guidelines established by the public utilities commissions of the states served by the Companies (PacifiCorp 2011; IPC 2011). Each IRP addresses the obligations of each

company pursuant to its OATT to plan for and expand its respective transmission systems in a non-discriminatory manner based on the needs of its native load customers, network customers, and all eligible customers that agree to expand their transmission systems. This includes entities that generate or plan to generate electricity, including coal-fired, natural-gas-fired, and renewable energy sources (biogas, wind, and geothermal).

The Bonneville Power Administration (BPA) supplies wholesale power to six utilities (two towns and four rural cooperatives) in Southeast Idaho. Until recently, a portion of that power has come from PacifiCorp and a portion from BPA's hydroelectric facilities. PacifiCorp has given BPA a five-year notice that it will no longer supply power under the old agreement. Therefore, by 2017, BPA must come up with another source of power for its six small utility clients in Southeast Idaho. As a part of future planning, BPA has entered into an agreement with PacifiCorp and Idaho Power to help fund the permitting of the Boardman to Hemingway (B2H) project and to consider the possibility of asset swaps in the future.

BPA is considering six alternatives to provide that power:

- Power Purchase with OATT Service
- B2H with OATT Service
- B2H with Transmission Asset Swaps
- MSTI with Tap to Goshen Substation
- Two BPA Construction Scenarios from Montana to SE Idaho

The second alternative depends upon the capacity of Gateway West through Idaho as well as on the completion of B2H. The other options do not depend upon the completion of the Gateway West project. BPA conducted a public comment period on these options which closed August 27, 2012. BPA must still conduct a NEPA analysis on its options to supply power to its Southeast Idaho customers, which has not yet started (BPA 2012). In October 2012, the BPA announced that it had selected the B2H with Transmission Asset Swaps as its top priority for pursuit. While BPA is not ruling out the other options, it is less likely that BPA will select the second alternative that depends upon the capacity of Gateway West through Idaho (BPA 2012a).

Gateway West is independent of, and will be built regardless of, any particular new generation project. The transmission grid of which it will become a part can be thought of in terms of hub and spokes, with a backbone connecting to the hubs. Each substation is a hub and receives or sends electricity along the spokes. For this system to work, a backbone of high-capacity transmission lines is needed to connect the hubs and transport the electricity from where it is or can be generated (in this case, mostly Wyoming but also Idaho), to where it is needed (in this case, mostly Idaho and Utah, though other markets may also be served).

2.8.1 Gateway West Substation Purposes

This Project proposes to connect 12 substations, which are essential control points for the route. These are illustrated in Appendix A, Figure A-1, and in subsequent maps by segment. The purposes of the individual substations to support the need for the overall location of the Gateway West Project are displayed in Table 2.8-1. Nine of the substations are in service now and three are proposed as part of this Project.

Table 2.8-1. Substations to Be Connected by Gateway West

Substation	Description	Purpose
Windstar	Existing: interconnection and generation-driven	The purpose of this substation is to integrate future wind and thermal resources with the existing transmission system by adding one existing 230-kV transmission line into the substation. The Gateway West Project starts at this substation because of the recent large development of nearby energy sources needing transmission to points west, including 200 MW integrated at the Windstar 230-kV Substation, Glen Rock 1 & III – 138.5 MW, Rolling Hills – 99 MW, Three Buttes – 99 MW, and Casper Wind – 17 MW.
Dave Johnston Power Plant	Existing: interconnection and generation-driven	Work inside the existing 230kV yard will consist of rebuilding bus breakers and switches to increase capacity to match the rebuilt 1W(c). No ground-disturbing activity or expansion of the fence line will be needed.
Heward	Existing : interconnection-driven	The existing Difficulty substation will be expanded. The expanded portion is given a new name because ownership is different. Difficulty must be kept in service while Segment 1W(c) is reconstructed, requiring the additional bus construction to be conducted adjacent to the existing substation. Construction of Heward will allow PacifiCorp to control the operation of the new buses, essential for reliability of the reconstruction.
Shirley Basin	Existing: interconnection-driven	Shirley Basin is an existing interconnection point for an existing wind energy facility. 1W(c) must interconnect here during the reconstruction of the line and the communication system must be improved. However, there will be no expansion of the fence line and no ground disturbance anticipated.
Aeolus	Proposed : part of Gateway West, generation-driven	This substation is intended to serve high wind areas identified in portions of Wyoming and will be the location for interconnecting new wind-driven sourced energy. The Aeolus 230-kV substation will be integrated into the RMP transmission system by looping the Dave Johnston – Heward – Shirley Basin – Miners 230-kV line into Aeolus. Aeolus will be used to interconnect future wind generation projects.
Anticline	Proposed: part of Gateway West, generation-driven	The new transmission lines will interconnect to the existing transmission system in the vicinity of the Jim Bridger Power Plant by constructing a new substation nearby. The purpose of the proposed substation is to support the existing thermal generation hub as well as an expanded hub for new wind resources expected to be sited in the area.
Jim Bridger Power Plant 345-kV	Existing: interconnection and generation-driven	This substation will be expanded to connect the Jim Bridger Power Plant with a new transmission line. No new generation will be added at the Jim Bridger Power Plant as a result or as part of this Project.
Populus	Existing: interconnection and generation-driven	This substation will interconnect with the proposed Gateway West 500-kV transmission lines, the existing Jim Bridger West 345-kV system, and the 345-kV transmission lines running north-south. The north-south 345-kV transmission lines (not part of Gateway West) begin at the Populus Substation (near Downey, Idaho), run south to the Wasatch Front1/, and transport new resources south to the Wasatch Front demand centers.
Borah	Existing: interconnection and load-driven	The substation expansion will allow the interconnection of new 500-kV transmission lines between Populus and Midpoint, as well as a new termination of a 345-kV line to Kinport.
Midpoint	Existing: interconnection and load-driven	The substation expansion will allow interconnection of new transmission lines from Cedar Hill and Hemingway and allow for the existing 345-kV transmission line between Borah and Midpoint Substations to be energized at 500 kV, thereby creating a continuous 500-kV system expansion and reliability tie with the Cedar Hill Substation

Table 2.8-1. Substations to be Connected by Gateway West (continued)

Substation	Description	Purpose
Cedar Hill	Proposed: part of Gateway West, load-driven	The substation serves two purposes: 1) a reliability tie between the proposed Gateway West north and south transmission lines, and 2) a 500-kV to 230-kV transformation station for serving the Magic Valley load. This will complement the existing service from Midpoint to the north of the Magic Valley. The Magic Valley Electrical Plan is under development, with this station being considered as a future source to the valley.
Hemingway	Existing; interconnection and load-driven	The substation expansion will serve as an interconnection point for the Gateway West, Summer Lake, Boardman, and Captain Jack transmission lines. The station itself currently serves the Treasure Valley load. The station is the southwestern 500-kV to 230-kV transformation point in the Treasure Valley 500-kV loop, as defined in the Treasure Valley Electrical Plan. The Hemingway Substation is the western terminus of the Gateway West Project because it is the major load point for the generation resources brought in from the east, primarily Wyoming.

1/ About 75 to 80 percent of all of the electricity use in the state of Utah is in the area known as the Wasatch Front. This area includes the entire electrical load served out of the Spanish Fork Substation in the south up to the electrical load served out of the Ben Lomond Substation in the north. This includes parts of Juab and Sanpete Counties, and all of Utah, Salt Lake, Summit, Tooele, Wasatch, Davis, Morgan, and Weber Counties.

2.8.2 Gateway West Transmission Line Segment Purposes

Table 2.8-2 summarizes the purpose for each of the segments of Gateway West. Each segment's Project description is presented in detail in Section 3.

Table 2.8-2. Gateway West Transmission Line Segments

Transmission Line Segment	Purpose
Segment 1W—Windstar to Aeolus, single-circuit 230-kV and Dave Johnston to Aeolus , rebuilt 230-kV line	Transport existing and new resources to load centers farther west via interconnection at Aeolus Substation. This line also represents the Companies' portion of a future 230-kV network of lines that are required to integrate other projects in areas of high wind potential.
Segment 2—Aeolus to Creston[1/], single-circuit 500-kV line	Transport new resources to load centers farther west.
Segment 3—Creston[1/] to Anticline, single-circuit 500-kV line	Transport new resources to load demand centers farther west.
Segment 3A—Anticline to Jim Bridger 345-kV	Provide for bidirectional transfer of power and integration of the Gateway West project by providing an intermediate tie line with the existing EHV system at Jim Bridger Substation.
Segment 4—Anticline to Populus, single-circuit 500-kV line	Transport new resources to load demand centers farther west and interconnect with existing systems.
Segment 5—Populus to Borah, single-circuit 500-kV line	Transport Wyoming energy resources from Populus to loads in southern Idaho and the Pacific Northwest. Additionally, this line will transport Pacific Northwest sourced energy to Populus to serve load in the Salt Lake City metropolitan area. Provides physical separation to meet reliability criteria between a northern route (Populus – Borah – Midpoint – Hemingway) and a southern route (Populus – Cedar Hill – Hemingway). Physical separation is needed due to existing transmission line congestion (multiple lines in the same area) and wildland fires resulting in outages.
Segment 6—Borah to Midpoint, energize existing 345-kV line to 500 kV	Increase the capacity of the existing line to transport existing and new energy resources in the service areas of the two Companies. Replace or reconfigure up to five spans at each end to accommodate new connections in substations to new 500-kV bays. No new transmission line construction

Table 2.8-2. Gateway West Transmission Line Segments (continued)

Transmission Line Segment	Purpose
Segment 7—Populus to Cedar Hill, single-circuit 500-kV line	Transport existing and new energy resources to load demand centers to the west. Additionally, this line will transport existing and new Pacific Northwest energy resources to serve load demand centers to the east. Provide physical separation to meet reliability criteria between a northern route (Populus – Borah – Midpoint – Hemingway) and a southern route (Populus – Cedar Hill – Hemingway). Physical separation is needed due to existing transmission line congestion (multiple lines in the same area) and wildland fires resulting in outages.
Segment 8—Midpoint to Hemingway, single-circuit 500-kV line	Transport existing and new energy resources to load demand centers throughout the system. Provide physical separation to meet reliability criteria between a northern route (Populus – Borah – Midpoint – Hemingway) and a southern route (Populus – Cedar Hill – Hemingway). Physical separation is needed due to existing transmission line congestion (multiple lines in the same area) and wildland fires resulting in outages.
Segment 9—Cedar Hill to Hemingway, single-circuit 500-kV line	Transport energy resources to serve load demand centers throughout the system. Provide physical separation to meet reliability criteria between a northern route (Populus – Borah – Midpoint – Hemingway) and a southern route (Populus – Cedar Hill – Hemingway). Physical separation is needed due to existing transmission line congestion (multiple lines in the same area) and wildland fires resulting in outages.
Segment 10—Midpoint to Cedar Hill, single-circuit 500-kV line	Provide a midway tie between the northern and southern routes, which is required for system reliability to move flows of the north system or the south system when transporting greater than 2,500 MW of power.

[1/] Creston Substation has been deleted from the Project. The location of the Creston substation is now used as the dividing point between Segments 2 and 3. See Section 3 for details.

3.0 PROJECT DESCRIPTION

3.1 Overall Project

As proposed in this revised POD, the Gateway West Project is composed of ten segments of high-voltage transmission lines that will run between proposed or existing substations. These segments start at the existing Windstar Substation close to the Dave Johnston Power Plant near Glenrock, Wyoming, and continue west until reaching the existing Hemingway Substation approximately 30 miles southwest of Boise, Idaho. An overview map of the Project location and facilities is provided in Appendix A, Figure A-1. Figure A-1 shows the Proposed Route (red). Maps of each segment are shown on Figures A-2 through A-12 in Appendix A. Maps of each existing or proposed substation are provided in Appendix A as Figures A-13 through A-24.

Changes since Draft Environmental Impact Statement (EIS) and January 2010 POD

The major facility design changes from the Project described in the Draft Environmental Impact Statement (EIS) and January 2010 POD are:

Elimination of Segment 1E – Elimination of the proposed single-circuit 230-kV line that would have been constructed between Windstar and Aeolus along Segment 1E. Segment 1E is no longer part of the Project because of lack of timely development of previously announced and planned wind resources within the project timeframe. As now proposed, Segment 1 will be a new 230-kV line between the Windstar and Aeolus substations (Segment 1W(a)) and a reconstruction of an existing 230-kV line between Dave Johnston Power Plant and Aeolus Substation (Segment 1W(c)). Elimination of Segment 1E results in the elimination of some equipment in the Windstar and Aeolus substations.

Elimination of one of the Segment 2, 3, and 4 electrical circuits – Adoption of one single-circuit 500-kV transmission line for Segments 2, 3, and 4. This alternative is described in the Draft EIS as the first phase of the Schedule Variation and therefore is fully evaluated in that document. The difference between the Schedule Variation and the Project as described herein is that the second phase will not be built. Elimination of the second circuit between Aeolus and Populous Substations eliminates the need for the Creston and Bridger 230-kV Substations and some equipment in the Aeolus and Anticline Substations. .

Elimination of Creston Substation – The demand for oil and gas field electrical energy has not materialized. The Creston Substation is no longer needed and therefore was eliminated. However, the location continues to be used as the terminus for Segments 2 and 3, whose routing was determined by the WWEC and by the Wyoming Governor's EO-2011-5.

Proposed Route changes – Since the January 2010 POD, engineering has progressed on portions of the Proposed Route. A design centerline has been developed for portions of the Proposed Route Segments 1W(a), 1W(c), 2, 3, 4, and portions of 7. These micro-siting changes range from less than 100 feet up to several miles. The changes are due to more site-specific information, refined design criteria for structure placement and conductor spans, and compliance with clearance and set-back codes for mine operations, railroads, and highways. Other changes are due to continued consultation with landowners. Finally, the Companies have adopted Alternative 2C and Alternative 4A as their Proposed Routes based on public comment during the Draft EIS review process.

Variation changes – The Schedule Variation, Structure Variation, and Design Variation alternatives are no longer part of the Project.

To maintain the segment numbering system and naming convention with the elimination of the Creston Substation, the location of the termination of Segment 2 and the beginning of Segment 3 is now simply called "Creston."

The following Project description incorporates the changes described above.

3.1.1 Proposed Project

The Project starts in Wyoming at the Windstar Substation and Dave Johnston Power Plant. Segment 1W(a) for the most part follows or parallels the West-wide Energy (WWE) corridor and an existing 230-kV line. This 230-kV line is the proposed route for reconstruction as Segment 1W(c). Both lines will terminate at the proposed Aeolus Substation. The Project then proceeds as one single-circuit 500-kV line from Aeolus to Populus Substation though Segments 2, 3, and 4. The interconnection from Anticline to its neighboring existing substation at the Jim Bridger Power Plant, Segment 3A, is 5.5 miles of 345-kV single-circuit line. At Populus, the Gateway West Project splits into two single-circuit 500-kV roughly parallel paths. Segments 5, 6, and 8 follow a more northerly route toward the Hemingway Substation through the Borah and Midpoint Substations, while Segments 7 and 9 travel a more southerly route through the Cedar Hill Substation to Hemingway. Segment 10 provides an interconnection between the Cedar Hill and Midpoint Substations and also provides an interconnection between the more northerly and more southerly routes. The Companies have proposed this split because of the need to serve loads along the way and also to increase reliability.

The transmission line segments will cross federal, state, and private lands. Table 3.1-1 summarizes miles crossed by ownership for the Proposed Route. The total length of all segments requiring new transmission line construction is approximately 1,000 miles. The ROW width requested for the transmission line is 125 feet for single-circuit 230-kV segments, 150 feet for the 345-kV segment, and 250 feet for single-circuit 500-kV segments.

Facilities included as part of the Project include:

- Ten transmission line segments, including their associated access roads, multi-use and helicopter fly yards, and other temporary construction ground disturbances;
- Three proposed substations and expansion or modifications at nine existing substations;
- Other associated facilities including communication systems and optical fiber regeneration stations, and
- Access roads and distribution supply lines where needed for proposed substations and optical fiber regeneration stations.

Details of construction and operations are summarized in Section 3.5 and detailed in Appendix B. Environmental protection plans are briefly summarized in Section 4.0 and included as appendices. These plans are considered part of the Project description for the proposed Project. Table 3.1-2 illustrates and summarizes the Proposed Action. Table 3.1-3 shows the construction schedule for the Project.

Table 3.1-1. Proposed Project Summary of Miles and Percent Crossed by Ownership

Segment	Length (Miles)						Percent of Total				
	BLM	**NF[1/]**	**State**	**Private**	**Other [2]**	**Total**	**BLM**	**NF**	**State**	**Private**	**Other**
Segment 1W(a) – Windstar to Aeolus	27.0	2.3	17.5	27.0	0.1	**73.8**	36.6	3.1	23.6	36.5	0.1
Segment 1W(c) – Dave Johnston to Aeolus	24.7	2.3	16.1	30.4	.1	**73.6**	33.6	3.2	21.8	41.3	0.1
Segment 2 – Aeolus to Creston	37.6	–	4.7	49.5	0.1	**91.9**	41.0	–	5.1	53.9	0.1
Segment 3 – Creston to Anticline	22.5	–	1.0	22.5	–	**45.9**	48.9	–	2.2	48.9	–
Segment 3A—Anticline to Jim Bridger 345-kV	3.2			1.9		**5.1**	63.0			37.0	
Segment 4 – Anticline to Populus	72.0	9.1	12.5	100.7	3.3	**197.6**	36.4	4.6	6.3	500.9	1.7
Segment 5 – Populus to Borah	13.2	–	3.6	38.9	0.1	**55.7**	23.7	–	6.5	69.8	.1
Segment 6 – Borah to Midpoint[3/]	–	–		0.5	–	**0.5**		–		100.0	–
Segment 7 – Populus to Cedar Hill	28.3	–	4.3	85.6	–	**118.2**	24.0	–	3.6	72.4	–
Segment 8 – Midpoint to Hemingway	87.1	–	9.3	31.5	3.6	**131.5**	66.2	–	7.1	24.0	2.7
Segment 9 – Cedar Hill to Hemingway	129.2	–	4.6	28.4	–	**162.2**	79.7	–	2.8	17.5	–
Segment 10 – Midpoint to Cedar Hill	16.2	–	–	18.0	0.1	**34.4**	47.2	–	–	52.5	0.3
Total Project[4/]	**461.1**	**13.7**	**73.4**	**434.9**	**7.3**	**990.5**	**46.6**	**1.4**	**7.3**	**43.9**	**0.7**

1/ Totals reflect mileage crossed on National Forest System (NFS) land.
2/ Other includes Bureau of Reclamation, U.S. Fish and Wildlife Service, etc.
3/ Segment 6 does not include ground-disturbing activity except in association with the expanded Borah and Midpoint Substations.
4/ Totals may not equal 100 percent due to rounding.

Table 3.1-2. Summary of Project Facilities

Project Facility	Description
Transmission Line Segments	
Transmission Line Features Common to All Proposed 500-kV Segments	• Three-phase 500-kV construction for all tower designs, conductor spacing and clearances[1]. • Conductors: Bundled 1949.6 kcmil 42/7 aluminum conductor steel reinforced (ACSR)/TWD "Athabaska/TW", with three subconductors per phase. Non-specular (dull) finish rather than a shiny finish. • Estimated subconductor diameter: 1.504 inches. • Bundle spacing: Distance between subconductors is 18 inches and 25 inches. • Non-reflective, non-refractive insulators. • One optical ground wire (OPGW) containing 48 fibers and with diameter of 0.637 inch on one side of tower. • One extra high strength (EHS) steel overhead ground wire. • Steel overhead ground wire diameter: approximately 0.495 inch. • Minimum ground clearance: 35 feet. • Structure types: lattice steel single-circuit structures. Dulled galvanized steel finish. • Structure heights: Single-circuit structure varies between 145 and 180 feet. Average height of 156 feet. • Approximate distance between structures: 1,200 to 1,300 feet. • .ROW width for one single-circuit: 250 feet. • The exact quantity, distance between, and placement of the structures will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, environmental constraints, and economics. Alignment options may also slightly increase or decrease the quantity, location, and height of structures.

Table 3.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Transmission Line Features for Segment 3A (345-kV)	• Three-phase 345-kV construction for all structure designs, conductor spacing and clearances[1]. • Conductors: Bundled 1272 kcmil 45/7 ACSR "Bittern" with three subconductors per phase. Non-specular finish. • Estimated subconductor diameter: 1.345 inches. • Bundle spacing: 18 inches and 25 inches. • Non-reflective, non-refractive insulators. • One optical ground wire (OPGW) containing 48 wires and with diameter of 0.637 inch where communications is required • One EHS steel overhead ground wire. • Estimated shield wire diameter: approx. 0.495 inch. • Minimum ground clearance: 30 feet. • Structure types: single-circuit steel H-frame structures, self-weathering steel. • Above-ground structure heights: varies between 80 and 110 feet. • Approximate distance between structures: 800 feet. • ROW width: 150 feet. • The exact quantity, distance between and placement of the structures will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, environmental constraints, and economics. Alignment options may also slightly increase or decrease the quantity, location, and height of structures.
Transmission Line Features Common to All Proposed 230-kV Segments	• Three-phase 230-kV construction for all structure designs, conductor spacing and clearances[1]. • Non-specular finish applied to conductors. • Bundle spacing: 18 inches vertical with two subconductors per phase. • Non-reflective, non-refractive insulators. • One optical ground wire (OPGW) containing 48 fibers and with diameter of 0.637 inch where communications is required • Two EHS steel overhead ground wires where communication is not required. One EHS steel overhead ground wire where communication is required. • Estimated shield wire diameter: approx. 0.495 inch. • Minimum ground clearance: 28 feet. • Structure types: single-circuit steel H-frame structures, self-weathering steel. • Above-ground structure heights: varies between 60 and 90 feet. • Approximate distance between structures: 800 feet. • ROW width: 125 feet. • The exact quantity, distance between and placement of the structures will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, environmental constraints, and economics. Alignment options may also slightly increase or decrease the quantity, location, and height of structures.

Table 3.1-2. Summary of Project Facilities (continued)

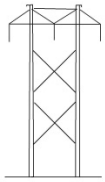
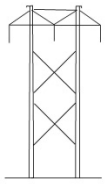
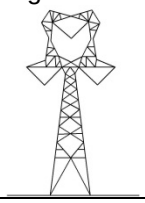
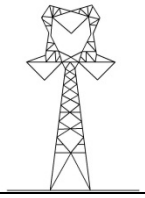
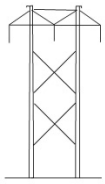
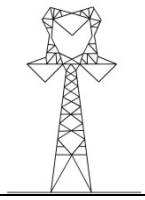
Project Facility	Description
Segment 1W(a) – Windstar to Aeolus 	• Single-circuit 230-kV transmission line in one ROW. • Conductors: Bundled 1272 kcmil 45/7 ACSR "Bittern" with two subconductors per phase. • Approximate number of structures: 531. • Line length: Approximately 73.8 miles. • One optical signal regeneration site. • See Figure A-2.
Segment 1W(c) – Dave Johnston to Aeolus 	• Existing single-circuit 230-kV transmission line to be reconstructed. • Conductors: Bundled 1272 kcmil 45/7 ACSR "Bittern" with two subconductors per phase between Dave Johnston Substation and Shirley Basin Substation; approximately 58.8 miles. • Conductors: Bundled 1557 kcmil 45/7 ACSS/TW "Potomac" with two subconductors per phase between Shirley Basin Substation and the proposed Aeolus Substation; approximately 13.8 miles. • Approximate number of structures to be replaced: 547. • Line length: Approximately 73.6 miles. • No optical signal regeneration sites. • See Figure A-2.
Segment 2 – Aeolus to Creston 	• One single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 390. • Line length: Approximately 91.9 miles. • Two optical signal regeneration sites. • See Figure A-3.
Segment 3 – Creston to Anticline 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 194. • Line length: Approximately 45.9 miles. • No optical signal regeneration sites. • See Figure A-4.
Segment 3A – Anticline to Bridger 345-kV Yard 	• Single-circuit 345-kV transmission line in one ROW. • Approximate number of structures: 25. • Line length: Approximately 5.1 miles. • No optical signal regeneration sites. • See Figure A-4.
Segment 4 – Anticline to Populus 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 856. • Line length: Approximately 197.6 miles. • Three optical signal regeneration sites. • See Figures A-5 and A-6.

Table 3.1-2. Summary of Project Facilities (continued)

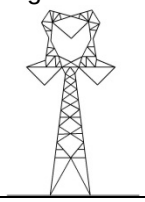
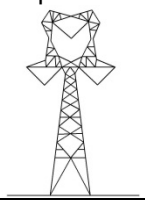
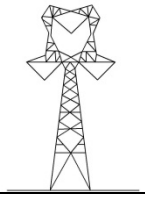
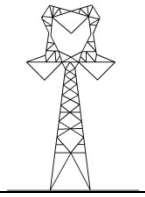
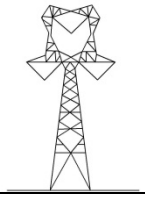
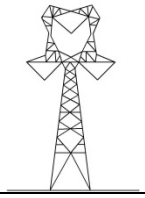
Project Facility	Description
Segment 5 – Populus to Borah 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 246. • Line length: Approximately 55.7 miles. • No optical signal regeneration sites. • See Figure A-7.
Segment 6 – Borah to Midpoint 	• Re-energize existing 345-kV system to 500-kV (this line segment was previously constructed to 500-kV standards). • Transmission line construction only required at segment ends to reroute from the existing 345-kV substation bays to the proposed 500-kV substation bays. • Structure type illustration is only for the new structures required. • Approximate number of structures: 10. • See Figure A-8.
Segment 7 – Populus to Cedar Hill 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 523. • Line length: Approximately 118.2 miles. • Two optical signal regeneration sites. • See Figure A-9.
Segment 8 – Midpoint to Hemingway 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 575. • Line length: Approximately 131.5 miles. • Two optical signal regeneration sites. • See Figure A-10.
Segment 9 – Cedar Hill to Hemingway 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 708. • Line length: Approximately 162.2 miles. • Two optical signal regeneration sites. • See Figure A-11.
Segment 10 – Midpoint to Cedar Hill 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 157. • Line length: Approximately 34.4 miles. • No optical signal regeneration sites. • See Figure A-12.

Table 3.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Substation Facilities	
Windstar Substation	• Modification of substation within existing fenceline. • Existing access road is gravel and will not need extension for Gateway West. • 230-kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers.. • 230-kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment added to the existing control building. • See Figure A-16.
Dave Johnston Power Plant	• Modification of substation within existing fenceline. • Existing access road is adequate. • All construction will be inside the existing fence line. No additional area is required. • 230-kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers. • 230-kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment added to the existing control building. • See Figure A-17.
Heward Substation	• Expansion of existing Difficulty substation. • Developed acreage: approximately 5 acres fenced and owned separately from the existing Difficulty substation. • 230 kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers. 230 kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment. • Addition of new control building within the substation fenced area. • See Figure A-18.
Shirley Basin Substation	• Modification of substation within existing fenceline. • Existing access road is adequate. • All construction will be inside the existing fence line. No additional area is required. • 230-kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment added to the existing control building. • See Figure A-19.

Table 3.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Substation Facilities	
Aeolus Substation	• Proposed substation. • Developed acreage: Approximately 100 acres fenced with an improved access road. • Upgrading County Route 121 is needed and will result in approximately 64 acres of construction disturbance and 33 acres of new permanent roadway, including replacement of an existing bridge. • 500-kV and 230-kV circuit breakers and related switching equipment, bus and support structures, 500/230-kV transformer banks, 500-kV shunt reactor banks, 500-kV series capacitor bank, 500-kV and 230-kV shunt capacitor banks, potential and current transformers. • Control, protection, and communications equipment. • 500-kV line termination structures approximately 135 feet in height. • 230-kV line termination structures approximately 70 feet in height. • Addition of new control buildings within the substation fenced area. • New Static Var Compensator occupying 10-15 acres within the substation fenced area, housed in a building that contains power electronic equipment and associated cooling equipment. • See Figure A-13.
Anticline Substation	• Proposed substation. • Developed acreage: Approximately 140 acres fenced with an improved access road. • To access the new 500-kV yard, an existing dirt road about a mile long will be improved with construction of an all-weather surface with improved access approaches, main highway entrance, and Union Pacific Railroad (UPRR) crossing arrangements. • 500-kV and 345-kV circuit breakers and related switching equipment, bus and support structures, 500/345-kV transformer bank, 345-kV phase shifting transformer, 500-kV shunt reactor banks, 500-kV series capacitor bank, and 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approximately 135 feet in height. • 345-kV line termination structures approximately 100 feet in height. • Control, protection, and communications equipment. • Addition of new control buildings within the substation fenced area. • See Figure A-14.
Jim Bridger 345-kV Substation	• Expansion of existing substation. • Existing access road is adequate. • Expansion of 345-kV yard by 10 acres. • Additions to Jim Bridger 345-kV yard, including 345-kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers. • Development of a new 345-kV transmission line termination structure approximately 100 feet in height to connect with the proposed line to Anticline Substation. • Relocation of an existing 345-kV shunt capacitor bank within the substation fenced area. • Control, protection, and communications equipment added inside the existing control building. • See Figure A-20.

Table 3.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Substation Facilities	
Midpoint Substation	• Expansion of existing substation. • Developed acreage: increase the fenced area by approximately 40 acres. • Existing access roads are paved and will not need extension. • 500-kV circuit breakers and related switching equipment, bus and support structures, 500-kV shunt reactor banks, 500-kV series capacitor bank, 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added to existing control building. • See Figure A-23.
Cedar Hill Substation	• Proposed substation. • Developed acreage: approximately 54 acres fenced with access road. Adjacent existing road is gravel and will not need extension. • 500-kV circuit breakers and related switching equipment, bus and support structures, 500-kV shunt reactor banks, 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment. • Addition of new control building within the substation fenced area. • Up to 5 single circuit 500-kV structure relocations required on existing line from Borah Substation. • See Figure A-15.
Hemingway Substation	• Expansion of existing substation. • Expansion of existing station to add a 500-kV line bay for termination of the Hemingway – Midpoint and the Hemingway – Cedar Hill transmission lines. • All construction will be inside the existing fence line. No additional area is required. • Existing access is adequate. • 500-kV circuit breakers and related switching equipment, bus and support structures, 500-kV shunt reactor banks, 500-kV series capacitor bank, 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added to the existing control building. • See Figure A-24.
Populus Substation	• Expansion of existing substation. • Developed acreage: increase the fenced area by approximately 80 acres. • Existing access road is adequate. 500-kV and 345-kV circuit breakers and related switching equipment, bus and support structures, 500/345-kV transformer bank, 500-kV shunt reactor banks, 500-kV series capacitor bank, 500-kV shunt capacitor banks, potential and current transformers. 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment. • Addition of new control building within the substation fenced area. See Figure A-21.

Table 3.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Substation Facilities	
Borah Substation	• Expansion of existing substation. • Developed acreage: increase the fenced area by approximately 35 acres. • Existing access road is gravel and will not need extension. • 500-kV and 345-kV circuit breakers and related switching equipment, bus and support structures, 500/345-kV transformer bank, 500-kV shunt reactor banks, 500-kV shunt capacitor banks, potential and current transformers. 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added inside the existing control building. • Up to 5 single circuit 500-kV structure relocations required on existing line from Midpoint Substation. • See Figure A-22.
Communications and Control Facilities – Optical Signal Regeneration Sites	• Regeneration sites are required to amplify the system control and monitoring signals carried over the fiber optic cable attached to the transmission towers. • Up to 13 regeneration sites will be needed for the Project. Segments requiring regeneration sites are noted in the transmission line section of this summary table. The locations for the regeneration sites are determined after detailed design engineering is completed. • Regeneration sites will be located either within a substation or at another location along the route. • Regeneration sites are located within a 75- X 75-foot fenced area. • Typical building dimensions within the fenced area are 12 feet wide X 32 feet long X 9 feet tall. • The fiber within the OPGW cable supported on the transmission structures is routed in and out of the regeneration site building from the nearest transmission structure either underground or overhead along two independent diverse paths. • Electronic equipment, required to support the fiber optic cable installation, is located inside the building. • At sites not within a substation, a liquid propane fueled emergency generator will be installed to provide backup power during an outage of the local electric distribution system supply. • Maximum regeneration site spacing is 55 miles or less depending on access and proximity to local electric distribution lines. • The primary siting criteria for a regeneration site are: adjacent to the Gateway West transmission line ROW, proximity to existing low-voltage electric distribution lines to provide power to the facility, and the ability to easily access the site by vehicle.

Table 3.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Ancillary Facilities	
Distribution Supply Lines	• Distribution line extensions are required to provide operational power and station service power at: o Up to 13 regeneration sites (locations to be determined during final design) o Aeolus 500-kV Substation (11 miles across BLM and private lands), needed for construction and possibly for operation. o Anticline 500-kV Substation (3.3 miles across private land) o Cedar Hill Substation (less than 200 feet across private land). o Heward Substation (new distribution line but same configuration as existing Difficulty substation distribution line) • Typically provided from an existing distribution line located in proximity to the site. • Not required for modifications at Dave Johnston and Shirley Basin or for expansions at Windstar, Jim Bridger, Populus, Borah, Midpoint, and Hemingway Substations since these substations exist.

1/ Project design follows the Avian Power Line Interaction Committee recommendations. Details for tower construction and components such as conductor spacing are provided in Appendix B.

Table 3.1-3. Proposed Action Construction Schedule

Segment Number	Segment or Substation Name	Primarily Wyoming		Idaho	
		Start June 2015	**End Dec 2018**	**Start June 2017**	**End Dec 2021**
	Windstar Substation	Windstar Expansion			
	Dave Johnston 230-kV Substation	Dave Johnston 230-kV Substation			
	Heward Substation	Heward Substation			
	Aeolus Substation	Aeolus Substation			
	Populus Substation	Populus Expansion			
	Anticline and Jim Bridger 345-kV Substations	Anticline Substation and 345-kV bays at existing Jim Bridger Substation			
1W(a)	Windstar – Aeolus #1	Single-Circuit 230-kV and rebuild a short section of the existing single-circuit 230-kV line			
1W(c)	Dave Johnston – Heward –Aeolus	Rebuild the existing single circuit 230-kV			
2	Aeolus – Creston	Single-Circuit 500-kV			
3	Creston – Anticline	Single-Circuit 500-kV			
3A	Anticline – Jim Bridger	Single-Circuit 345-kV			
4	Anticline – Populus	Single-Circuit 500-kV			
	Populus Substation			Populus Expansion	
	Cedar Hill Substation			Cedar Hill Substation	
	Hemingway Substation			Hemingway Expansion	
7	Populus – Cedar Hill			Single-Circuit 500-kV	
9	Cedar Hill – Hemingway			Single-Circuit 500-kV	
10	Midpoint – Cedar Hill			Single-Circuit 500-kV	
	Borah Substation				
	Midpoint Substation			Borah Expansion	
	Hemingway Substation			Midpoint Expansion	
5	Populus – Borah			Hemingway Expansion	
6	Borah – Midpoint [1]			Single-Circuit 500-kV	
8	Midpoint – Hemingway			Existing single-circuit	

1/ Existing single circuit constructed to 500-kV standards (energized from 345-kV to 500-kV)

3.1.2 Structure Lighting

RTO Infrared (IR) obstruction lights that incorporate both red and IR light-emitting diodes (LEDs) in a single unit would be installed on every other transmission tower on the east side of the Jarbidge Military Operating Area between milepost (MP) 46.5 and MP 54.4 of RMP's Proposed Route; in the Saylor Creek Air Force Range restricted area on every structure between MP 91.2 and MP 95.7 of RMP's Proposed Route; and in the IDANG Orchard Combat Training Center to ensure visibility for aircraft pilots, both during normal flight and when aided by night vision systems. Night Vision Goggles (NVGs) and Aviator's Night Vision Imaging System (ANVIS) often employ Class A, B, and C filters. These filters can reduce LED sources that emit light in the visible spectrum. The Vigilant IR Series overcomes this obstacle by combining visible red LEDs and IR LEDs in a single unit. This obstruction light system utilizes a unique optical, electrical, and mechanical design. The RTO is a universal, compact, and efficient obstruction light that has been ETL Certified to FAA requirements. In order to ensure that the intensity of lighting is not so bright as to render the NVGs ineffective, RMP proposes to use equipment with peak lighting intensities of 860 nanometers for the IR lights and 30-50 candelas for red lighting.

3.1.3 Proposed Route

The route changes since the January 2010 POD include elimination of Segment 1E and incorporation of Alternatives 2C and 4A into the Proposed Route.

Because the Project connects a series of three proposed and nine existing substations, it is described by segment and numbered sequentially between substations. The exception is between Segments 2 and 3 where the formerly proposed Creston Substation was eliminated. Table 3.1-4 lists the Proposed Route segments. The reference points are illustrated in Appendix A, Figures A-2 through A-12 by segment.

Table 3.1-4. Summary of Proposed Route

Figure	Designation	Reference Points
Segment 1W – Windstar to Aeolus		
A-2	Segment 1W(a)	1,2
	Segment 1W(c)	1d, 1e, 1g, 2
Segment 2 – Aeolus to Creston		
A-3	Segment 2	2, 3
Segment 3 – Creston to Anticline		
A-4	Segment 3	3, 4
Segment 3A – Anticline to Bridger		
A-4	Segment 3A	3c, 4
Segment 4 – Anticline to Populus		
A-5, A-6	Segment 4	4, 5
Segment 5 – Populus to Borah		
A-7	Segment 5	5, 6
Segment 6 – Borah to Midpoint		
A-8	Segment 6	6, 8
Segment 7 – Populus to Cedar Hill		
A-9	Segment 7	5, 9
Segment 8 – Midpoint to Hemingway		
A-10	Segment 8	8, 11
Segment 9 – Cedar Hill to Hemingway		
A-11	Segment 9	9, 11
Segment 10 – Cedar Hill to Midpoint		
A-12	Segment 10	8, 9

3.1.4 Segment 1W – Windstar/Dave Johnston to Aeolus

Segment 1W is composed of Segments 1W(a) and 1W(c). Both consist of single-circuit 230-kV transmission lines. Segment 1W(a) will be a new transmission line and 1W(c) involves reconstruction of a portion of the existing Dave Johnston – Rock Springs 230-kV transmission line. Reconstruction of the existing transmission line is necessary to increase the load-carrying capacity of this existing line. The existing single conductor per phase will be replaced with two larger conductors per phase, requiring the replacement of all of the existing wood structures with stronger steel-pole, H-frame structures, similar in height and appearance to the existing line. Each single-circuit line will be constructed in a separate ROW to meet reliability criteria. The 230-kV lines will be carried on steel H-frame structures between 60 and 90 feet tall (Appendix B, Figure B-1). Appendix A, Figure A-2 is a map of the Segment 1W routes. Segment 1W(a) will carry the fiber optic communication system for Segment 1. Because of its length it needs an optical signal regeneration site approximately midway along its route. Final locations for the regeneration station will be determined after detailed design engineering is completed.

3.1.4.1 Proposed Route 1W(a)

The Proposed Route 1W(a) extends south and west approximately 73.8 miles from the existing Windstar Substation to the proposed Aeolus Substation (points 1, 2). The Proposed Route crosses the Burlington Northern Railroad, North Platte River, U.S. Highway (US) 87/20, and Interstate 25 (I-25). At MP 4.0, the line turns to the southwest on the east side of Deer Creek, parallel to and west of Segment 1W(c). The routes maintain a minimum of separation of 1,500 feet to meet reliability criteria.

3.1.4.2 Proposed Route 1W(c)

Proposed Route 1W(c) is a rebuild of an existing 230-kV line from the existing Dave Johnston Power Plant to the proposed Aeolus Substation. The route leaves the existing substation at the Dave Johnston Power Plant and proceeds west and south to the proposed Aeolus Substation, a distance of approximately 73.6 miles (points 1d, 1e, 1g, 2). The Proposed Route crosses the North Platte River, Burlington Northern Railroad, US 87/20, and I-25. At MP 2.0, the route turns southwest on the east side of Deer Creek, crossing Deer Creek at MP 14.7 to join Segment 1W(a).

From Banner Mountain, Proposed Routes 1W(a) and 1W(c) follow similar paths, proceeding south and crossing into Natrona County at approximately MP 21.0. After crossing the county line, the two Proposed Routes cross the West Fork of Duck Creek Deer Creek Range and the western edge of the Medicine Bow National Forest, and then proceed generally south passing east of Ice Cave Mountain and Bates Creek Reservoir before crossing into Carbon County. At MP 44.3 Proposed Route 1W(c) enters and then exits the proposed Heward Substation (expansion of the existing Difficulty Substation). Both Proposed Routes then parallel SR 487 for about 14 miles across Shirley Basin. At MP 55.4, Proposed Route 1W(c) ties into existing transmission lines looping into and out of the existing Shirley Basin Substation before proceeding south, still parallel to Proposed Route 1W(a). At MP 58.0, both Proposed Routes turn southwest through Little Basin to the northwest of the Freezeout Mountains. At MP 64.0, the Proposed Routes diverge to a maximum separation of approximately 7,500 feet as Proposed Route 1W(a) swings west to avoid a private landing strip in Red Draw before turning south and crossing Difficulty Creek at MP 70.0. Both Proposed Routes cross the southern toe of the Freezeout Mountains at MP 70.5 and 69.0 before terminating at the proposed Aeolus Substation at MP 73.8 (MP 70.3 for the Dave Johnston – Rock Springs line) on the north side of the Medicine Bow River. Preferred Route 1W(c) will be realigned for a short distance resulting

in the removal of approximately 1 mile of existing 230-kV transmission line where transitions occur between the new and existing transmission line segments that comprise Proposed Route 1W(a). Proposed Route 1W(c) enters and then exits the proposed Aeolus Substation, heading south to MP 71.0 before turning west to rejoin the existing Dave Johnston-Rock Springs line at MP 71.7. Approximately 1.2 miles of the existing 230-kV in the vicinity of the Aeolus Substation will be demolished in order to arrange the new line entry and exit points to the substation.

3.1.5 Segment 2 – Aeolus to Creston

Segment 2 consists of one single-circuit 500-kV transmission line between the proposed Aeolus Substation and the location of the originally planned Creston substation (hereafter abbreviated as Creston) near Wamsutter, Wyoming. This segment generally follows a combination of the WWE corridor and existing transmission lines. Appendix A, Figure A-3 is a map of Segment 2 between the Aeolus Substation and Creston.

Segment 2 as proposed will use 500-kV single-circuit lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). Segment 2 is about 92.0 miles long and therefore will need two optical signal regeneration sites, one site in the in the area south of Rawlins and another in the general location of the formerly-planned Creston substation. Final locations for regeneration stations will be determined after detailed design engineering is completed.

The proposed 92.0 mile-long 500-kV single-circuit line (points 2, 3) exits the proposed Aeolus Substation directly west crossing County Route (CR) 121 and the Medicine Bow River paralleling the north side of the Seven Mile Hill Wind Energy Project. About 7.2 miles west of the substation, the route turns south, generally following Hanna Draw, for about 27.0 miles through the Hanna Sage Grouse Core Area and an active coal mining area north and west of Hanna. The Proposed Route between MP 3.0 and 30.0 was recommended as the preferred route by the Wyoming Governor's Office and follows the corridor established by EO-2011-5. At MP 28.0, the Proposed Route passes between Dana Ridge and Saint Mary's Ridge before turning west near Walcott Junction. The Proposed Route parallels north of I-80 for about 4.5 miles, crosses I-80 and the North Platte River south of the Fort Steele State Historic Site before continuing west between two bald eagle nest buffers on the west bank of the North Platte River at MP 38.0. From there, the route proceeds west, passing between two Wyoming Game and Fish Department (WGFD) parcels and a BLM Special Recreation Management Area (SRMA), and north Hogback ridge and multiple raptor nests. The Proposed Route then passes through alternating sections of private and BLM-managed land, following an existing pipeline northwest for 4 miles before again continuing west at MP 42.2.

Proceeding west, the Proposed Route passes north of Severson Flats and south of the Greenville Dome, the Wyoming State Penitentiary, and the Rawlins water treatment facility before crossing SR 71 about 2.7 miles south of Rawlins. West of SR 71, the route traverses Coal Creek and Coal Mine Ridge south of and parallel to an existing 230-kV line. The route continues at varying distances from the existing line to Creston. In this last 40-mile segment, the route crosses Hogback Ridge, Red Rim, SR 789, and several active oil and gas fields before reaching Creston about 4.0 miles south of Wamsutter.

The Proposed Route follows the WWE corridor, which is also a BLM-designated ROW corridor (BLM 2008a), where feasible. It diverts only to stay within the transmission corridor through core sage-grouse population areas established by the Governor's Executive Order (EO-2011-5), and to avoid the Fort Fred Steele State Historic site, the Seven Mile Hill Wind Energy Project, sage-grouse leks, and oil and gas well infrastructure. The Proposed Route is within or parallel to the WWE corridor (which is also an existing utility corridor) for 50.0 miles out of a total route

length of 92.0 miles. Of its 92.0 mile length, the route parallels existing transmission lines for 50.0 miles. The Proposed Route crosses the Hanna Sage-Grouse Core Area (Hanna Core Area) within the Wyoming Governor's EO-2011-5 designated corridor on a Greenfield route from approximately MP 3.0 to 30.0.

3.1.6 Segment 3 – Creston to Anticline

Segment 3 has two components: a short 5.1-mile 345-kV interconnection between the existing Jim Bridger 345-kV substation and the proposed Anticline substation (Segment 3A see Section 3.1.7), and a 45.9-mile-long 500-kV line between the terminus of Segment 2 near the previously proposed Creston substation and the proposed Anticline substation (called simply Segment 3).

The 500-kV portion of Segment 3 is located between points 3 and 4. It begins at Creston and proceeds west for 17 miles, at which point it turns northwest and crosses I-80 at MP 19.3. This 17-mile segment parallels I-80 approximately 2 to 3 miles to the south, north of the Delaney Rim. Once north of I-80, Segment 3 stays north of this highway until it reaches the east side of the Jim Bridger Power Plant access road. In this segment, oil and gas pipelines and wells were important routing considerations. At MP 43.1, the 500-kV circuit turns north and proceeds for about 2.6 miles along Deadman Wash parallel to the power plant road before entering the proposed Anticline Substation.

Appendix A, Figure A-4 is a map for Segment 3. Segment 3 as proposed will use 500-kV single-circuit lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). Segment 3 (in total) parallels existing transmission lines for 42.1 miles.

No optical signal regeneration site is needed.

3.1.7 Segment 3A – Anticline to Bridger

Because Segment 3A is a different voltage from the rest of Segment 3, it is listed and treated separately for the purposes of a technical project description. A 5.1-mile interconnecting 345-kV transmission line will be constructed between the proposed Anticline Substation and the existing Jim Bridger Substation 345-kV yard to electrically connect the two substations. About 0.5 mile east of the plant access road, this route angles to the northwest on the east side of Deadman Wash before turning west and then south into the existing substation. Appendix A, Figure A-4 is a map for Segment 3A. The structure type will steel-pole H-frame (Figure B-2, Appendix B).

No optical signal regeneration site is needed.

3.1.8 Segment 4 – Anticline to Populus

One single-circuit 500-kV line is proposed between the proposed Anticline Substation and the existing Populus Substation near Downey in southern Bannock County, Idaho. This segment generally follows an existing transmission line corridor. Appendix A, Figures A-5 and A-6 show the Proposed Route for Segment 4 in Wyoming and Idaho, respectively.

Segment 4 as proposed will use 500-kV single-circuit lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3).

Segment 4 is 197.6 miles long and will require three optical signal regeneration sites spaced approximately equidistant along its route. Final locations for regeneration stations will be determined after detailed design engineering is completed.

The proposed single-circuit 500-kV segment extends from the proposed Anticline Substation southeast of the Jim Bridger Power Plant and partially along the existing 345-kV corridor in

Sweetwater County, Wyoming, to the existing Populus Substation west of the community of Downey in Bannock County, Idaho (points 4, 5). The Proposed Route exits the proposed Anticline Substation to the west and parallels to the south side of the existing 345-kV corridor for about 40.0 miles, then, after by-passing the Seedskadee National Wildlife Refuge, continues to follow the existing transmission lines, except for two short deviations in the vicinity of the two U.S. Highway 30/SR 89 crossings, a further 120.0 miles. The Proposed Route crosses the Greater South Pass Core Area in the Wyoming Governor's EO-2011-5 designated corridor between MP 32.0 to MP 45.0. The route then crosses the Seedskadee Core Area in the Wyoming Governor's EO-2011-5 designated corridor between MP 58.0 to MP 70.2. The route further crosses the Sage Core Area in the Wyoming Governor's EO-2011-5 designated corridor between MP 104 to MP 120. All three crossings of sage grouse core area occur adjacent to existing 345-kV transmission lines.

The Proposed Route crosses Deadman Wash and North Baxter Basin before crossing Killpecker Creek, US 191 and the White Mountains about 10 miles north of Rock Springs. The route continues to parallel the existing 345-kV corridor west toward the Seedskadee National Wildlife Refuge where it deviates south at MP 45.8 through Stevens Flat to avoid the southern boundary of the Refuge near Big Island. The Proposed Route crosses the Green River at MP 52.0 then turns north at MP 53.4 paralleling SR 372 for approximately 3.5 miles before turning west again to parallel the existing 345-kV corridor through the oil and natural gas fields in Whiskey Basin, crossing Oyster Ridge and US 189 about 4.5 miles north of Kemmerer. Between MP 67.0 and MP 136.8, the Proposed Route follows the alignment recommended by the Wyoming Governor's Office. At MP 100.0, the Proposed Route crosses to the north side of the existing 345-kV corridor in the Pomeroy Basin before continuing west parallel to the corridor, crossing Commissary Ridge and then the Ham's Fork River south of Kemmerer Reservoir. Still parallel to the 345-kV corridor, the route continues to the northwest across the Ham's Fork Plateau and the Tunp Range, deviating slightly to cross US 30/SR 89, before crossing the Bear River about 0.5 miles south of Cokeville.

At MP 126.0 the route continues northwest crossing Boundary Ridge and proceeding from Lincoln County, Wyoming, into Bear Lake County, Idaho, at MP 130.0. From the county line, the Proposed Route continues to parallel the north side of the existing 345-kV corridor crossing the Bear River at MP 134.3 before deviating slightly across Sheep Creek and the Sheep Creek Hills. The Proposed Route then continues west to cross US 30 about 2.8 miles south of the community of Montpelier.

The Proposed Route remains parallel and offset about 1,500 feet northeast of the existing 345-kV corridor crossing Bear Lake Valley, US 89, and the Bear River before proceeding to the eastern boundary of the Caribou-Targhee National Forest (NF) at MP 161.1. The Proposed Route crosses about 9.2 miles within the NF boundary on a new ROW north of, but offset from, the existing 345-kV line. The route then rejoins the existing corridor on the west side of SR 34 crossing Mound Valley and the Bear River for a fourth time.

At MP 180.0, the Proposed Route leaves the existing 345-kV corridor and proceeds west passing along the north side of Dry Hollow Mountain and angling northwest toward the community of Downey. About 2 miles south of Downey, the Proposed Route crosses US 91 and the Marsh Valley. It then continues northwest to the existing Populus Substation located about 1.3 miles west of Downey.

3.1.9 Segment 5 – Populus to Borah

One single-circuit 500-kV line is proposed between the existing Populus Substation and the existing Borah Substation in Power County, Idaho. This line will be constructed with 500-kV single-circuit lattice steel towers between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-7 shows the Proposed Route for Segment 5. Segment 5 is 55.7 miles long and therefore will not need optical signal regeneration sites.

The proposed single-circuit 500-kV segment is approximately 55.7 miles long between points 5 and 6. Two existing 345-kV transmission lines extend between the Populus and Borah Substations. The Proposed Route follows the existing lines from the existing Populus Substation northwest for approximately 12 miles, crossing the existing lines just north of Hawkins Reservoir and south of Hawkins Basin, at which point the Proposed Route follows a Greenfield alignment for the remainder of the route, extending northwest along the foothills to the west of Hawkins Basin before turning west, south of the Fort Hall Indian Reservation, crossing the Arbon Valley and the Deep Creek Mountains and then turning north east of Rockland and on to the existing Borah Substation. The first part of Segment 5 crosses I-15 about 2.0 miles northwest of the Populus Substation. At MP 12.4, the Proposed Route turns west crossing the existing 345-kV corridor and then the Bannock County/Power County line at MP 18.2. The route continues west, parallel to the proposed Populus – Cedar Hill line (Segment 7) crossing the Arbon Valley and the Deep Creek Mountains south of the Fort Hall Reservation. At the west side of these mountains, the Proposed Route turns northerly between the Deep Creek Mountains and SR 37.

Proceeding north along the western foothills of the Deep Creek Mountains, the route crosses several drainages, particularly the East Fork of Rock Creek, generally avoiding farm land located west of the route. The route crosses Visual Resource Management (VRM) Class II land at several points, but avoids the Bowen Canyon Bald Eagle Sanctuary in the mountains to the east. At MP 49.9 the route proceeds west, again parallel to the existing 345-kV corridor, crossing I-86, SR 37, and US 30 before crossing the Snake River and entering the existing Borah Substation.

From MP 36.0 north to the existing Borah Substation, the current Proposed Route is about 1 to 2 miles east of the Companies' original Proposed Route. Meetings with local landowners and Power County representatives identified a more acceptable route that was subsequently adopted by the Companies. As a result, the current Proposed Route is located more on public land.

The Segment 5 Proposed Route is mostly adjacent to, but offset approximately 1,500 feet from, the Segment 7 Proposed Route for approximately 30 miles. Of its total length, the Proposed Route will be Greenfield for 39.7 miles and parallel to existing transmission lines for 16.0 miles.

3.1.10 Segment 6 – Borah to Midpoint

In Segment 6, from the existing Borah Substation to the existing Midpoint Substation located approximately 9 miles south of Shoshone, Idaho, the voltage will be increased to 500 kV on the existing Midpoint – Kinport 345-kV transmission line. The line will be routed into the proposed 500-kV yard at the Borah Substation requiring approximately five structure replacements in the immediate vicinity of the Borah and Midpoint Substations but requiring no other transmission line construction. The remaining line from Borah to Kinport terminates in the existing 345-kV yard at the Borah Substation and will remain in operation at 345 kV. The structures utilized for the reroutes on each end of this line segment are 500-kV single-circuit lattice steel towers

between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-8 shows the locations of the Borah and Midpoint Substations and the existing 345-kV line.

The line segment between the Borah and Midpoint Substations, Segment 6, is part of the existing 345-kV transmission line that was constructed to 500-kV design standards although currently operated at 345 kV. No new transmission line construction will be required along Segment 6 to operate this line segment at 500 kV, except in the vicinity of the Borah and Midpoint Substations. At the Borah and Midpoint Substations, the line will be rerouted and re-terminated from the existing 345-kV line bays into the new 500-kV line bays at each substation. Several new structures and conductors will be needed adjacent the Midpoint Substation to reroute the existing 345-kV line from its termination on the north side of the existing station to the proposed 500-kV yard expansion on the south side. Several new structures and conductors will also be needed at the Borah Substation to reroute the line from the northeast side of the existing station to the proposed 500-kV yard addition on the south side. A new structure will be needed to route the 345-kV line between Borah and Kinport into the existing 345-kV yard on the east side. The line between Borah and Midpoint will then be energized at 500 kV.

3.1.11 Segment 7 – Populus to Cedar Hill

One 118.2 mile single-circuit 500-kV transmission line is proposed between the existing Populus Substation and the proposed Cedar Hill Substation near the Cassia County/Twin Falls County approximately 14 miles southeast of Twin Falls. The line will be constructed utilizing 500-kV single-circuit lattice steel towers between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-9 shows the Proposed Route for Segment 7. Because Segment 7 is 118.2 miles long, it will need two optical signal regeneration sites along its route. Final locations for regeneration stations will be determined after detailed design engineering is completed.

The proposed single-circuit 500-kV line route (points 5, 9) will extend from the expanded Populus Substation about 9.0 miles along the east side of the existing 345-kV lines before turning west and crossing the existing lines south of Cedar Mountain and Hawkins Reservoir. The route turns northwest along the foothills west of Hawkins Basin before turning west and passing south of Pauline. From there, the Proposed Route continues west across the Arbon Valley and the Deep Creek Mountains before crossing SR 37 less than 1 mile south of Rockland at MP 41.0. This segment continues west another 7 miles across the northern foot of the Sublett Range.

From this point it crosses into Cassia County and then proceeds across the Raft River Valley, where it turns southwest along the northern toe of the Cotterel and Albion Mountains before turning west for approximately 22 miles across an area of extensive irrigated cropland and dairy operations, entering the proposed Cedar Hill Substation at MP 118.2. Of its 118.2 mile length, the Proposed Route will be Greenfield for 107 miles and parallel existing transmission lines for 11.2 miles.

3.1.12 Segment 8 – Midpoint to Hemingway

One single-circuit 500-kV transmission line is proposed between the existing Midpoint Substation and the existing Hemingway Substation, located approximately 30 miles southwest of Boise, Idaho. The line will be constructed using steel lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-10 shows the proposed Segment 8 route. The Proposed Route is about 131.5 miles long and therefore two optical signal regeneration sites, about 40 to 50 miles apart, will be needed along the route. Final locations for regeneration stations will be determined after detailed design engineering is completed.

The 131.5 mile-long Proposed Route (points 8, 11) proceeds west-northwest, parallel to an existing 230-kV line, passing just north of the juncture of the Jerome, Lincoln, and Gooding County lines near MP 9. This route continues in the same direction, passing between Gooding and Wendell before crossing the Malad River at MP 19.3. Southwest of Pioneer Reservoir, the route angles northwest away from the existing 230-kV corridor to avoid impacts to an identified residence, crossing the Gooding County/Elmore County line at MP 36.9. At MP 42.0 the route rejoins the existing 230-kV corridor. Between MP 45.8 to MP 48.1 and MP 50.2 to MP 51.1, the Proposed Route crosses VRM Class I in an area of multiple transmission lines, entering the WWE corridor at MP 52.0. At MP 58, the route parallels south and west of the existing PacifiCorp 500-kV line offset 1,500 feet for reliability reasons. The route crosses US 20 at MP 68.5 approximately 3.8 miles northeast of Mountain Home and turns west at MP 86.2,, crossing I-84 at MP 90.2 and the Elmore County/Ada County line at MP 90.9. Continuing west, the Proposed Route is located approximately 1,500 feet south of the existing Summer Lake to Midpoint 500-kV transmission line through the Morley Nelson Snake River Birds of Prey National Conservation Area (SRBOP).

The route enters the SRBOP at MP 98.8 and continues to the west, then southwest through Ada County. A 4.7-mile segment of the route passes through a portion of the Alpha Maneuver Sector for the Idaho Army National Guard (IDANG), which is located in the SRBOP. At MP 116, the route turns more to the south, crossing the Snake River, the Halverson and Wees Bar non-motorized areas (NMA) and the Guffey Butte-Black Butte Archaeological District between MP 117 and MP 120. The Snake River in this area forms the Ada County/Owyhee County line. The route continues southwest and then west around Guffey Butte before intercepting a WWE corridor and turning northwest at MP 124.2, approximately 3.5 mile north of Murphy. The route leaves the SRBOP at MP 126.7 before ending at the existing Hemingway Substation. Of its 131.5 mile length, approximately 15.4 miles are Greenfield and 116.1 miles parallel existing transmission lines.

3.1.13 Segment 9 – Cedar Hill to Hemingway

One single-circuit 500-kV transmission line is proposed between the proposed Cedar Hill and the existing Hemingway Substations. The line will be constructed using 500-kV single-circuit lattice steel structures between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-11 provides details on the transmission line route between the Cedar Hill and Hemingway Substations.

Segment 9 is 162.2 miles long and therefore will need two optical signal regeneration sites along its route. Final locations for regeneration stations will be determined after detailed design engineering is completed.

The 162.2 mile long Proposed Route (points 9, 11) for the single-circuit 500-kV line proceeds generally west through public and private rangeland. The route continues west about one mile south of Twin Falls Military Reservation, and crosses US 93 at MP 17.7. At MP 27.9 the route turns northwest to parallel the east side of Salmon Falls Creek adjacent to an existing 138-kV transmission line for about 5.0 miles. At MP 33 the Proposed Route crosses the Salmon Falls Creek at the north end of Lilly Grade adjacent to an existing single-phase 34.5-kV distribution line just north of the Salmon Falls Creek WSA and a VRM I designated viewshed. The area crossed is still part of an Area of Critical Environmental Concern (ACEC) and eligible Wild and Scenic River (WSR). Several raptor nest buffers are crossed as the route continues northwest through the Bruneau Desert. At MP 46.6, the route enters Owyhee County and turns to the north along the Twin Falls County/Owyhee County line for about 10 miles before turning to the northwest at MP 56.5, then into Elmore County at MP 63.4. Between MP 46.6 and MP 63.4 the

Proposed Route will be just inside the east boundary of the general Jarbidge Military Operating Area (MOA). Within the MOA, the height of the transmission structures normally cannot extend more than 100 feet above ground level. Consultation between Twin Falls County and the U.S. Air Force has determined that this height restriction would not apply and this minor encroachment is acceptable (Postema 2010).

AT MP 79.0, the Proposed Route joins the designated WWE corridor northwest of Deadman Flat, entering the SRBOP at MP 88.0. The Proposed Route passes through the Saylor Creek Air Force Range restricted area and to the south of Bruneau Dunes State Park in the between MP 91 to MP 95.6. Consultation between representatives of the BLM, U.S. Air Force, Idaho Department of Parks and Recreation, and the Companies has determined that the location of the Proposed Route within the restricted Military Operating Area and just to the south of Bruneau Dunes State Park is acceptable with micro-siting . From this point, the Proposed Route proceeds generally southwest, crossing the Bruneau River and the Bruneau Valley near MP 99.0.

On the west side of this valley the route turns northwest, crosses SR 51, and then continues northwesterly on the southwest side of the Bruneau River, then the Snake River and SR 78. In this portion, the Proposed Route follows the WWE corridor on BLM-managed land but frequently changes direction on private segments to avoid rural residences, the small communities of Murphy and Oreana and, as much as possible, cultivated lands. The route reenters the SRBOP between MP 142.4 to MP 146.2 and again between MP 151.5 to MP 152.6, mainly within the WWE corridor on BLM-managed land, and continues north and west into the Hemingway Substation at MP 162.2.

3.1.14 Segment 10 – Midpoint to Cedar Hill

One single-circuit 500-kV transmission line is proposed between the existing Midpoint and proposed Cedar Hill Substations. The line will be constructed using 500-kV single-circuit lattice steel structures between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-12 shows the proposed Segment 10 route between Midpoint and Cedar Hill. The Midpoint Substation is described under Segment 8 and the Cedar Hill Substation is described under Segment 9. Segment 10 will not need an optical signal regeneration site along its route.

The 34.4 mile-long Proposed Route (8, 9) exits the existing Midpoint Substation parallel to an existing 345-kV line and within the designated WWE corridor in a southeasterly direction for 11 miles. At this point, the route turns south crossing the North Side Main Canal, and angles southeast again before turning south again at MP 18.8. From MP 20.5 to the proposed Cedar Hill Substation the Proposed Route again parallels the existing 345-kV line. The route continues south across Goose Lake west of the community of Eden and then crosses I-84 to the west of Skeleton Butte at MP 23.0, the Snake River(Jerome County/Twin Falls County line) at MP 24.3, and US 30 at MP 26.1, before entering the proposed Cedar Hill Substation at MP 34.4. The Proposed Route follows the alignment of the planned Southwest Intertie Project. If that project is constructed, it will serve in place of the Gateway West Segment 10 Proposed Route. Only one transmission line will be constructed under any circumstances.

3.2 Substations

The Project includes three proposed substations and expansions or modifications at nine existing substations.

3.2.1 Proposed Substations

3.2.1.1 Aeolus Substation

The Aeolus Substation site is located in Carbon County approximately 10 miles west of Medicine Bow, Wyoming, on private land as shown in Appendix A, Figure A-13. The substation is the southern terminus of Segment 1 and the eastern terminus of Segment 2. The Aeolus Substation is proposed to electrically terminate the new 230-kV line 1W(a), the reconstructed portion of the Dave Johnston – Rock Springs 230-kV line 1W(c) looped in and out of the Aeolus Substation, and the new transmission lines that will extend west to the Anticline Substation (Segments 2 and 3).

Equipment to be installed includes 500-kV and 230-kV circuit breakers, high-voltage switches, bus supports, transmission line termination structures, and other equipment for each transmission line. The 500-kV transmission line termination structures are approximately 125 to 135 feet tall. Additional equipment including 500/230-kV transformers, 500-kV capacitors and 500-kV shunt reactors (which resemble a transformer in appearance) will be installed. In addition, a Static Var Compensator will be installed for system reliability. This equipment will occupy about 10 to 15 acres within the overall substation fenced area. New control houses will be added to accommodate the necessary system communications and control equipment. Site development will disturb approximately 120 acres and 100 acres will be required for operations. (Appendix A, Figure A-13).

The Aeolus Substation 500-kV transformers weigh approximately 600,000 pounds during shipment. They will be transported to the Project vicinity, offloaded to a heavy haul transporter, and then transported over the highway to the Aeolus site. The heavy haul transporter is approximately 190 feet long, has 35 axles, and weighs 300,000 to 325,000 pounds. Due to the size of the vehicle, a route with minimal grade and large turning radii is necessary. CR 121 will be upgraded to provide the required access.

The Aeolus Substation will require development of a distribution line to provide electrical power during construction and operation. The 11 mile distribution line will be located within or adjacent to the CR 121 ROW between U.S. 30 and the site. Figure 3.2-1 shows the location of CR 121 and access routes to the Aeolus site.

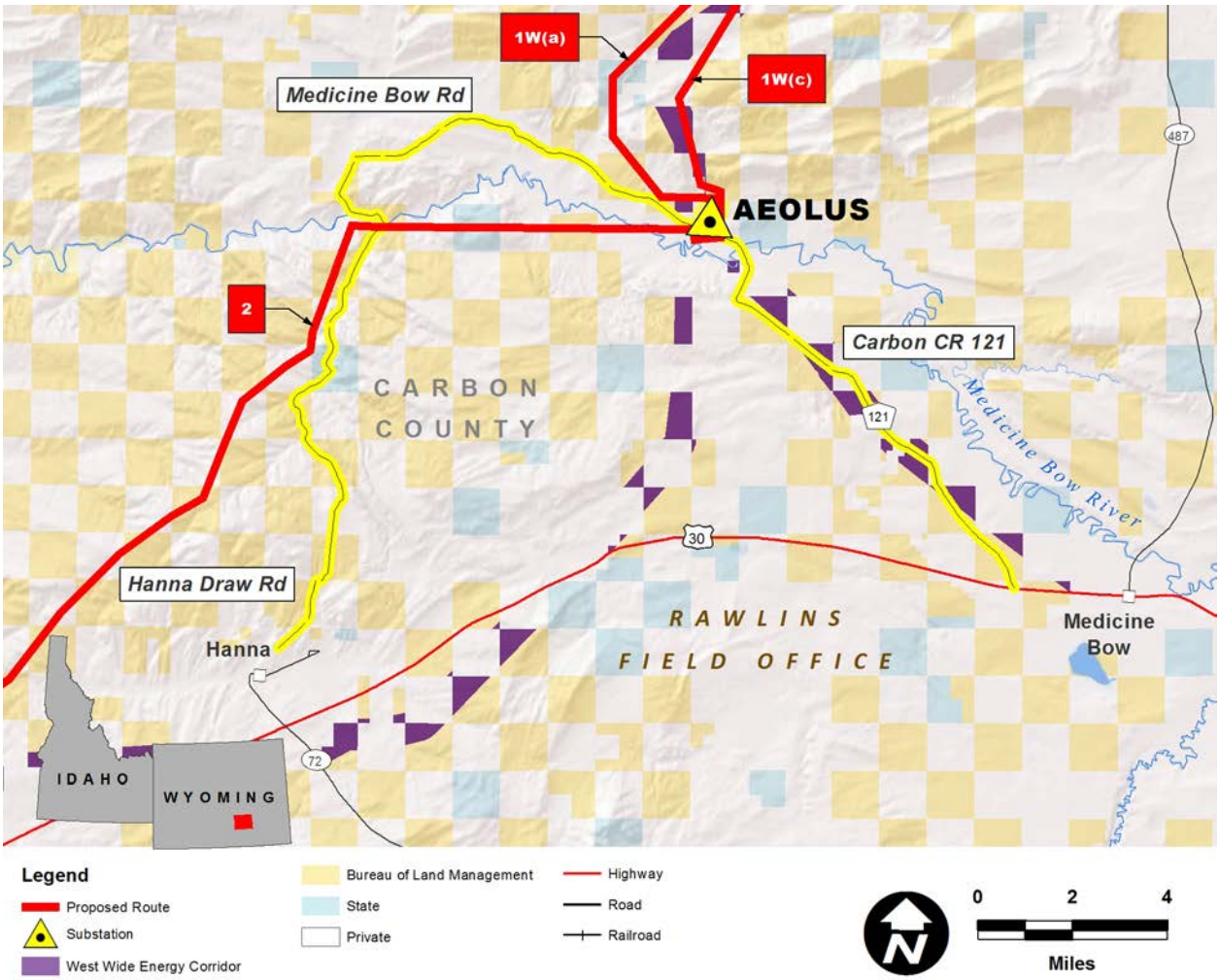


Figure 3.2-1. CR 121 Access to Aeolus Substation

CR 121 Improvements

Existing Conditions: CR 121 is currently a single-lane road, about 20 feet wide and about 11 miles long, from U.S. Hwy 30 to the Aeolus Substation. It is in poor condition with a thin layer of gravel over a clay base and without turnouts. It includes a single-lane bridge over the Medicine Bow River built in 1914 and refurbished with a metal deck around 1972 (see Figure 3.2-2). The bridge was recently inspected by the Wyoming Department of Transportation and found to be in poor structural condition. Its current weight limitations include a 10-ton weight limit for single axle trucks and 13-ton limit for multiple axle trucks, which will not accommodate the heavy haul transporters.

Figure 3.2-2. Looking Westerly Toward the Existing CR 121 Bridge

Needed Improvements: CR 121 will be reconstructed from U.S. Hwy 30 to the immediate vicinity of the Aeolus Substation. Reconstruction will result in approximately 64 acres of construction disturbance and 33 acres of new permanent roadway. Reconstruction includes the following:

- Realignment of the roadway to improve negotiability, visibility, and safety;
- Addition of turnouts, expanding the roadway to 30 feet wide for up to 100 feet along the roadway every mile or where existing terrain and alignment will not accommodate the heavy haul transporter or sight distances are inadequate;
- Improved roadway, likely to include subgrade improvement and application of a geotextile fabric covered by 6 to 8 inches of compacted aggregate base;
- Inspection of all culverts for adequacy and replacement of up to 16;
- Inspection of all cattle guards for adequacy and replacement of up to 6;
- Replacement of the bridge with one that meets Wyoming Department of Transportation standards for HS-20 loading[3]. Based on preliminary engineering, the new bridge requires an approximate span of 125 to 150 feet and a 24-foot travelway width. The new bridge will be installed just downstream (south) of the existing bridge; and
- After the new bridge is completed, removal of the old bridge and its approaches.

Prior to conducting any work, the existing bridge will be evaluated for eligibility for listing on the National Register of Historic Places and any required mitigation, including photographic recordation, will be completed.

3.2.1.2 Anticline Substation

The proposed Anticline Substation is located about 2.5 miles southeast of the Jim Bridger Power Plant, along the east side of Deadman Draw, approximately 30 miles east of Rock

3 Loading is either H-20 or HS-20 based on an axle load of 32 kilo-pounds. This load is divided by the number of tires on each axle.

Springs, Wyoming, as shown on Appendix A, Figure A-4. The proposed substation will consist of a new 500-kV yard constructed southeast of the power plant occupying a fenced area of about 125 acres on private land (Appendix A, Figure A-14). Equipment to be installed within the fenced area includes 500-kV and 345-kV circuit breaker bays and associated equipment, bus supports, high-voltage switches, transmission line termination structures, 500/345-kV transformers, 345-kV phase shifting transformer, 500-kV reactors, 500-kV capacitors, and a new control building to house communications and control equipment. Access to the new 500-kV yard requires improving about 0.5-mile of existing dirt road to a 20- to 24-foot all-weather surface road between the existing Jim Bridger Power Plant access road and proposed Anticline Substation fenceline, improved highway access approaches, and a Union Pacific Railroad crossing. Within the substation site, approximately 0.4 mile of intermittent stream channel will be realigned to provide site drainage. Site development will disturb approximately 150 acres and 140 acres would be required for operations.

The new 500-kV line from the interconnection with Segment 2 (part of Segment 3), the new 500-kV line going to Populus Substation (Segment 4), and the new 345-kV line going to the Jim Bridger 345-kV Substation (Segment 3A) will connect into the Anticline Substation yard.

3.2.1.3 Cedar Hill Substation

The proposed Cedar Hill Substation will be located on public and private land approximately 20 miles southeast of Twin Falls, Idaho, as shown on Appendix A, Figure A-15 as the western terminus of Segment 7. The Cedar Hill Substation is the interconnection point for three new Gateway 500-kV transmission lines. The three lines include the 500-kV line from the Populus Substation (Segment 7), the 500-kV line from the Hemingway Substation (Segment 9), and the 500-kV line from the Midpoint Substation (Segment 10).

Each of the transmission line bays contain high-voltage circuit breakers and switches, bus supports, and control equipment. New 500-kV reactors and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to terminate the 500-kV conductors. A new control building will be constructed to house the 500-kV communications and control equipment for the proposed Gateway 500-kV transmission lines. Approximately 1,000 feet of new access road will be required between the existing county line road and the substation.

Site development will disturb approximately 65 acres and 54 acres will be required for operations.

3.2.2 Existing Substations

The substations described in this section are already operational. Alternative locations for these substations were not considered. The following describes their locations and the modifications proposed as part of the Gateway West Project.

3.2.2.1 Windstar Substation

The Windstar Substation is located on private lands approximately 3.5 miles east of Glenrock, Wyoming, and approximately 1 mile north of the Dave Johnston Power Plant (Appendix A, Figure A-16).

For the Gateway West Project, one expanded 230-kV line bay, including 230-kV circuit breakers and associated equipment, bus supports, high-voltage switches, and transmission line termination structure, will be added to the Windstar Substation to electrically terminate the new

transmission line from the Aeolus Substation (Segment 1W[a]). Site development will disturb approximately 5 acres within the existing substation fenceline.

A new control house will be added or the existing control house will be expanded and/or added to accommodate the necessary system communications and control equipment. The existing access road will be used to reach the site.

3.2.2.2 Dave Johnston Substation

The existing Dave Johnston Substation 230-kV yard (Segment 1W[c]) will be modified to match the proposed capacity of the transmission configuration, Replacement of existing 230-kV circuit breakers, high-voltage switches, tubular and wire bus, bus supports, and transmission line termination structures is required. No expansion of Dave Johnston Substation is proposed and all construction will take place within the existing substation fence. (Appendix A, Figure A-17).

3.2.2.3 Heward Substation

The Heward Substation will be developed on BLM land immediately adjacent to the existing Difficulty Substation, which is located about 45 miles from Bessemer Bend and approximately 34 miles north of Medicine Bow, Wyoming, as shown on Appendix A, Figure A-18. Although operationally independent of the Difficulty Substation, it is in effect an expansion of an existing use. Heward comprises a new 230-kV yard to the west and immediately adjacent to the existing substation fenced area. The Heward 230-kV yard will be required because the existing 230-kV bus and other equipment within the Difficulty Substation is under-rated for accommodating the additional electrical capacity that will be added by rebuilding and reconductoring a portion of the existing Dave Johnston – Rock Springs 230-kV line between the Dave Johnston Power Plant and the planned Aeolus Substation (Proposed Route 1W(c). Adding the new 230-kV yard will increase the flow through capacity of the 230-kV bus and also facilitate maintaining power to Difficulty Substation customers during construction.

Site development will disturb approximately 7 acres and 5 acres will be required for operations.

The new 230-kV yard includes 230-kV circuit breakers, high-voltage switches, bus supports, and transmission line termination structures. The 230-kV transmission line termination structures will be approximately 70 feet tall. A new control house will be constructed within the fenced area to accommodate the necessary system communications and control equipment in the new 230-kV yard. The 230-kV bus will be extended to interconnect to the existing Difficulty Substation 230-kV bus. The existing Difficulty Substation access road will be utilized on the current alignment and state highway entrance. Approximately 500 feet of additional roadway will be developed adjacent to the northern substation fence line to provide alternative equipment access to the Difficulty Substation. The rebuilt Dave Johnston – Heward and Heward – Aeolus 230-kV lines will enter and exit the new substation yard from the north and south as shown in Appendix A, Figure A-19.

3.2.2.4 Shirley Basin Substation

The existing Shirley Basin 230-kV Substation will require the addition of control, protection, and communications equipment to the existing control building. No expansion of Shirley Basin Substation is proposed and all construction will take place within the existing substation fence (Appendix A, Figure A-19).

3.2.2.5 Jim Bridger 345-kV Substation

The existing Jim Bridger Power Plant has a separate 345-kV substation yard located east of the plant (Appendix A, Figure A-20). A 5.5-mile interconnecting 345-kV transmission line between

the new Anticline Substation 500-kV yard and the existing Jim Bridger Substation 345-kV yard (Segment 3A) will be required to electrically connect the two substations. The Jim Bridger 345-kV yard will be expanded by about 10 acres to accommodate the line termination position.

Equipment to be installed within the fenced area includes 345-kV circuit breaker bays and associated equipment, bus supports, high-voltage switches, transmission line termination structures and relocated 345-kV capacitors.

3.2.2.6 Populus Substation

The existing Populus Substation (Figure A-21), located near the town of Downey, Idaho, will be expanded to accommodate the addition of the Gateway West 500-kV transmission lines (Appendix A, Figure A-1). A new 500-kV yard will be constructed in the expansion area north of the existing 345-kV substation yard and interconnected to the existing 345-kV station equipment through a new 500/345-kV transformer bank. Site development will disturb approximately 90 acres and 80 acres will be required for expansion of the existing fence line for operations. (Appendix A, Figure A-21). 500–kV transmission line bays will be installed for connection to the transformer bank and the termination of the three 500-kV line positions for lines to Anticline Substation (Segment 4), Borah Substation (Segment 5), and Cedar Hill Substation (Segment 7).

Each of the transformer and line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment. A new 500/345-kV transformer bank, 500-kV reactors, and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to physically terminate the 500-kV conductors. A new control building will be constructed to house the 500-kV communications and control equipment. The existing access road will be used to reach the site.

3.2.2.7 Borah Substation

The existing Borah Substation is located near American Falls, Idaho (Appendix A, Figure A-8). Expansion of the existing substation requires expansion of the fenced area on private land to accommodate the new 500-kV facilities. Site development will disturb approximately 40 acres and 35 acres will be required for expansion of the existing fence line for operations. The existing Midpoint – Kinport 345-kV line, which currently bypasses the Borah Substation, will be reconnected into an existing 345-kV line bay at this substation and the remaining line segment to Midpoint Substation (Segment 6 – upgrade to 500 kV) and the 500-kV line from Populus Substation (Segment 5) will terminate in the new expansion area. The new 500-kV facilities will be connected to the existing station by the addition of a 500/345-kV transformer bank (Appendix A, Figure A-22).

Each of the transformer and line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment. The new 500/345-kV transformer bank, 500-kV reactors, and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to physically terminate the 500-kV conductors. The existing control building will be enlarged and/or a new control building will be added to house the new 500-kV communications and control equipment. The existing access road will be used to reach the site.

3.2.2.8 Midpoint Substation

The existing Midpoint Substation is approximately 9 miles south of Shoshone, Idaho, on Highway 93 (Appendix A, Figure A-10). The Midpoint Substation will be expanded by 40 acres on private land to accommodate the new Gateway West 500-kV lines. The three 500-kV transmission lines from Hemingway Substation (Segment 8), Cedar Hill Substation (Segment

10), and Borah Substation (Segment 6) will terminate in the expansion area (Appendix A, Figure A-23).

Each of the transmission line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment. New 500-kV reactors and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to physically terminate the 500-kV conductors. The existing control building will be enlarged and/or a new control building will be added to house the 500-kV communications and control equipment for the new Gateway West 500-kV transmission lines. The existing access road will be used to reach the site.

3.2.2.9 Hemingway Substation

The existing Hemingway Substation is located approximately 30 miles southwest of Boise, Idaho, just off of Highway 78 near Wilson Creek Cemetery, shown on Appendix A, Figure A-10 as the western terminus of Segment 8.

The Hemingway Substation has sufficient space planned within the existing fenced area to accommodate the two new 500-kV transmission line bays for Gateway West (Appendix A, Figure A-24). One bay will be for the 500-kV line from the Midpoint Substation (Segment 8) and one for the 500-kV line from the Cedar Hill Substation (Segment 9). Each of the transmission line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment.

New 500-kV reactors and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to physically terminate the 500-kV conductors. The communications and control equipment for the Gateway 500-kV transmission lines will be housed within the existing control building. The existing access road will be used to reach the site.

3.3 Transmission Line Components

Regardless of the route or the structure type chosen, the construction, operation, maintenance, and decommissioning of the transmission line will be conducted as specified in this section. This section provides a general outline of the construction, operations, maintenance, and decommissioning of the transmission line, and references portions of Appendix B, which provides details on each component. Both this section and Appendix B are organized into four parts. The first part describes the components of the transmission line system, including the transmission line itself and its supporting structures, substations, and the communication system. The second part describes the construction techniques and addresses both the permanent alterations and the temporary disturbances needed as well as providing a description of the construction workforce, equipment, and traffic. The third part describes the operations and maintenance of the new system, while the fourth part discusses decommissioning and restoration of the ROW.

3.3.1 System Components

The new transmission system is composed of the transmission structures themselves, the conductors, other hardware, the communications system, access roads, and substations. Each is summarized below and detailed in Appendix B.

3.3.1.1 Construction Disturbance and Land Requirements

Appendix B, Section 3.1.1 details the typical ROW land areas needed for the various components during construction and over the operational life of the Project.

3.3.1.2 Transmission Line System

Appendix B, Section 2.1.1 describes transmission structures, including their types and sizes, the clearances needed between phases of the system and between the lowest conductor and the ground surface, and their foundations. It goes on to describe the conductor types and the other hardware used. Both steel H-frames and lattice steel towers are detailed.

3.3.1.3 Communication System

To control the transmission line and manage the flow of electricity, a sophisticated communication system is required. This communication system's backbone is a fiber optic system contained within one of the overhead ground wires carried along the length of the transmission system. The fiber optic signal needs to be "boosted" or regenerated about every 55 miles along the system, requiring optical signal regeneration stations. These stations consist of a building 12 by 32 by 9 feet tall, a fenced yard, access road, and distribution power supply from the local distribution system. They are typically built close to the transmission line as land use and physical features allow. Details are found in Appendix B, Section 2.4.2.

3.3.1.4 Access Roads

During construction vehicular access will be required to each structure. Appendix B, Section 2.5.1 specifies the typical access roads. New access roads will be constructed and existing roads widened as needed to provide a 14-foot-wide travel way. Roads not required for operations will be restored to their original condition or left as is, depending on landowner/land management agency requirements. Exact locations for roads will be developed during the detailed design phase. Preliminary design has provided indicative locations for roads and laydown yards along the entire ROW. These indicative locations have been used in geographic information system (GIS) analysis to develop the "disturbance footprint" of the Project. While the vast majority of the access roads to be used by the Project will be within the ROW requested, some access roads will be outside the ROW.

Access roads are necessary for access to, and maintenance of, transmission lines, structures or ancillary facilities, but they are not part of the public or federal network of roads. They are generally closed to the public and will be maintained by the Companies and are detailed in Appendix B, Section 2.5.2. With few exceptions, construction access roads become roads needed for operations, although most will be used only infrequently to meet maintenance requirements. Access roads needed for operations and structure construction pads will be revegetated but not recontoured.

3.3.1.5 Multi-Purpose Yards and Fly Yards

Appendix B, Sections 3.2.3 and 3.2.4 provide a general description for multi-purpose yards and fly yards. Exact locations for yards will be developed during the detailed design phase, but preliminary design has provided indicative locations for roads and laydown yards along the entire ROW. These indicative locations have been used in GIS to develop the "disturbance footprint" of the Project. While the vast majority of the multi-purpose yards to be used by the Project would be within the ROW requested, some multi-purpose yards and most fly yards would be outside the ROW. Multi-purpose yards and fly yards are temporary disturbances or temporary uses of areas already developed for storage or other industrial uses.

3.3.1.6 Substations

The description of substations includes their access roads, the types of buildings, transformers, and other infrastructure needed to convert incoming voltage to either another long-distance transmission voltage or to a lower voltage appropriate for distribution to load centers nearby. Details of substation contents are found in Appendix B, Section 2.6.

3.3.2 System Construction

3.3.2.1 Transmission Line Construction

The installation of transmission structures requires preparation of each site where a structure will be installed, including vegetation removal and grading to obtain a relatively flat surface for the operation of the large cranes used to install the structures. Then, either the directly embedded H-frame structure holes need to be drilled or excavated to accept the two poles of each structure, drilled concrete piers are developed for each of three poles for angle structures for the 345-kV structures, or else four foundations for each of the four legs of the lattice steel towers must be established. Appendix B, Table B-2 describes in detail the ranges of foundation sizes, depths, and amounts of concrete needed for each. In addition to the general description of foundation installation, Section 3.5.1 of Appendix B discusses the procedures if rock is encountered and blasting is needed. After the holes are dug for H-frame installation or the foundations completed for the lattice steel towers, the structures are brought in either by truck or by helicopter. If ground transportation is used, cranes will be employed for lifting and installing the structures. Structures are assembled at fly yards if helicopters are used (see also Section 3.5.2 of Appendix B specifying helicopter use procedures).

After the structures are assembled and in place, the conductors and the overhead ground wires will be strung from tower to tower. This is generally accomplished using a helicopter but may be conducted from the ground if the access road travels directly between towers. Details are found in Section 3.2.8 of Appendix B.

3.3.2.2 Communication Systems

Construction of the fiber optic “backbone” of the communication system will be accomplished at the same time as the conductors are strung. Regeneration station construction is also detailed in Section 3.3.1 of Appendix B.

3.3.2.3 Substation Construction

Appendix B, Section 3.4 provides details of substation construction, including development of all-weather access roads, staging areas, clearing and grading of the site, establishment of grounding mats and systems, fencing, foundation excavation, structure and equipment installation, oil containment system installation, control building installation, and finally cleanup and landscaping.

3.3.2.4 Construction Elements

Section 3.6 in Appendix B concludes by providing details of the construction workforce to be employed, the construction equipment and likely daily traffic patterns during the peak of construction, and the proposed construction schedule. Removal of temporary facilities and waste disposal are also discussed.

3.3.3 Operations and Maintenance

The Companies have prepared Project-specific operations and maintenance policies and procedures designed to meet the requirements of the NERC, WECC, and the state public utility

commissions, while remaining in compliance with the applicable codes and standards with respect to maintaining the reliability of the electrical system. Operations and maintenance activities include transmission line patrols, climbing inspections, tower and wire maintenance, insulator washing in selected areas as needed, service roads repairs. Periodic inspection and maintenance is also a key part of operating and maintaining the electrical system. The following key topics are described in detail in Appendix B, Section 4.0:

- Routine system inspection, maintenance, and repair;
- Transmission line maintenance;
- Hardware maintenance and repairs;
- Service road and work area repair;
- Vegetation management; and
- Substation and regeneration site maintenance.

3.3.4 Decommissioning

The projected life of the Gateway West Project is 50 years. Typically, transmission lines that have been maintained through that period will continue to provide service for a much longer lifetime. At the end of the service life of the Project, assuming that it is not upgraded or otherwise kept in service, the structures and conductors would be removed. The substations and regeneration stations, if not needed for other existing transmission line projects, would also be removed. Appendix B, Section 5.0 provides information regarding the removal of materials and the restoration of the sites.

4.0 ENVIRONMENTAL PROTECTION PLANS

This section describes the framework plans included as appendices to this POD that the Companies will use to ensure environmental protection during construction, operation, and maintenance. Each plan will include environmental protection measures (EPMs). These measures have been developed by the Companies to maintain environmental quality and meet requirements of various agencies. For the purposes of ongoing review and discussion with agencies, the measures are included herein as Appendix Z. Once the measures are finalized, they will be incorporated into individual plans. The Companies will be responsible to ensure their contractors and employees will implement these measures. Table 4-1 describes the framework environmental protection plans (EPPs).

The process leading to a set of Final plans is an iterative one that started with initial siting and will end with the submittal of final Plans for protection of resources during construction and restoration details for the permitted route. Framework Plans are an intermediate step to provide each Plan's structure and as much detail as is available at this stage of project development.

Framework Plans

To support the Environmental Impact Statement (EIS) analysis of the Gateway West Project, the Companies developed an indicative layout of centerline location, access roads, multipurpose areas, fly yards and pulling and tensioning sites at a desktop level for the Proposed Route and alternative routes identified by the agencies and other stakeholders that the BLM determined should be analyzed in detail in the EIS. Section 3.1 of the Draft EIS describes that process. Concurrently the Companies developed a series of Framework EPPs.

Appendix C of the POD, the Framework Environmental Compliance Management Plan, provides details of how the Companies will uphold, document, and manage compliance with the requirements of all federal, state, and local permits and landowner agreements. This plan provides a complete approach to third-party monitoring, reporting, and management of construction compliance with the terms and conditions of permits and agreements controlling the Project.

The remaining Framework Plans (Appendices D through R of the POD and summarized in Table 4-1) and the Environmental Protection Measures (EPMs, found in Appendix Z) have been developed as much as possible given the lack of certainty of the approval and permitting process. Note that for the purposes of the May 2012 POD and its September 2012 supplement, Appendix Z represents the Companies' environmental protection measures, including those measures proposed by agencies which the Companies have agreed to incorporate in their project description.

Schedule and Procedure for Final Plan Development

The BLM and other agencies have taken the Project description, including the EPMs listed in Appendix Z of the POD, into consideration during their environmental analysis of the impacts of the project. When the BLM and other agencies have completed that analysis and published it as the Final EIS, the Companies expect that there will be additional requirements imposed beyond those found in the EPMs. Those requirements will be incorporated, together with those EPMs found to be adequate by the agencies, into each of the Final Plans.

Step 1: Additional Engineering Design

The Companies have taken the initiative to move the process of determining the site-specific details forward even before the agencies have issued permits. This at-risk work has been

limited to Phase 1 of the project (Segments 1 through 4) where the Companies feel that there is a strong agreement among federal, state, and local permitting agencies regarding the location of the Preferred Route. In that case, the Companies have invested in additional design engineering, in which the initial desktop design is verified in the field and provided with additional detail through engineering modeling to resolve angle structure locations, clearances and road alignments and grades. In addition, engineering design has taken into account information developed during the environmental analysis and has avoided where feasible such resources as wetlands, sensitive plants, raptor nesting areas, other wildlife sensitive areas, and cultural resources.

The Companies intend to present the results of this at-risk engineering design work to the land managing agencies including the BLM, the USFS, and the BOR as well as to private landowners in a series of meetings covering Segments 1 – 4. The objectives of these meetings are to explain deviations from the centerline as analyzed in the EIS, solicit input on locally known resource issues, and request review and approval of associated facility locations such as access roads, multipurpose yards, regeneration stations, and fly yards. These review meetings will be concluded before the BLM issues the Record of Decision on the environmental analysis and the BLM and other agencies issue their right-of-way grants, special use permits, and other permitting documents.

Step 2: Development, Review, and Approval of Final Plans

The results of these meetings and any revisions requested in the design engineering will provide the basis for the second step for acquiring sufficient site-specific information to finalize each plan. This step will occur after the issuance of a right-of-way grant from the BLM and other permits from other agencies in Wyoming and Idaho. At that time the engineering, procurement, and construction (EPC) contractor will be on board and will complete both the engineering design and the details of each plan for review and approval by the BLM and other permitting agencies.

The chief environmental protection advantage of the EPC process is that the contractor who will be responsible for day to day construction will have been integrally involved in development of the Final EPPs. This ensures that the planning and construction process are synchronized and incorporate feasible solutions.

The Companies, through their EPC contractor, will submit each plan to the agencies for review and approval. When the plans have all been reviewed and revised if needed, they will be incorporated into the Construction POD. The Construction POD will be submitted with site-specific information for each Notice to Proceed (NTP) to Construction. The Companies and the BLM have agreed that the Project will receive a single ROD but a series of NTPs that reflect the Companies' construction priorities. The Companies expect that each NTP will be issued only when the BLM and other agencies are satisfied that the Construction POD for that portion of the Project contains sufficient detail to adequately protect environmental resources and restore the area after construction.

Plan Implementation

The Companies will ensure that their contractors and employees implement these measures following the procedures in the Environmental Compliance Management Plan. The Companies and BLM have agreed on the use of a third-party Construction Inspection Contractor (CIC) to act on the behalf of land managing and other regulatory agencies and provide environmental compliance oversight during construction. The CIC will be selected by the BLM and other agencies but paid for by the Companies. The Companies anticipate that the CIC will be selected and hired prior to issuance of requested the right-of-way grants and special use

authorizations, respectively, to allow adequate time for the CIC to review documents and develop on-the-ground familiarity with the Project. The CIC will be authorized to enforce the POD on BLM- and USFS-administered lands. The CIC will also ensure BLM and USFS responsibilities under the NHPA and ESA are met on non-federal lands and disturbance on non-federal lands is consistent with the analysis in the EIS.

Table 4-1. Environmental Protection Plans

Framework Plan	Preliminary Plan or Environmental Protection Measures	Final Plan
The **Environmental Compliance Management Plan** will be the primary guidance document that states how the Companies will uphold, document, and manage compliance with the right-of-way grant, the POD, landowner agreements, and all federal, state, and local permits. It is a centralized Project environmental compliance reference and is thereby intended to facilitate environmental compliance across the entire Project.	Included in POD as Appendix C.	Construction POD and COM Plan
The **Framework Reclamation Plan** will include site-specific construction mitigation, reclamation, and revegetation measures for each land management area crossed by the ROW within BLM-managed and National Forest lands. It will combine the Companies' BMPs with site-specific mitigation developed in consultation with agencies. Some measures will apply Project-wide, while others will be designed for specific areas.	Included in POD as Appendix D. Environmental protection measures (EPMs) provided in Appendix Z.	Construction POD and COM Plan
The **Framework Noxious Weed Plan** will provide methods to control the potential occurrence/infestation of noxious and invasive weeds during and following construction of the Project. The purpose of the plan is to ensure noxious weeds are identified and controlled during the construction of project facilities and all federal, state, county, and other local requirements are satisfied.	Included in POD as Appendix E. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Stormwater Pollution Prevention Pl**an will include 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.	Included in POD as Appendix F. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Spill Prevention, Containment, and Countermeasures Plan** will include measures for spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response and incident reporting, and training requirements.	Included in POD as Appendix G. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Plant and Wildlife Conservation Measures Plan** will present the measures proposed by the Companies for avoidance and minimization of impacts to special status plant and wildlife species as related to construction activities for the Project and outlines specific conservation measures to be implemented in the event that state or Federally listed species, BLM sensitive species, or Forest Service special status species or their habitats are identified within or adjacent to the Project right-of-way.	Included in POD as Appendix H. EPMs provided in Appendix Z. Compensatory mitigation plan for impacts to sage-grouse habitat submitted to the BLM under separate cover.	Construction POD and COM Plan
The Framework Stream, Wetland, Well, and Spring Protection Plan will provide measures to protect these resources from potential impacts during construction, operation, and maintenance activities. The goals of this plan are to control Project-related erosion and sedimentation into streams and wetlands and minimize disturbance and erosion of streambeds and banks and protect springs and wells in the Project area from impacts due to blasting and hazardous materials contamination.	Included in POD as Appendix I. EPMs provided in Appendix Z. Compensatory mitigation plan for impacts to Waters of the U.S. submitted to the BLM under separate cover.	Construction POD and COM Plan
The Framework Paleontological Resources Protection Plan will identify the mitigation measures needed to avoid or reduce project-related impacts to paleontological resources, wherever feasible. This plan provides important background and contextual information useful for the paleontological resources mitigation program.	Included in POD as Appendix J. EPMs in Appendix Z.	Construction POD and COM Plan

Table 4-1. Environmental Protection Plans (continued)

Framework Plan	Preliminary Plan or Environmental Protection Measures	Final Plan
The **Framework Agricultural Protection Pl**an will include measures intended to mitigate or provide compensation for agricultural impacts that may occur due to construction of the Project. The measures will be intended to be implemented on partially or wholly owned private agricultural land unless directed otherwise by the landowner. Agricultural land will be defined to include that which is annually cultivated or rotated cropland; land in perennial field crops, improved pasture; hayfields; and land in the Conservation Reserve Program.	Included in POD as Appendix K. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Traffic and Transportation Management Plan** will include measures that require compliance with federal policies and standards relative to planning, siting, improvement, maintenance, and operation of roads for the Project.	Included in POD as Appendix L. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Blasting Plan** will outline methods to prevent adverse impacts to human health and safety, property, and the environment that could potentially result from the use of explosives during project construction and mitigate risks and potential impacts associated with blasting procedures that may be required for construction. The plan will provide all levels of construction personnel project-specific information concerning blasting procedures, including the safe use and storage of explosives.	Included in POD as Appendix M. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Dust Control and Air Quality Plan** will provide measures to ensure protection of the air quality that will be affected by the Project. This plan is to be implemented during the construction, operation, and maintenance phases of the Project. These measures are intended to minimize dust and emissions from construction-related activities.	Included in POD as Appendix N. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Fire Prevention and Suppression Plan** will include measures to be taken by the Companies and its contractors to ensure that fire prevention and suppression measures are carried out in accordance with federal, state, and local regulations. The plan will address the specific requirements of the Forest Service and BLM handbooks and provide BMPs for fire management on privately owned lands..	Included in POD as Appendix O. EPMs provided in Appendix Z.	Construction POD and COM Plan
The **Framework Hazardous Material Management Plan** will reduce the risks associated with the use, storage, transportation, production, and disposal of hazardous materials (including hazardous substances and wastes). This Plan will identify Project-specific mitigation measures and other specific stipulations and methods to address spill prevention, response, and cleanup procedures for the Project.	Included in POD as Appendix P. EPMs provided in Appendix Z.	Construction POD and COM Plan
The Framework Construction Emergency Preparedness and Response Plan will provide an overview of methods to be implemented if the need for emergency management is imminent. This document will the existing support structure, chain of command, and emergency communications protocols to be used as a guide for an Emergency Preparedness and Response Plan to be completed by the Construction Contractor	Included in POD as Appendix Q. EPMs provided in Appendix Z.	Construction POD and COM Plan
The Framework Operations, Maintenance, and Emergency Response Plan will include measures to be employed while conducting routine, corrective, and emergency operations and maintenance activities. Measures identified will be in compliance with applicable state and federal laws and policies; ensure consistency across and within federal jurisdictions; and allow for the Companies to access the transmission line and ancillary facilities in a timely, cost effective, and safe manner.	Included in POD as Appendix R. EPMs provided in Appendix Z.	Construction POD and COM Plan

Table 4-1. Environmental Protection Plans (continued)

Framework Plan	Preliminary Plan or Environmental Protection Measures	Final Plan
The **Cultural Resources Protection and Management Measures** will include the procedures undertaken to inventory, evaluate, and protect cultural resources. It describes the treatment of any eligible or listed resource that cannot be avoided, and procedures for handling inadvertent discoveries during construction, operation, and maintenance.	General EPMs provided in Appendix Z. Final measures will be based on the Programmatic Agreement and the Historic Properties Treatment Plan. Draft HPTP with framework compensatory mitigation plan for impacts to historic trails submitted under separate cover to the BLM.	Construction POD and COM Plan

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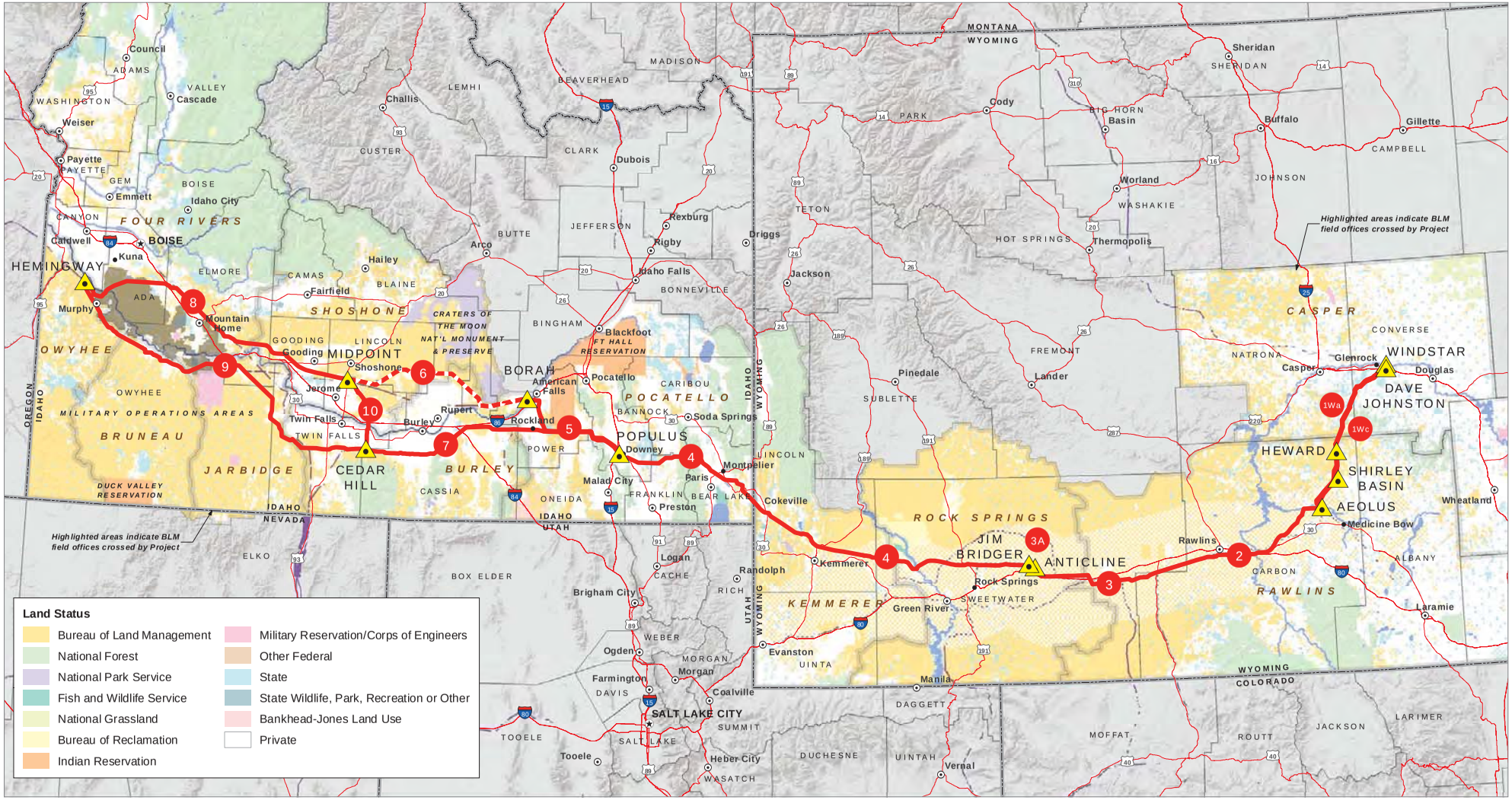
APPENDIX A
PROPOSED ROUTE AND SUBSTATION MAPS AND FIGURES



0 40
Miles
NAD 1983 UTM Zone 12N

Enlarged Area Above

Route Features
- Proposed Route
- Energize Existing 345-kV to 500-kV
- Substation

- Segment Number

Other Features
- State Capital
- County Seat
- Other City/Town

- County
- BLM Field Office
- Morley Nelson Snake River Birds of Prey NCA
- West Wide Energy Corridor (WWEC)

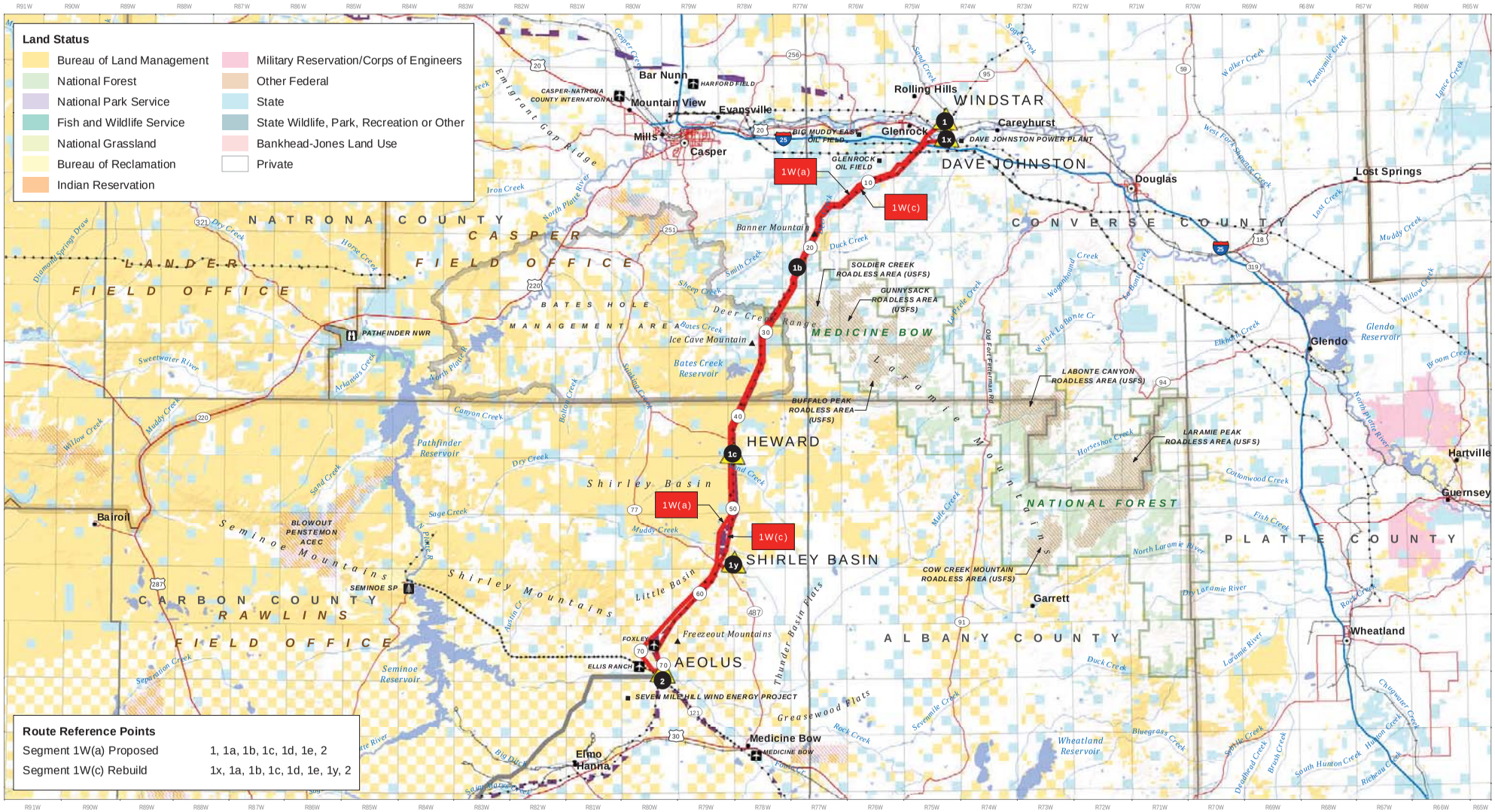
ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

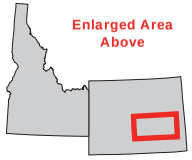
Project Overview
Figure A-1

Sources | BLM; USFS; ESRI

SF299_POD FIG A-1 Project Overview_20120918 Saved | 9/18/2012



0 10
Miles
NAD 1983 UTM Zone 12N



Route Features
- Proposed Route
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access

- Railroad
- Interstate
- US Highway
- Secondary State or County Road

- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

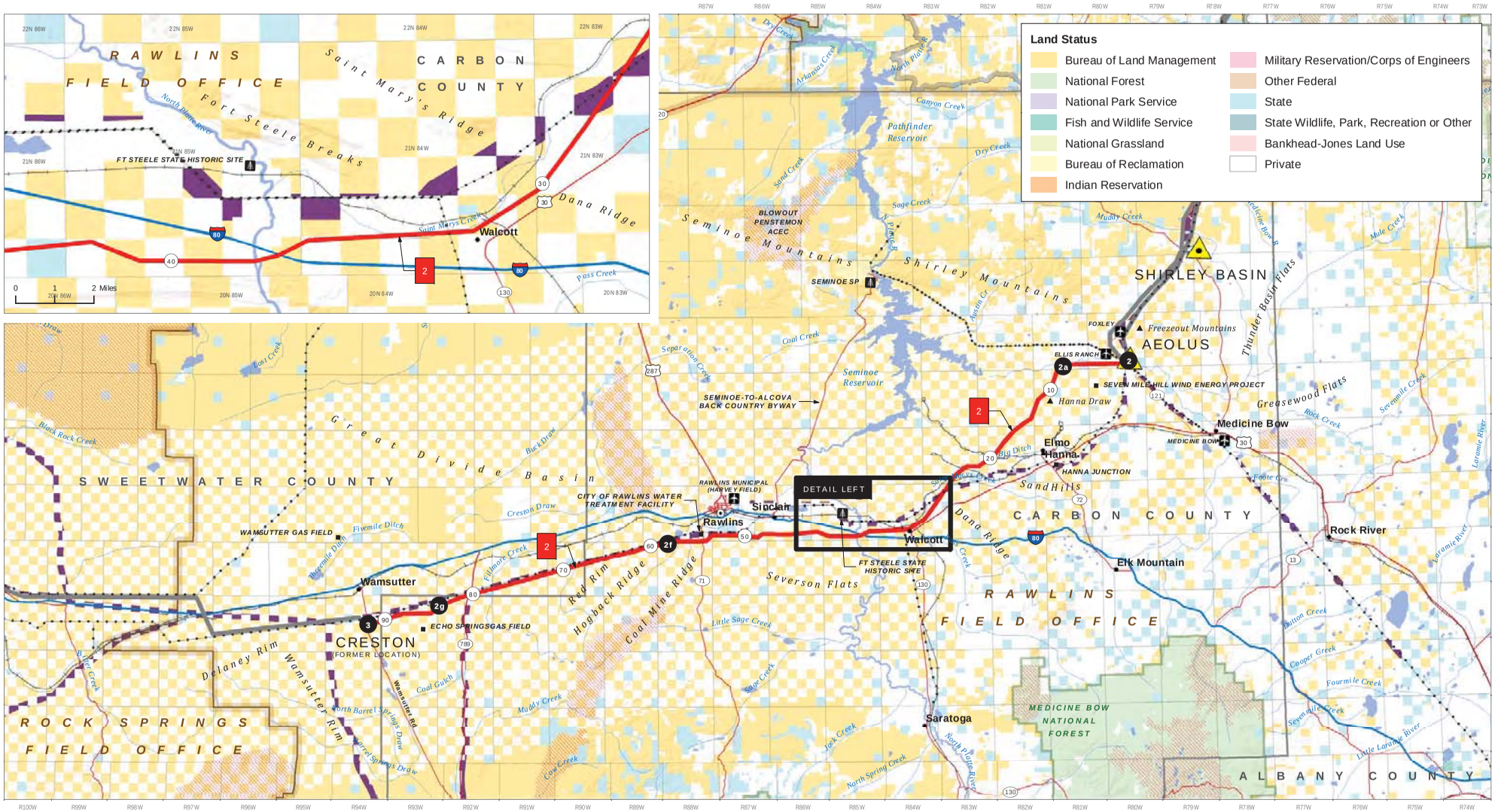
ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

Segment 1W(a) / 1W(c)
Windstar/Johnston to Aeolus
Figure A-2

Sources | BLM; USFS; ESRI

SF299_POD FIG A-2 Segment 1W_20120918 Saved | 9/18/2012



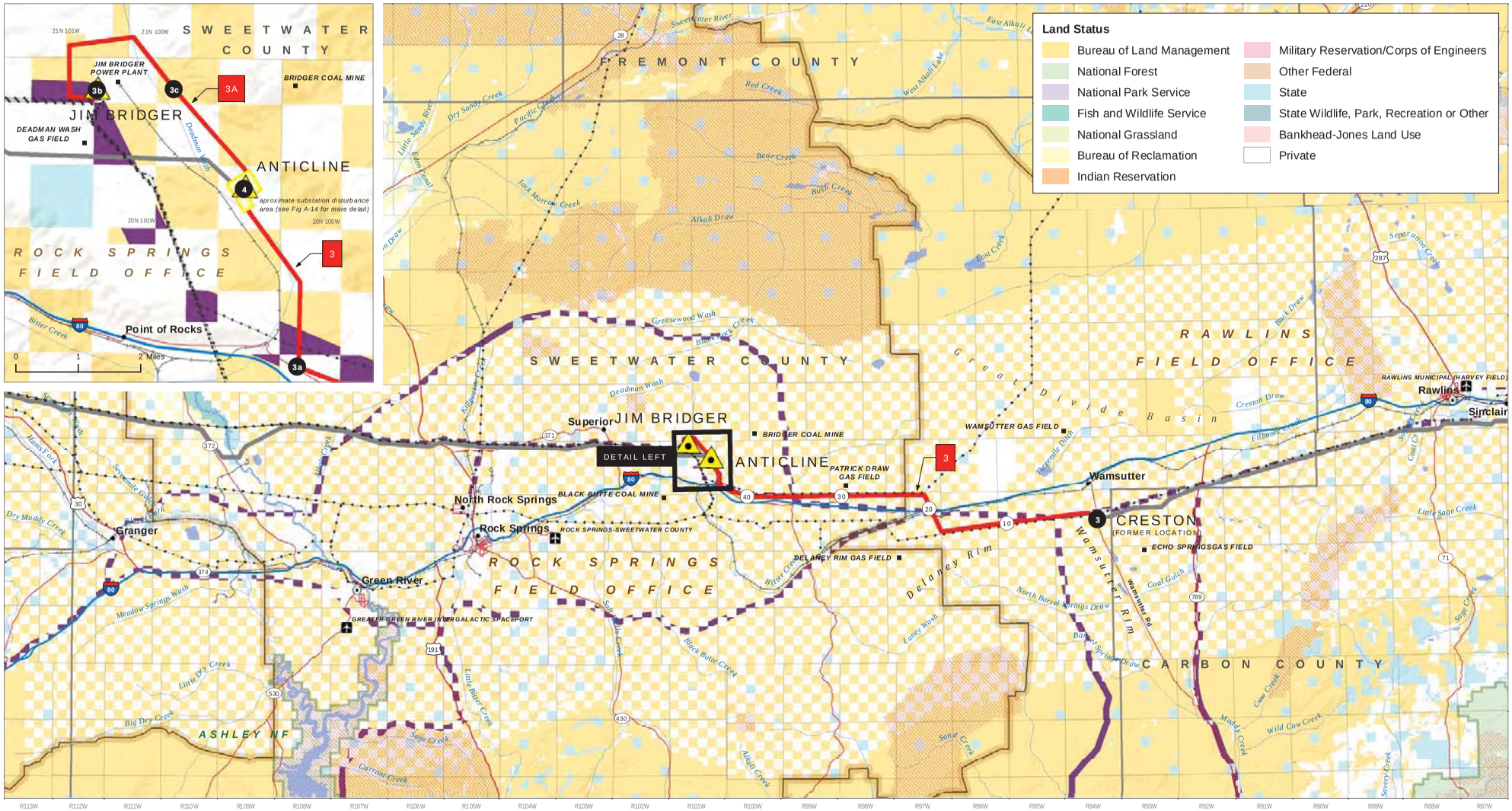
ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

Segment 2
Aeolus to Creston
Figure A-3

Sources | BLM; USFS; ESRI

SF299_POD FIG A-3 Segment 2_20120918 Saved | 9/18/2012



0 10
Miles
NAD 1983 UTM Zone 12N

Enlarged Area Above

Route Features
- Proposed Route
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access

- Railroad
- Interstate
- US Highway
- Secondary State or County Road

- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

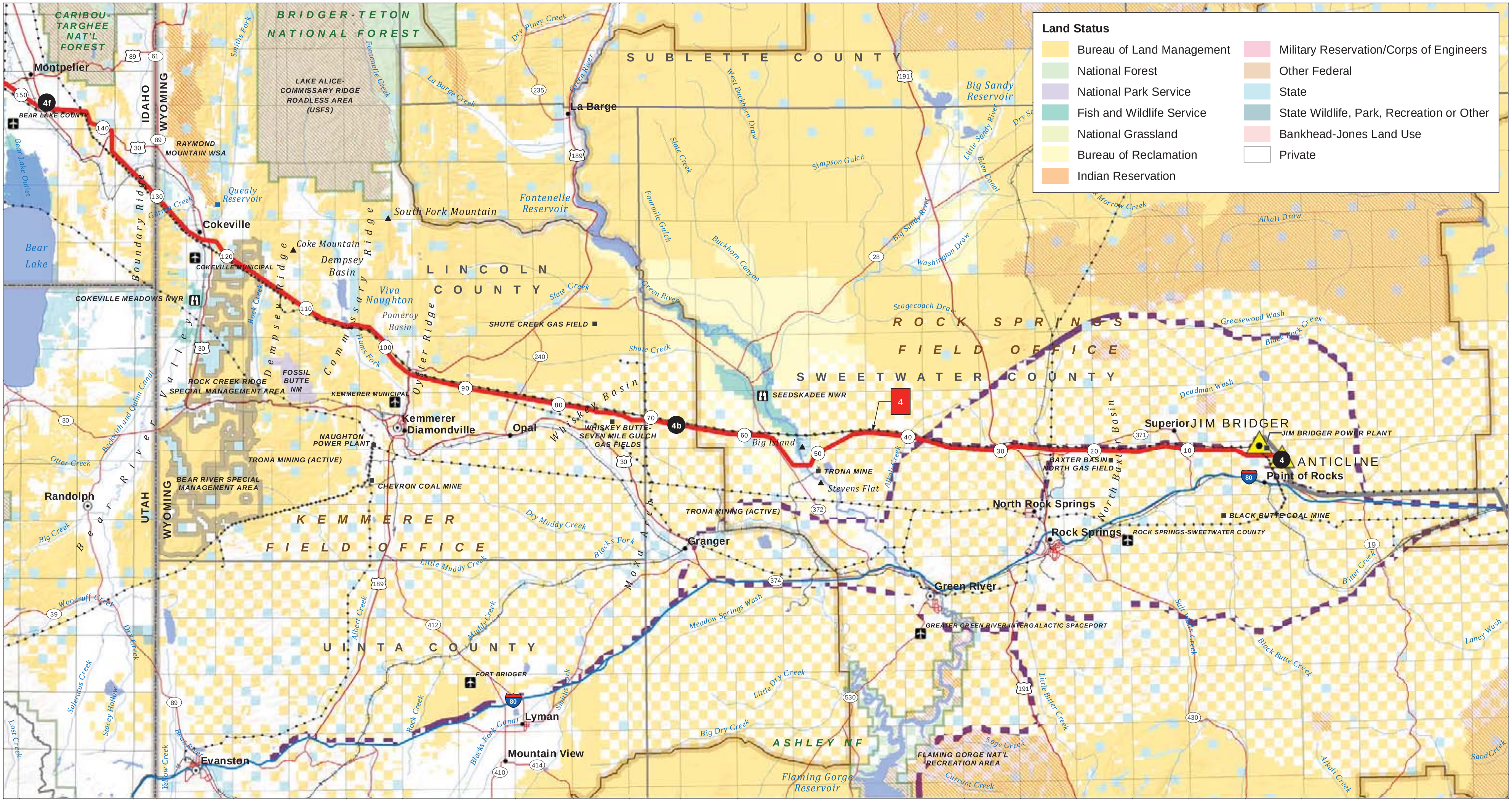
ROCKY MOUNTAIN POWER
IDAHO POWER

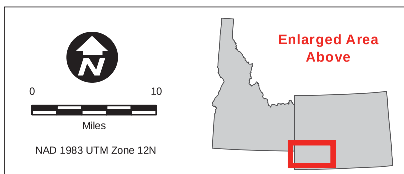
Gateway West
Transmission Line Project

Segment 3
Creston to Anticline/Bridger
Figure A-4

Sources | BLM; USFS; ESRI

SF299_POD FIG A-4 Segment 3_20120918 Saved | 9/18/2012





Route Features

- Proposed Route
- Other Route
- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features

- BLM Field Office
- National Forest
- County
- Restricted Access
- Railroad
- Interstate
- US Highway
- Secondary State or County Road
- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

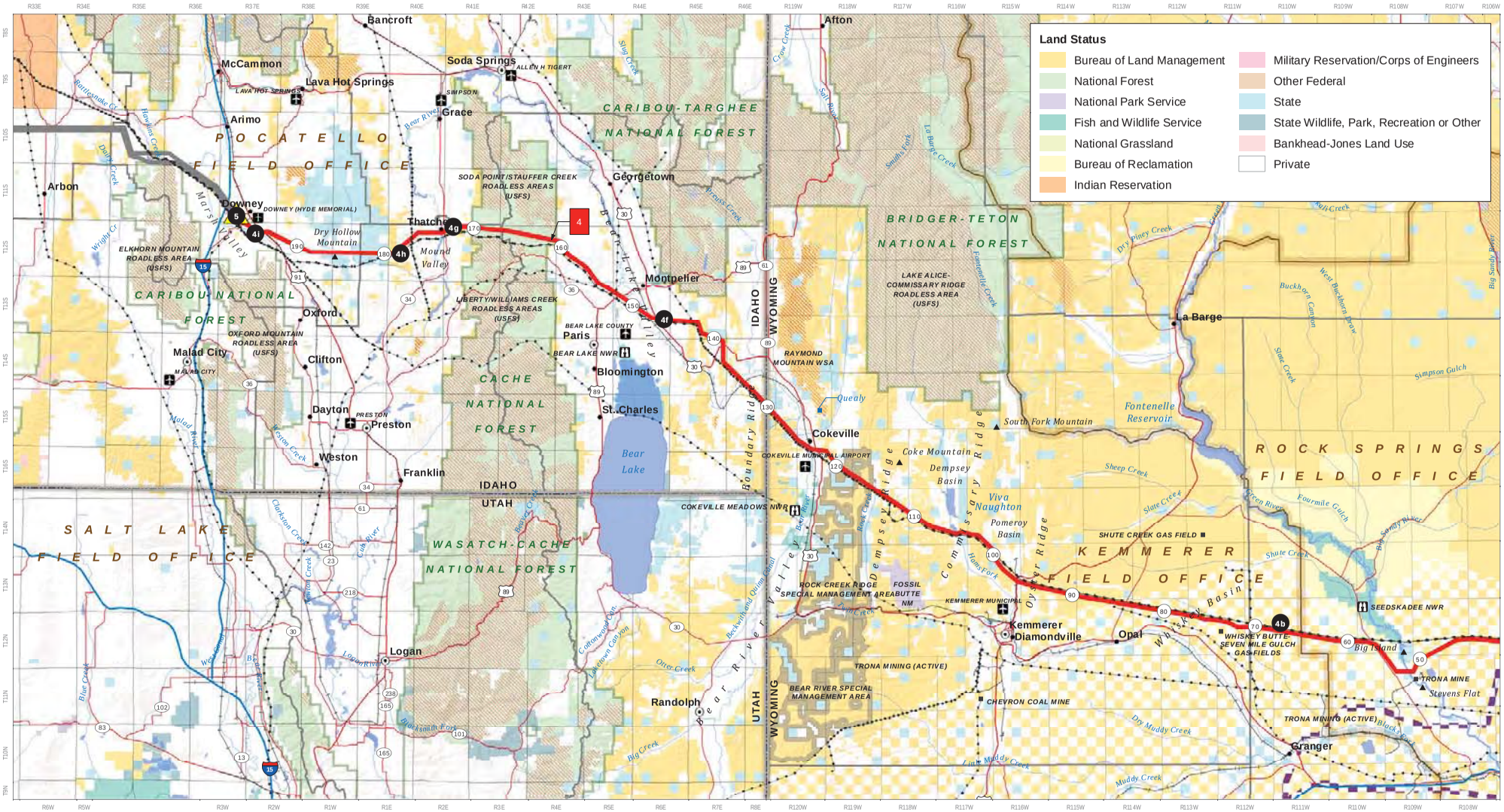
ROCKY MOUNTAIN POWER IDAHO POWER

Gateway West Transmission Line Project

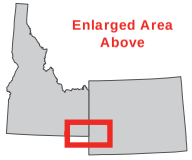
Segment 4-WY
Anticline to Wyoming/Idaho
Figure A-5

Sources | BLM; USFS; ESRI

SF299_POD FIG A-5 Segment 4-WY_20120918 Saved | 9/18/2012



0 10
Miles
NAD 1983 UTM Zone 12N



Route Features
- Proposed Route
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access

- Railroad
- Interstate
- US Highway
- Secondary State or County Road

- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

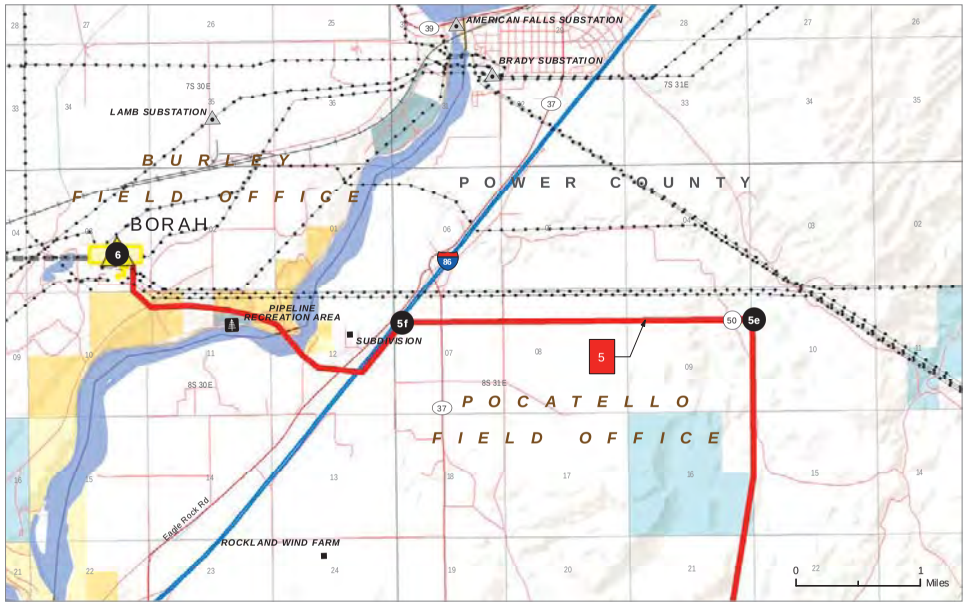
ROCKY MOUNTAIN POWER
IDAHO POWER

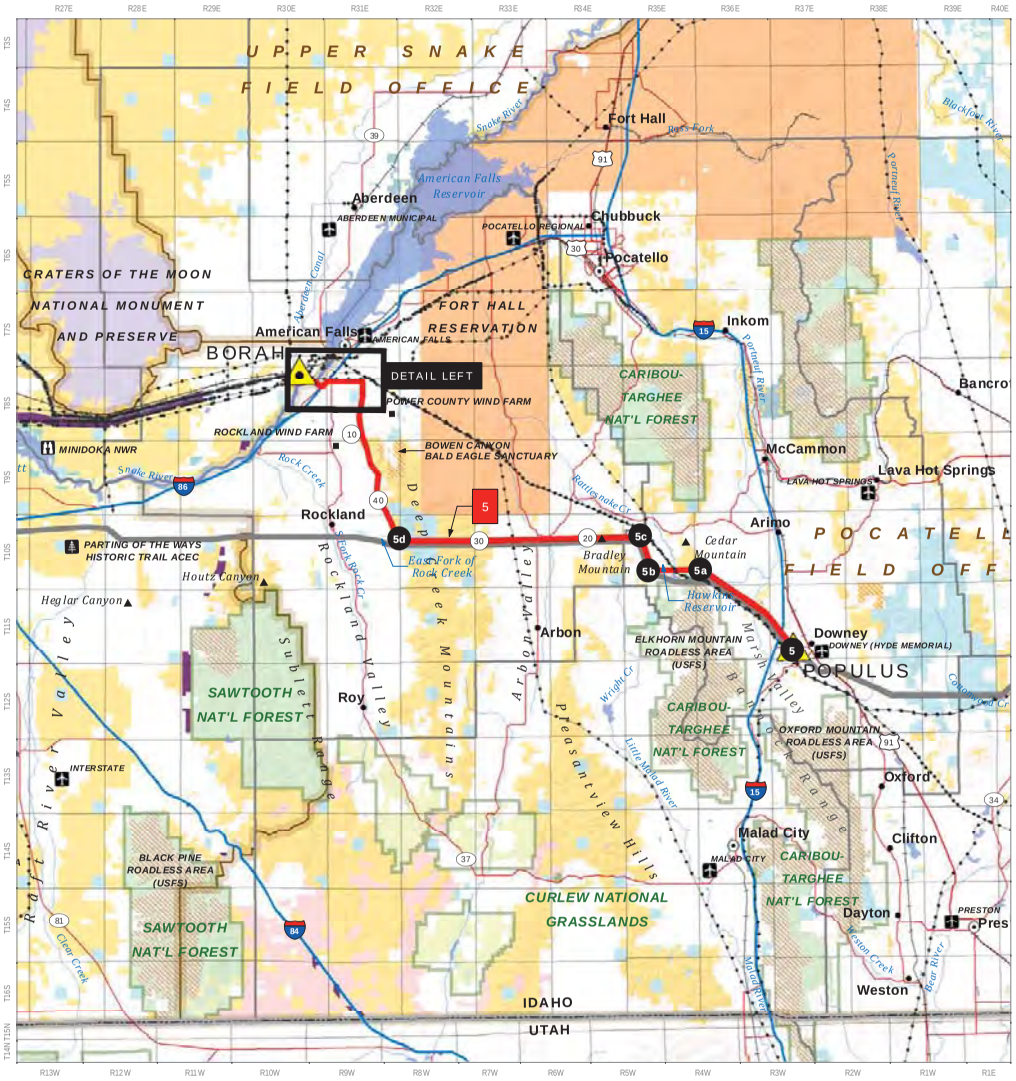
Gateway West
Transmission Line Project

Segment 4-ID
Wyoming/Idaho to Populus
Figure A-6

Sources | BLM; USFS; ESRI

SF299_POD FIG A-6 Segment 4-ID_20120918 Saved | 9/18/2012



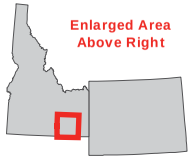


Land Status

- Bureau of Land Management
- National Forest
- National Park Service
- Fish and Wildlife Service
- National Grassland
- Bureau of Reclamation
- Indian Reservation
- Military Reservation/Corps of Engineers
- Other Federal
- State
- State Wildlife, Park, Recreation or Other
- Bankhead-Jones Land Use
- Private

0 10 Miles

NAD 1983 UTM Zone 12N



Enlarged Area Above Right

Route Features

- Proposed Route
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features

- BLM Field Office
- National Forest
- County
- Restricted Access

- Railroad
- Interstate
- US Highway
- Secondary State or County Road

- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

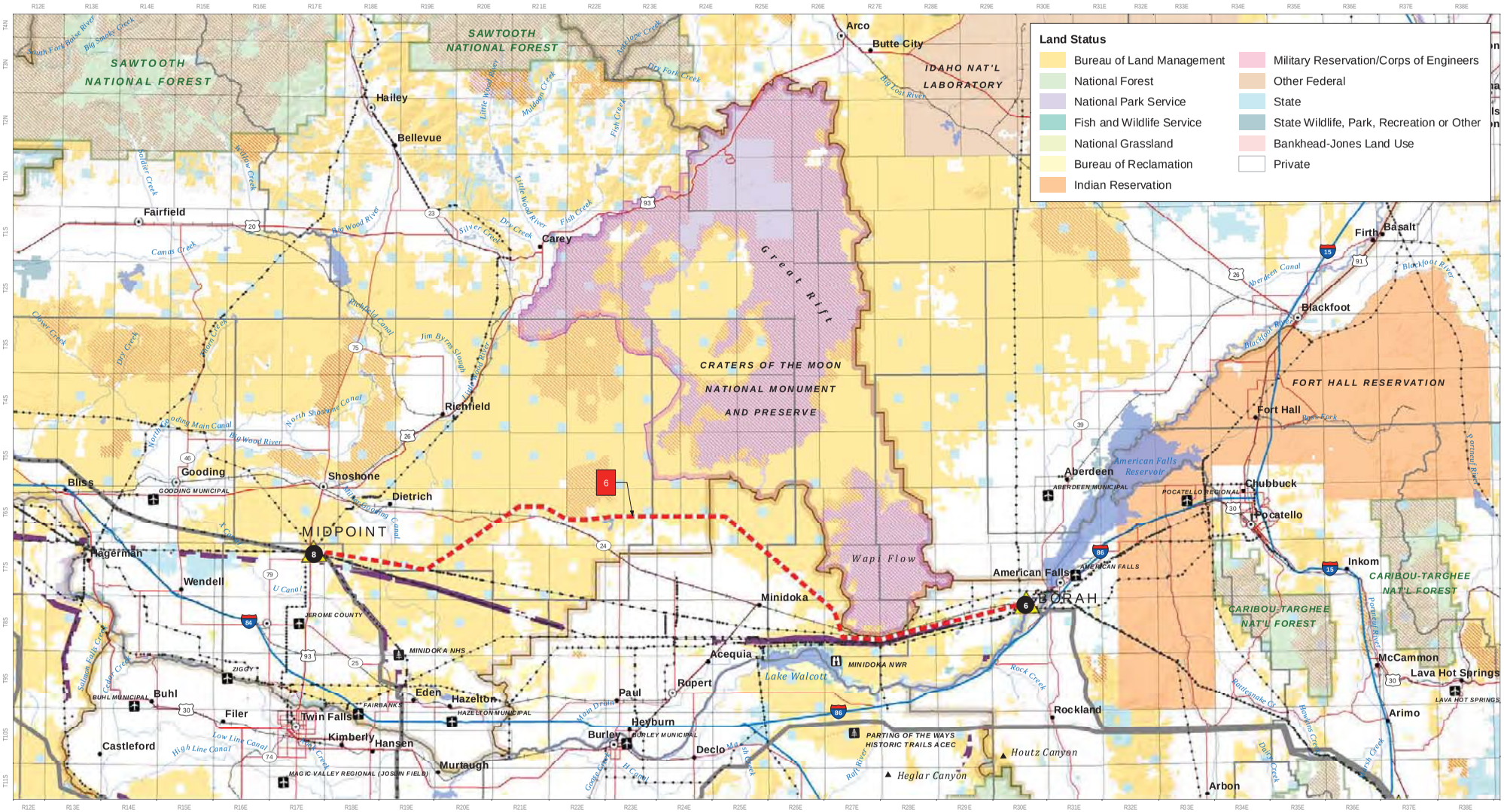
ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

Segment 5
Populus to Borah
Figure A-7

Sources | BLM; USFS; ESRI

SF299_POD FIG A-7 Segment 5_20120918 Saved | 9/18/2012

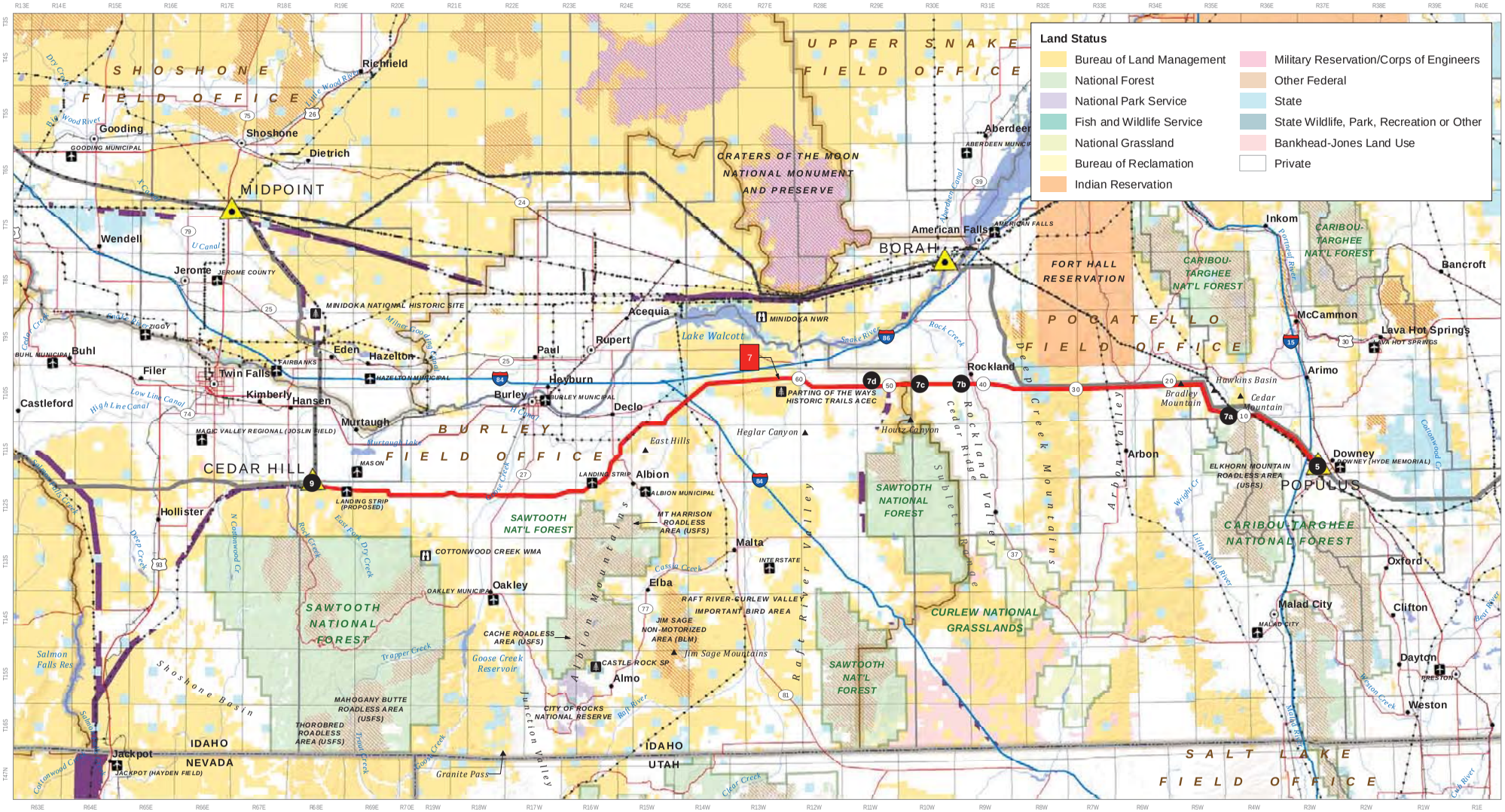


Gateway West
Transmission Line Project

Segment 6
Borah to Midpoint
Figure A-8

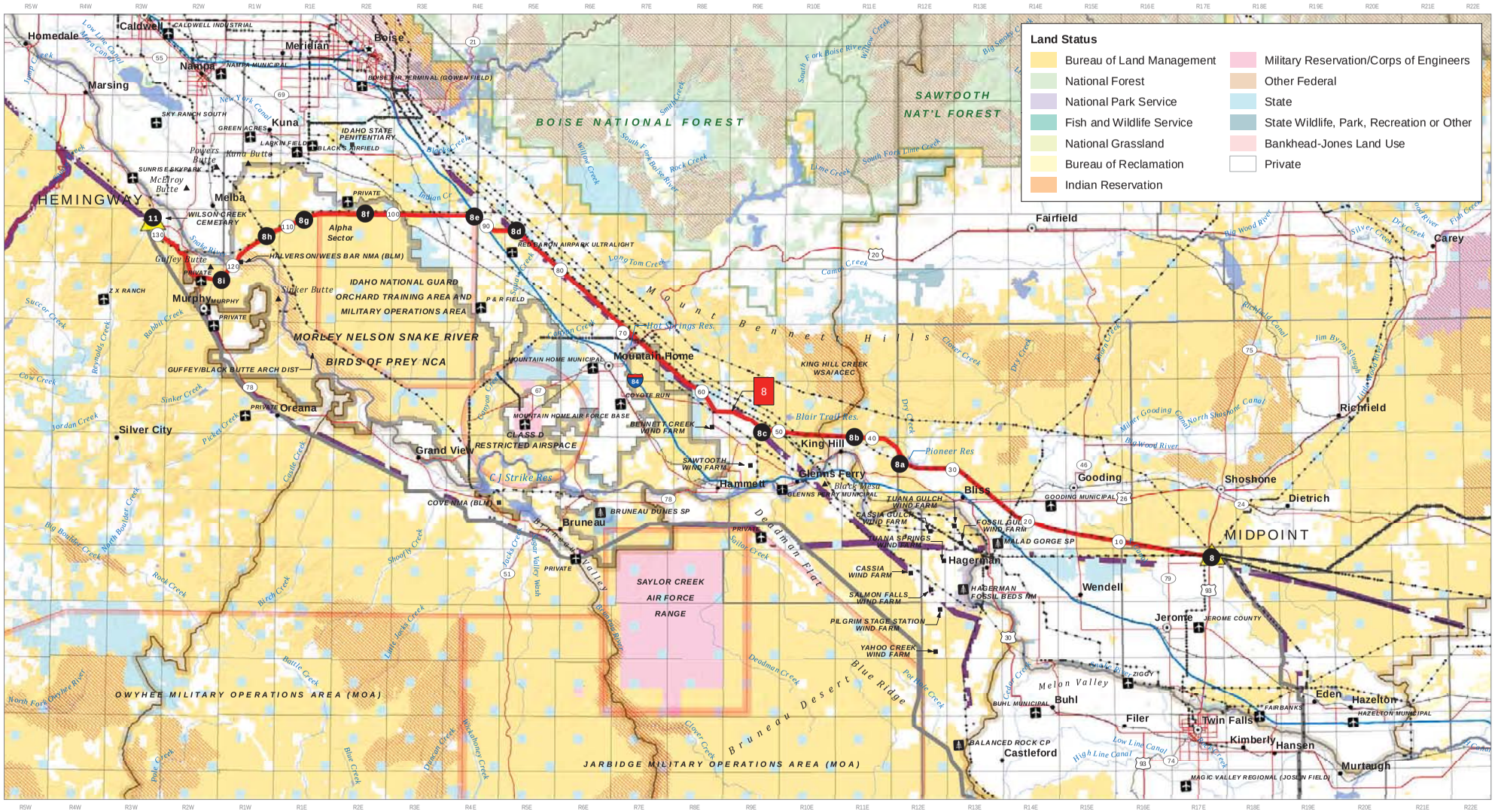
Sources | BLM; USFS; ESRI

SF299_POD FIG A-8 Segment 6_20120918 Saved | 9/18/2012



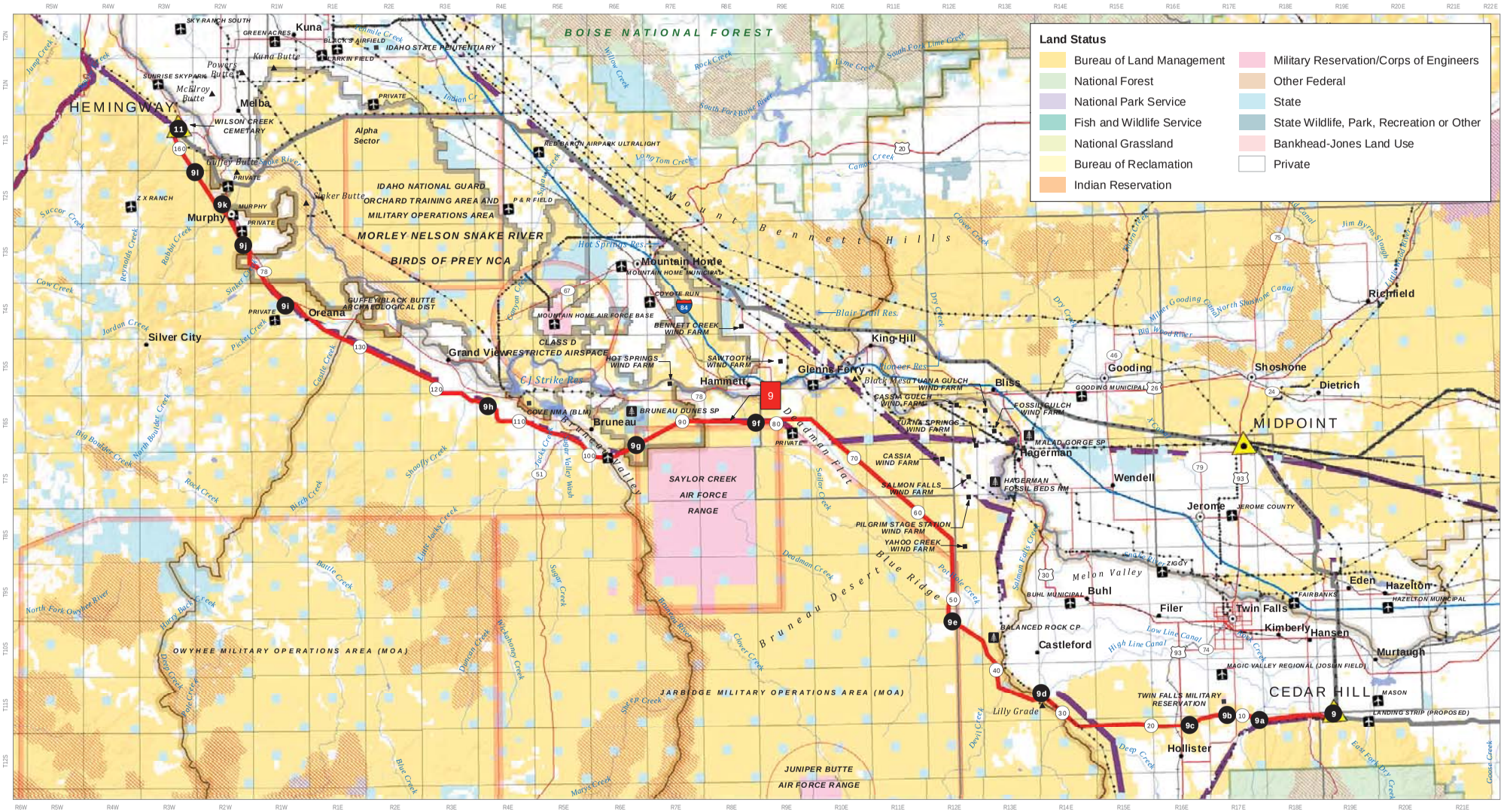
Sources | BLM; USFS; ESRI

SF299_POD FIG A-9 Segment 7_20120918 Saved | 9/18/2012



Sources | BLM; USFS; ESRI

SF299_POD FIG A-10 Segment 8_20120918 Saved | 9/18/2012



0 10
Miles
NAD 1983 UTM Zone 12N

Enlarged Area Above

Route Features
- Proposed Route
- Other Route

- Reference Point
- Mile
- Substation
- Existing Transmission Line (115kV greater)
- West Wide Energy Corridor (WWEC)

Other Features
- BLM Field Office
- National Forest
- County
- Restricted Access

- Railroad
- Interstate
- US Highway
- Secondary State or County Road

- Airport/Landing Strip
- Park/Recreation Area
- Wildlife Area
- Stream/River
- Waterbody

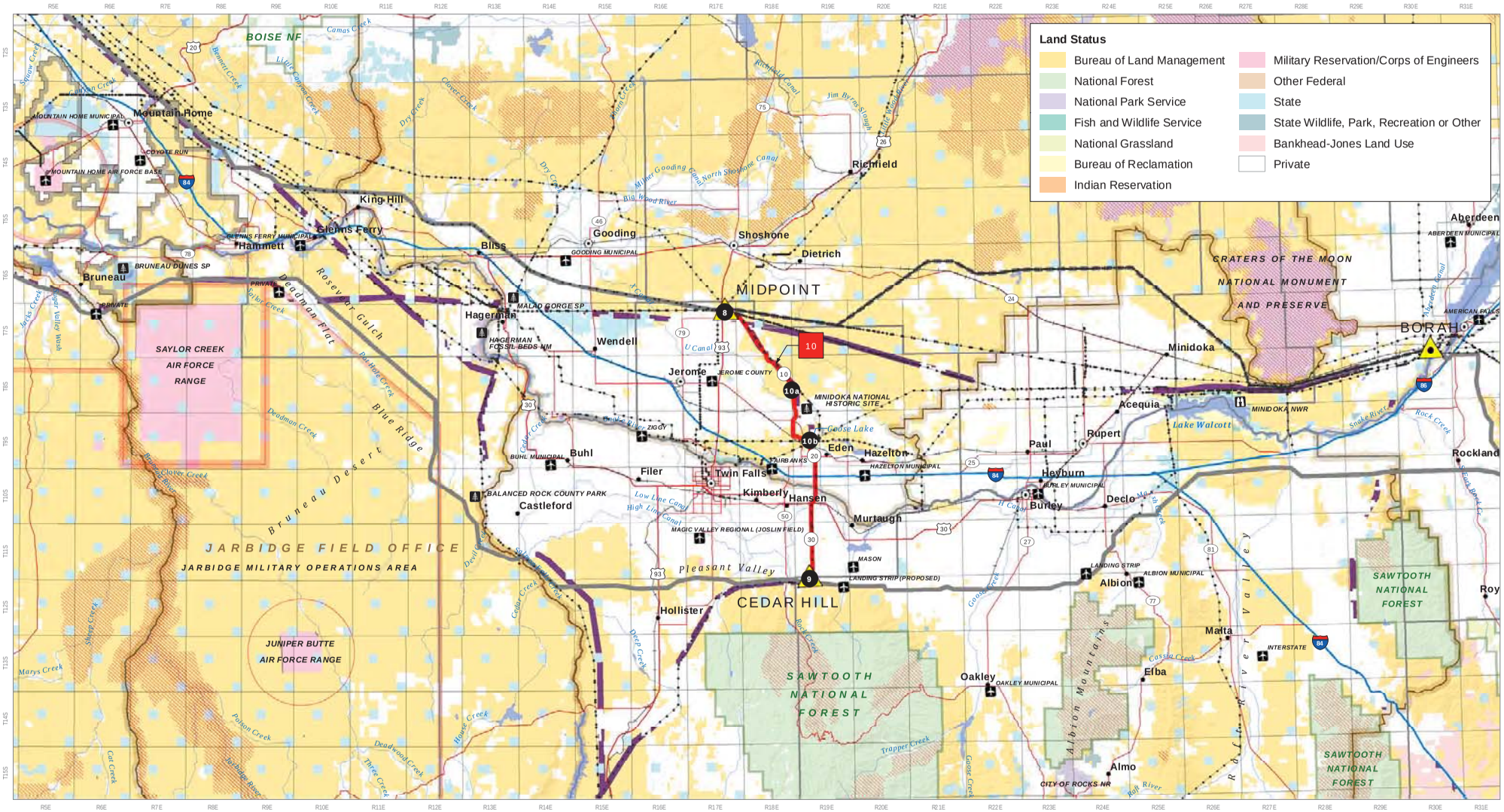
ROCKY MOUNTAIN POWER
IDAHO POWER

Gateway West
Transmission Line Project

Segment 9
Cedar Hill to Hemingway
Figure A-11

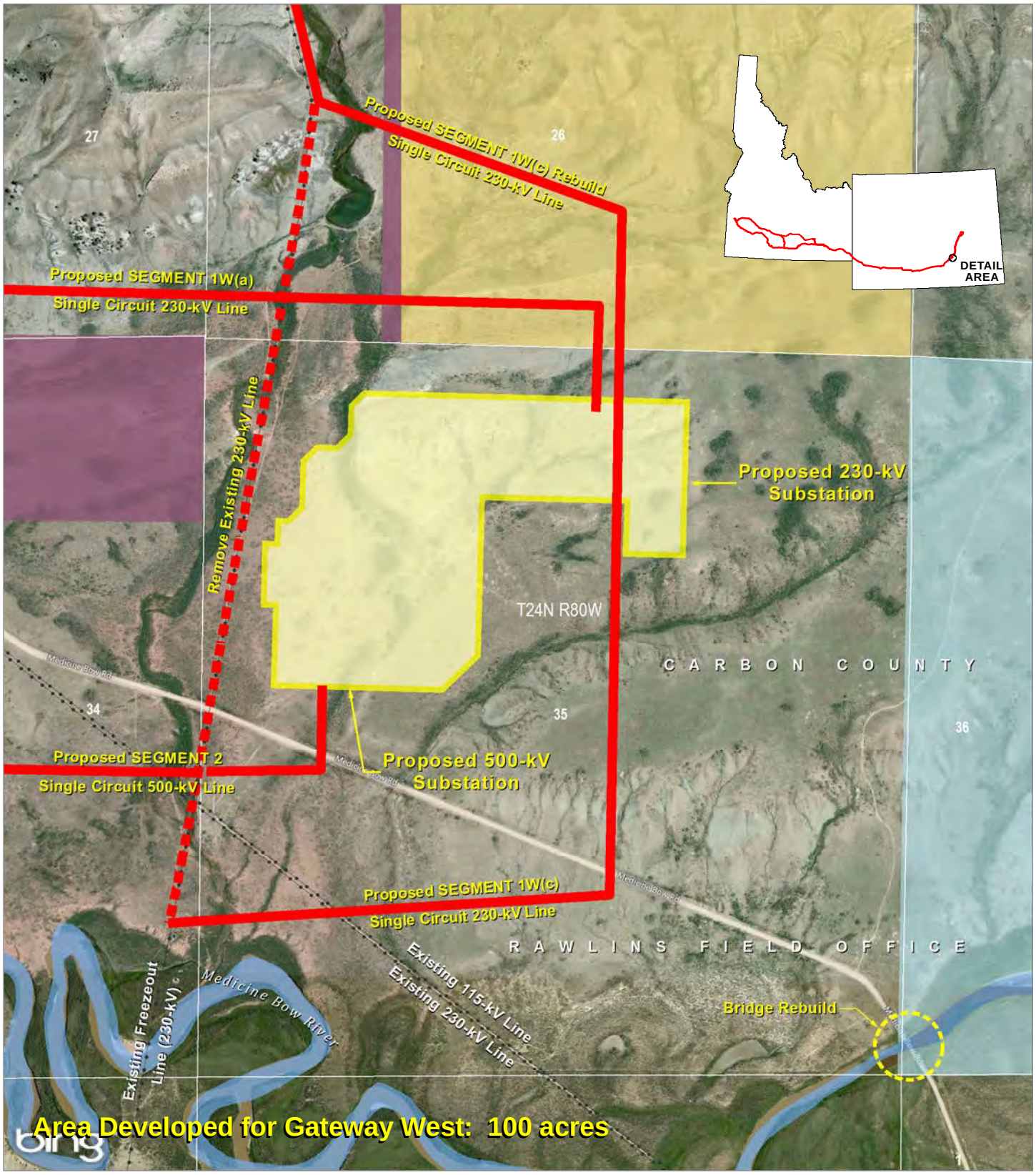
Sources | BLM; USFS; ESRI

SF299_POD FIG A-11 Segment 9_20120918 Saved | 9/18/2012



Sources | BLM; USFS; ESRI

SF299_POD FIG A-12 Segment 10_20120918 Saved | 9/18/2012



0 1,000
Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Remove Existing Line
- Existing Transmission Line
- WWE Corridor

LAND OWNERSHIP
- Bureau of Land Management
- Private
- State

Gateway West
Transmission Line Project

Aeolus
230/500-kV Substation
Figure A-13

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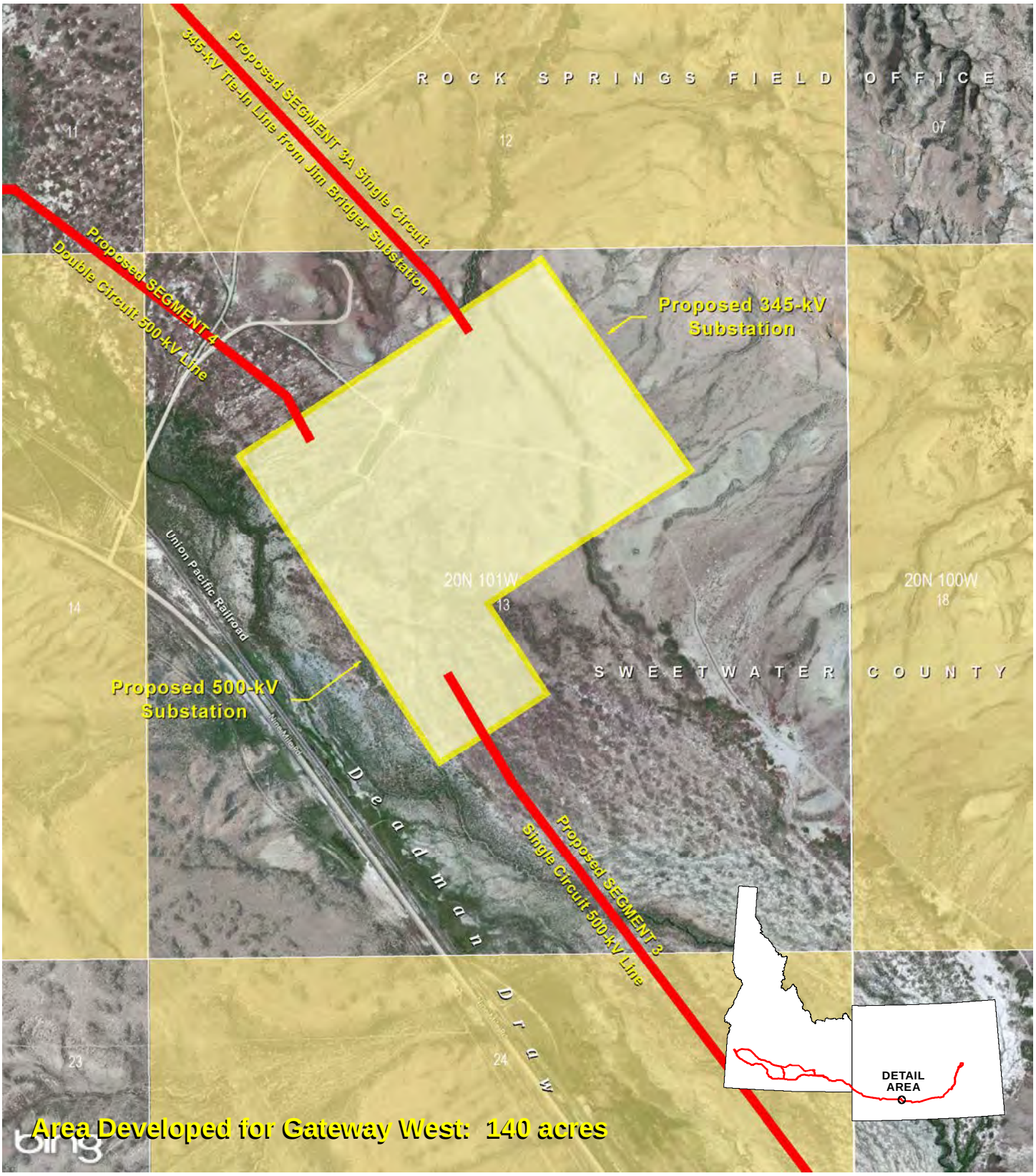

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Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Existing Transmission Line

LAND OWNERSHIP
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Anticline
345/500-kV Substation
Figure A-14

Last Saved: May 3, 2012
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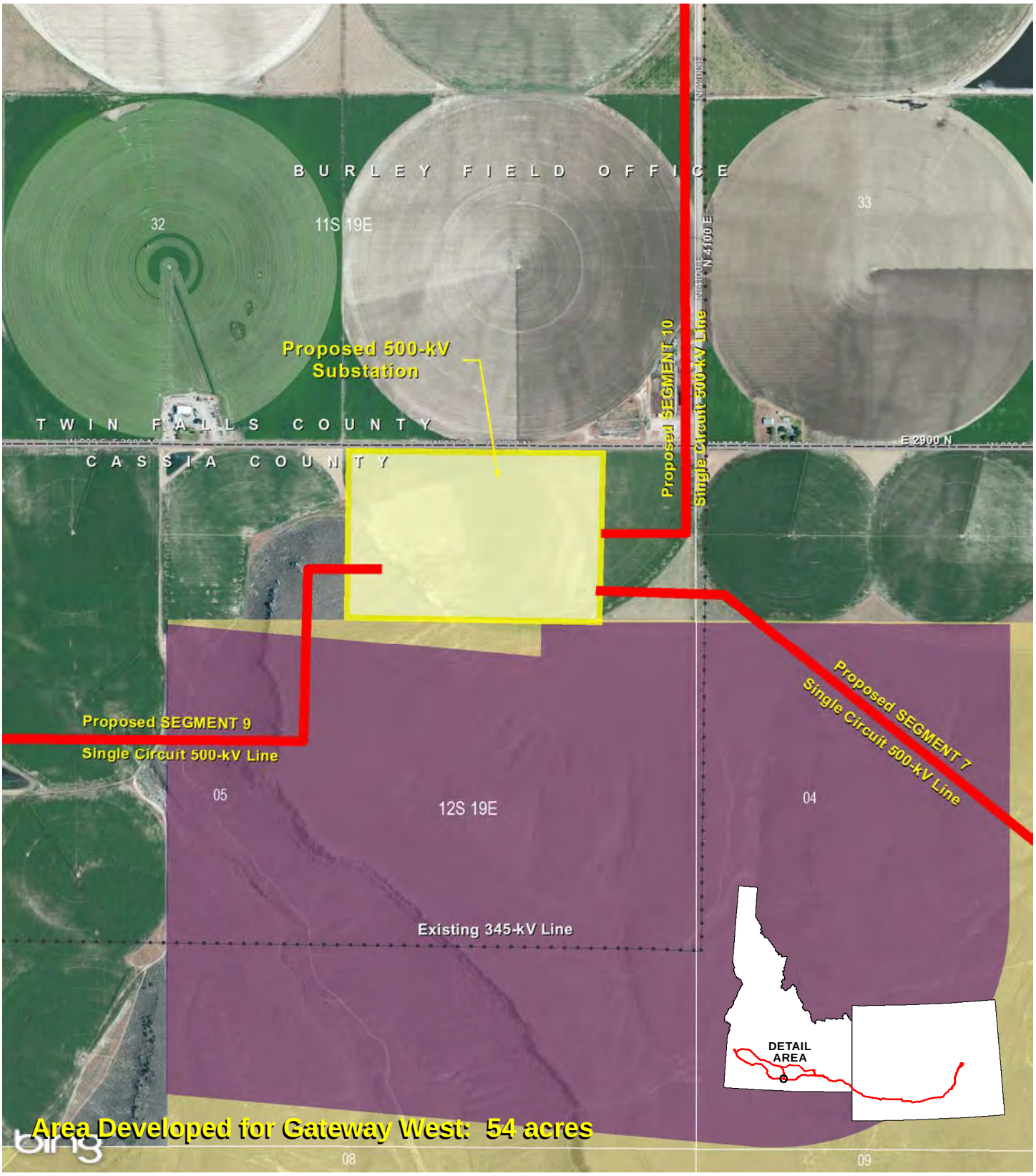

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Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Existing Transmission Line
- WWE Corridor

LAND OWNERSHIP
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Cedar Hill
500-kV Substation
Figure A-15

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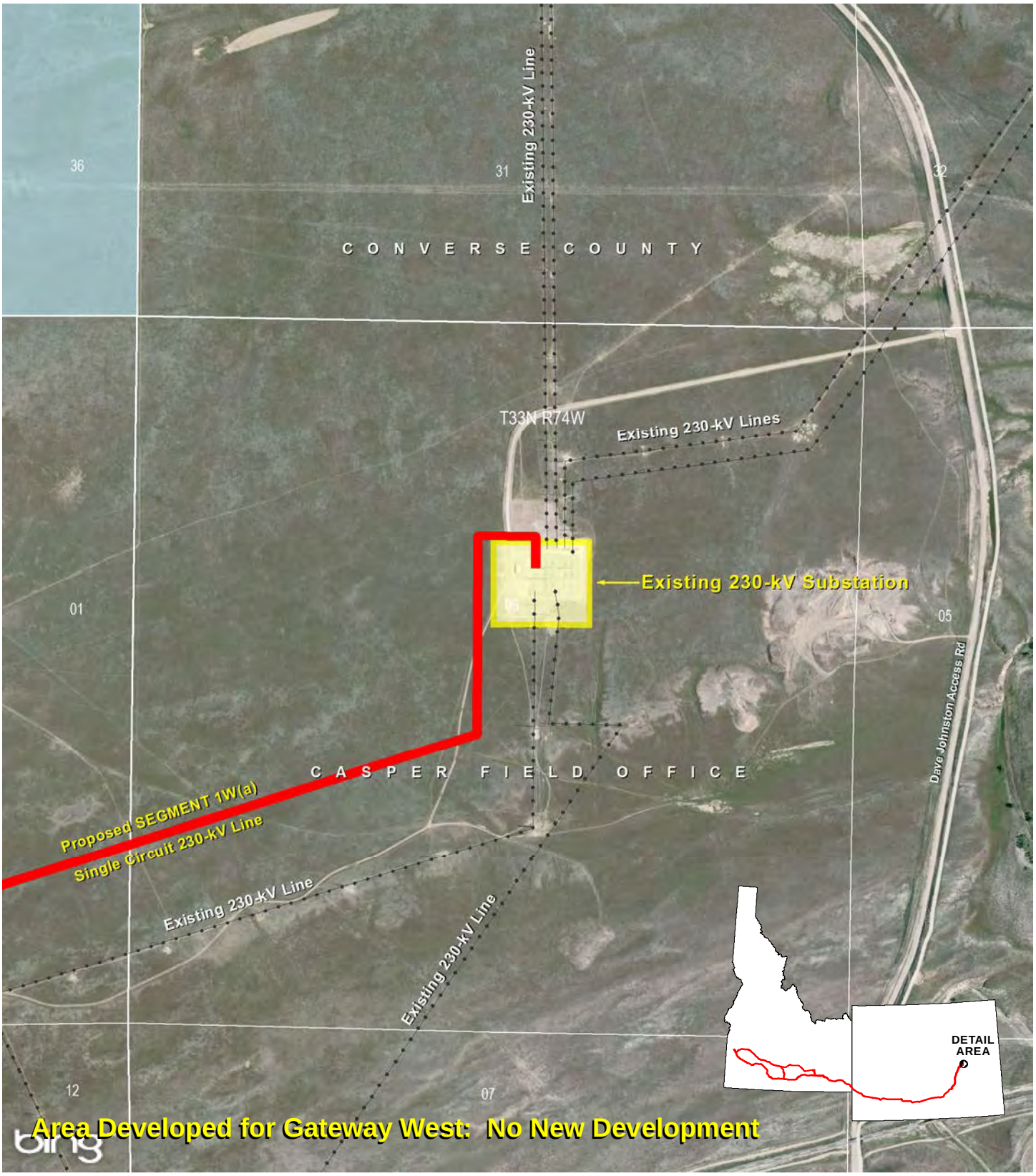

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Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Existing Transmission Line

LAND OWNERSHIP
- Private
- State

Gateway West
Transmission Line Project

Windstar
230-kV Substation
Figure A-16

Last Saved: May 3, 2012
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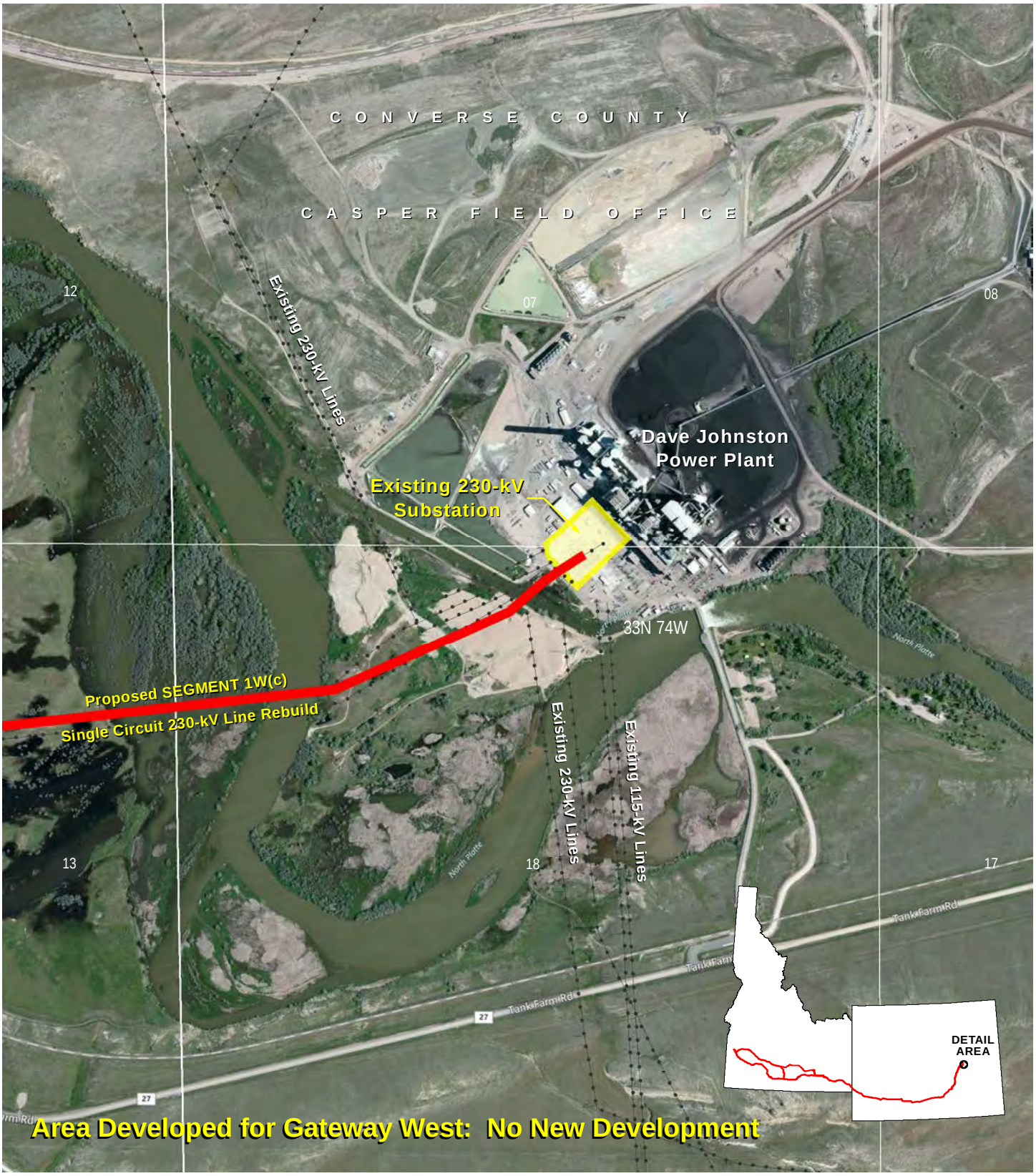

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Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
Proposed Route
Existing Transmission Line

LAND OWNERSHIP
Private

Gateway West
Transmission Line Project

Dave Johnston
230-kV Substation
Figure A-17

Last Saved: May 3, 2012
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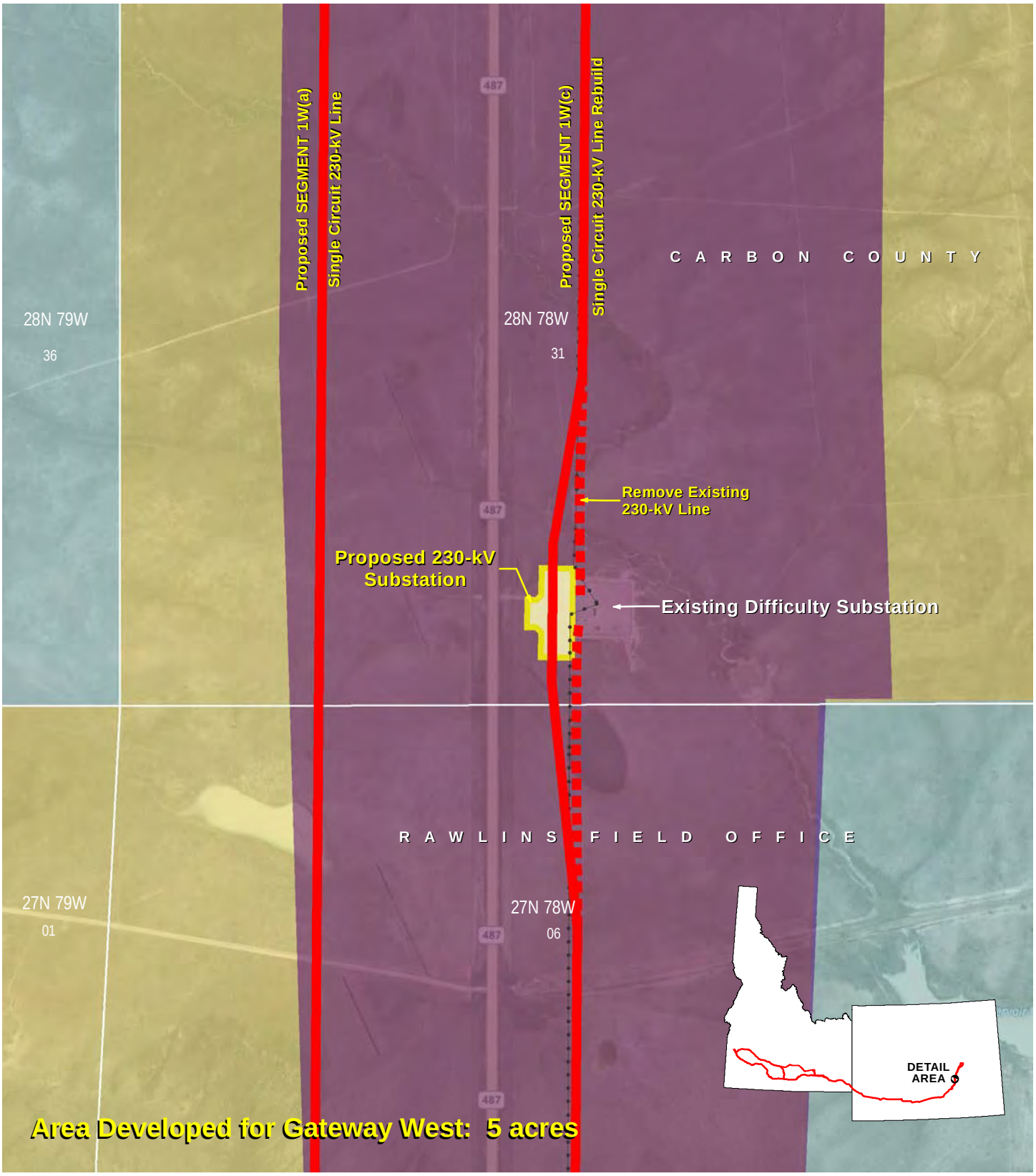

0 1,000
Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Remove Existing Line
- Existing Transmission Line
- WWE Corridor

LAND OWNERSHIP
- Bureau of Land Management
- Private
- State

Gateway West
Transmission Line Project

Heward
230-kV Substation
Figure A-18

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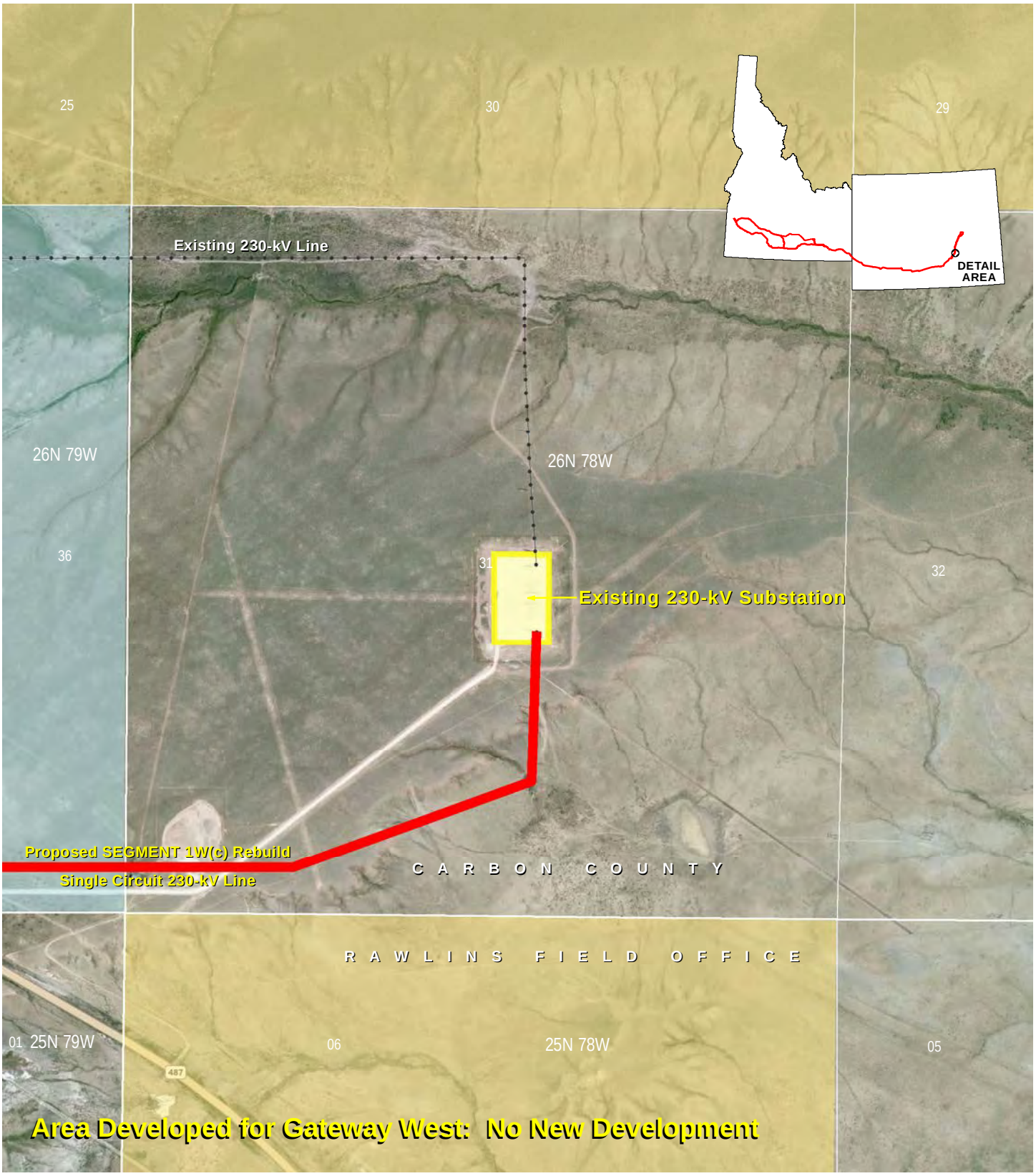

0 1,000
Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Existing Transmission Line
- WWE Corridor

LAND OWNERSHIP
- Bureau of Land Management
- Private
- State

Gateway West
Transmission Line Project

Shirley Basin
230-kV Substation
Figure A-19

Last Saved: May 3, 2012
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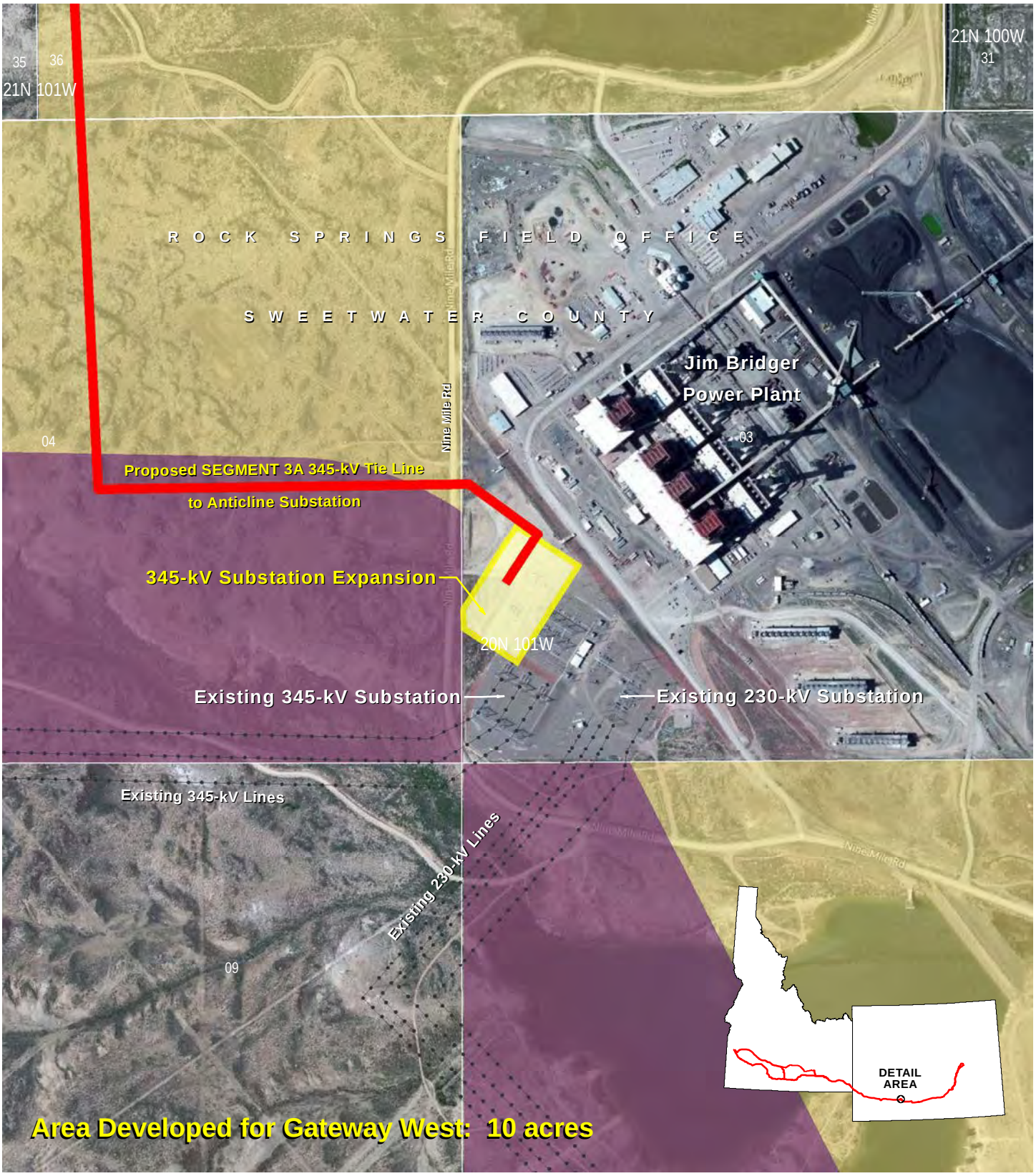

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Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Existing Transmission Line
- WWE Corridor

LAND OWNERSHIP
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Jim Bridger
345-kV Substation
Figure A-20

Last Saved: May 3, 2012
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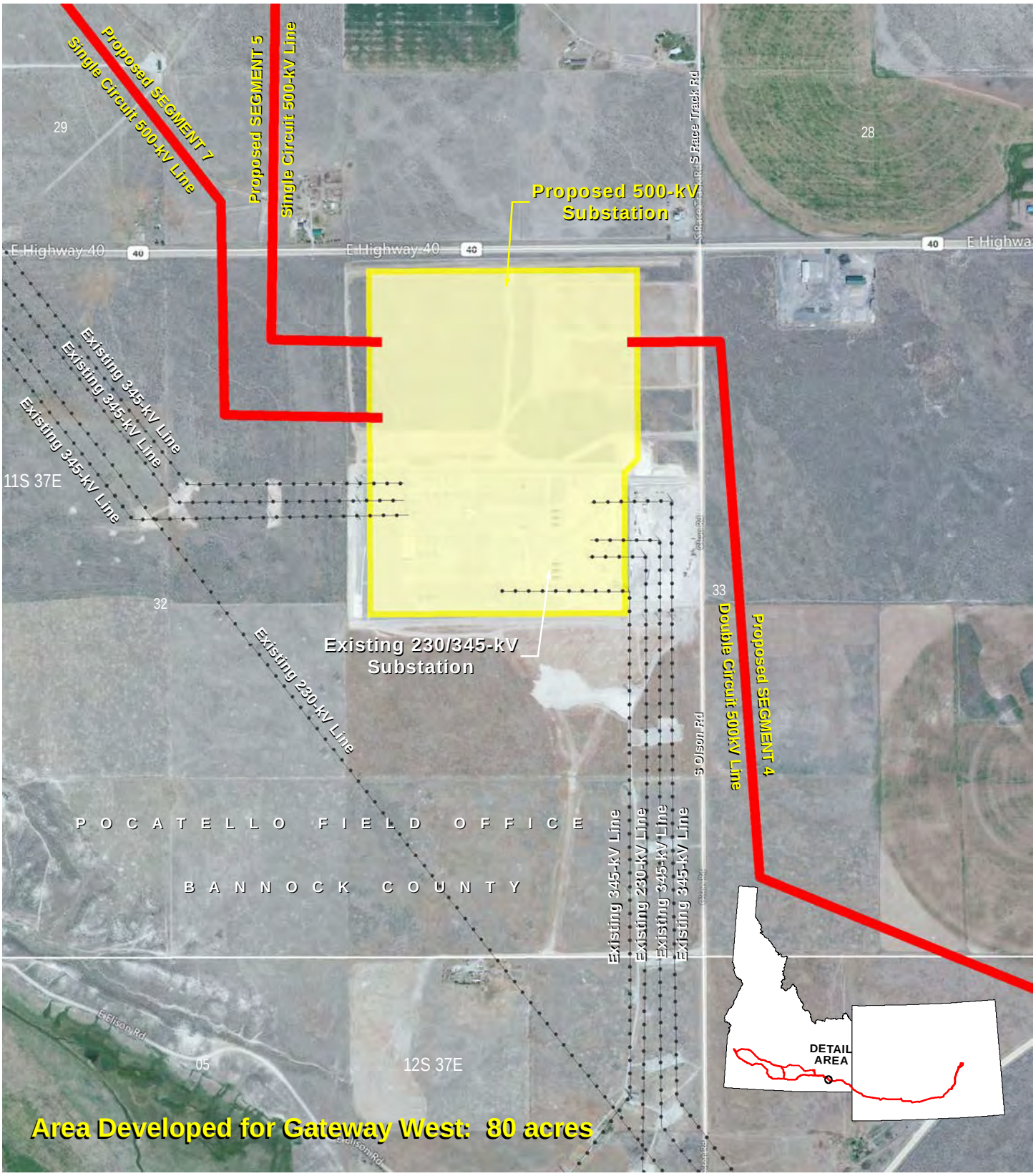

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Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
Proposed Route
Existing Transmission Line

LAND OWNERSHIP
Private

Gateway West
Transmission Line Project

Populus
500-kV Substation
Figure A-21

Last Saved: May 3, 2012
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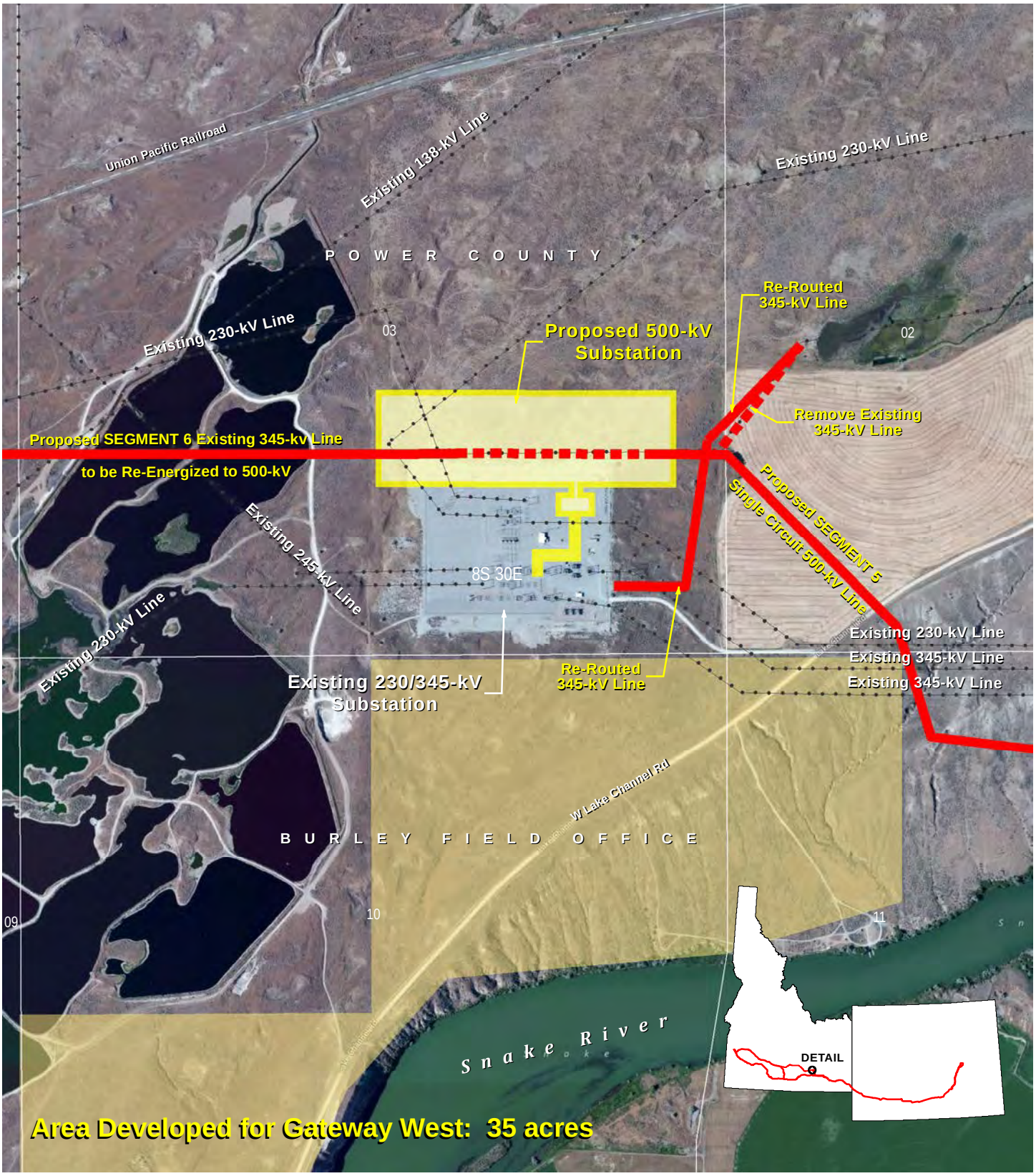

0 1,000
Feet

ROCKY MOUNTAIN POWER

IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Remove Existing Line
- Existing Transmission Line

LAND OWNERSHIP
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Borah
500-kV Substation
Figure A-22

Last Saved: May 3, 2012
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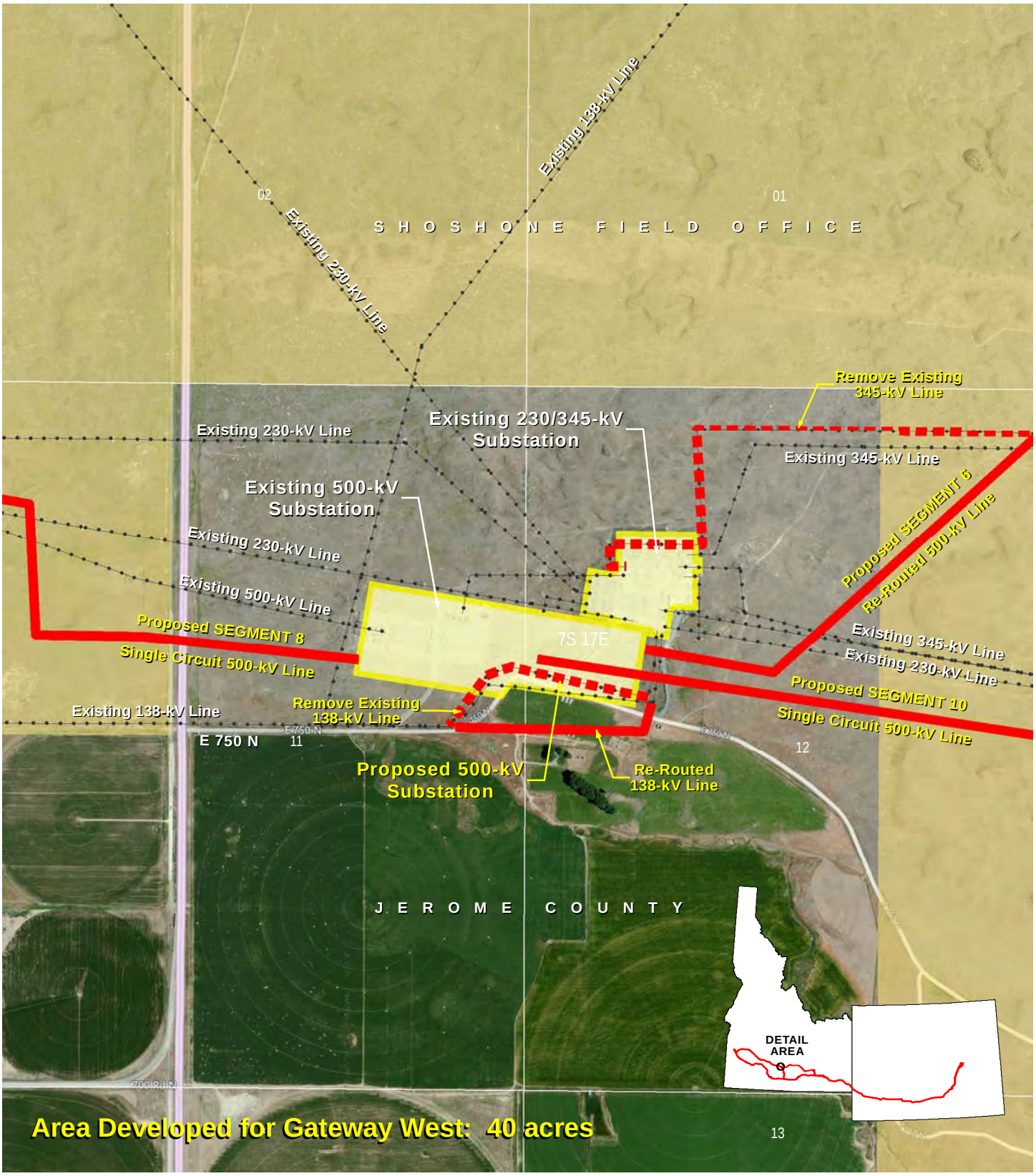

0 1,000
Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Remove Existing Line
- Existing Transmission Line

LAND OWNERSHIP
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Midpoint
500-kV Substation
Figure A-23

Last Saved: May 3, 2012
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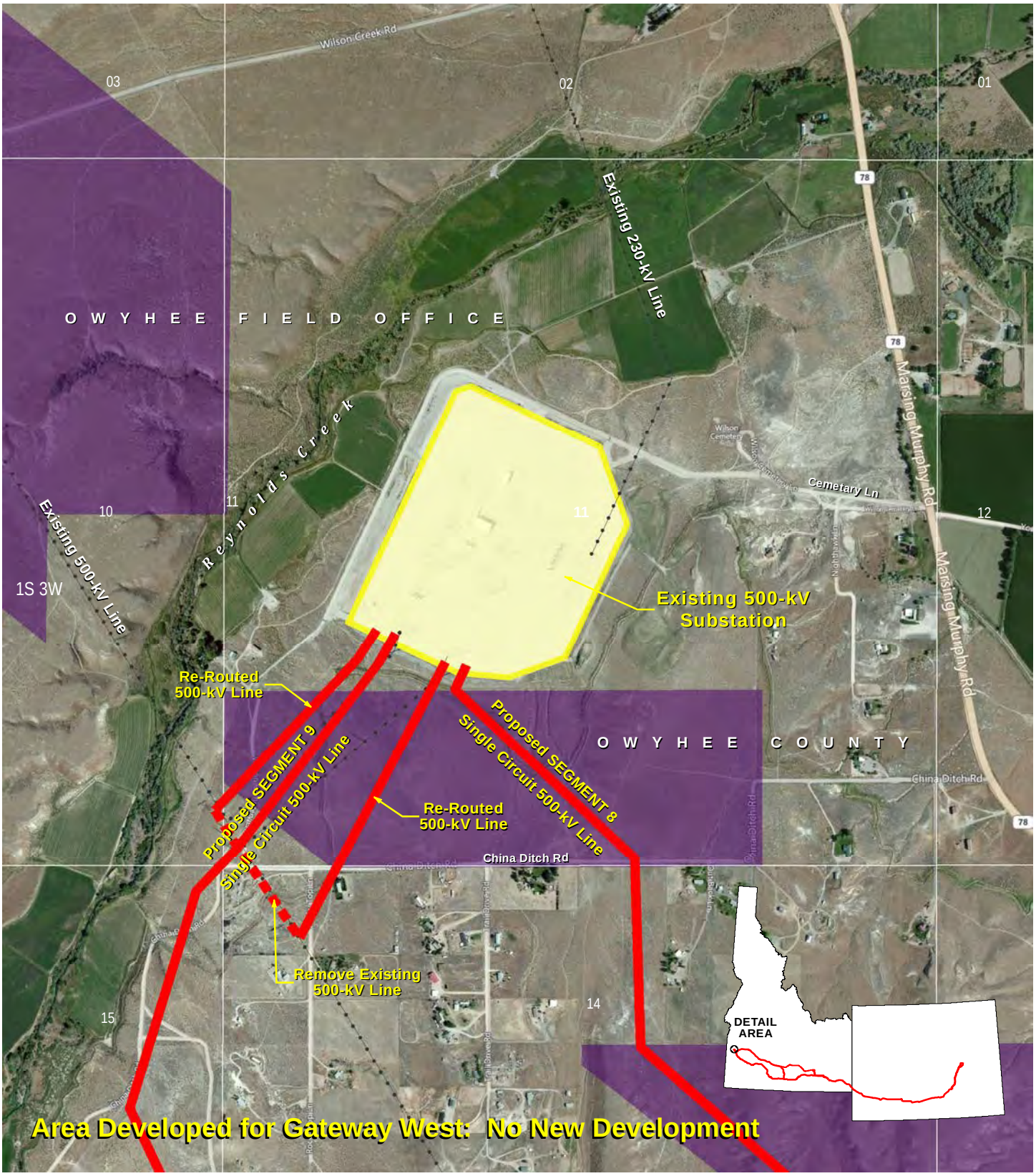

0 1,000
Feet

ROCKY MOUNTAIN POWER
IDAHO POWER

PROJECT FEATURES
- Proposed Route
- Remove Existing Line
- Existing Transmission Line
- WWE Corridor

LAND OWNERSHIP
- Bureau of Land Management
- Private

Gateway West
Transmission Line Project

Hemingway
500-kV Substation
Figure A-24

Last Saved: May 3, 2012
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APPENDIX B
TRANSMISSION LINE AND SUBSTATION COMPONENTS

Appendix B

Transmission Line and Substation Components

Gateway West Transmission Line Project

Prepared by:

PacifiCorp
1407 W North Temple
Salt Lake City, UT 84116

and

Idaho Power Company
1221 West Idaho Street
Boise, ID 83702

January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 990 miles of new 230-kilovolt (kV), 345-kV, and 500-kV alternating current electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving structures, access roads, multi-purpose yards, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), other federal agencies, and the states of Idaho and Wyoming.

This appendix contains detailed information regarding the components of the transmission system evaluated in the Environmental Impact Statement (EIS), including the transmission structures, the communications system, and the substations. This appendix includes component descriptions (Section 1.0), provides details regarding construction of the system (Section 2.0), goes on to provide information regarding the operations and maintenance of the system (Section 3.0), and finally details the proposed abandonment and restoration techniques (Section 4.0).

2.0 SYSTEM COMPONENTS

This section describes the various components of the transmission system for the Gateway West Project, including the structures themselves, the conductors used, other hardware needed, the communication system, the access roads, and finally the substations. Both the proposed and alternative structures are described here, and details are provided to support the discussion of transmission structure alternatives found in Section 2.7 of Chapter 2 of the EIS.

2.1 Transmission Structures

2.1.1 Types of Transmission Line Support Structures

The proposed transmission line circuits typically will be supported by three types of structures: steel H-frame 230-kV and 345-kV structures and self-supporting single-circuit 500-kV lattice steel towers[1]. Figures B-1 through B-3 illustrate the typical tangent structure configurations, which will be the predominant types used for the Project. Tangent structures are designed to support the conductors where the line angle at the

[1] A 5.1-mile interconnecting 345-kV transmission line (Segment 3A) will be constructed between the proposed Anticline Substation yard and the existing Jim Bridger Substation 345-kV yard to electrically connect the two substations.

structure location is typically one degree or less, meaning the transmission line is essentially a straight line. Figures B-4 and B-5 illustrate the proposed and alternative ROW design configurations.

In addition to the more typical tangent structure configurations, specialized structures are designed where the line must turn an angle. Each structure type is individually designed, depending on the line angle and the underlying soil and rock conditions, to withstand the pull of the wires in different directions. Angle structures are heavier and have deeper foundations. 230-kV angle structures are guyed.

Figures B-6 and B-7 illustrate guyed and monopole structures considered during preliminary Project design but not carried forward as proposed by the Companies.

230-kV Steel H-Frame Structures

The proposed 230-kV single-circuit line between the Windstar and Aeolus Substations (Segments 1W[a]) uses steel H-frame structures (Figure B-1). The structures that will be replaced when reconstructing the existing 230-kV line between the Dave Johnston and Aeolus Substations (Segment 1W[c]) will also use steel H-frame structures.

The 230-kV steel H-frames use either dulled galvanized or self-weathering steel. Weathering steel is manufactured from a group of steel alloys that were developed to eliminate the need for painting or other protective finish. This type of steel alloy forms a stable rust-like appearance if exposed to the weather for several years. The average distance between H-frame structures is approximately 800 feet. Structure heights vary depending on terrain and the requirement to maintain minimum conductor clearances from ground. Typically, the 230-kV single-circuit H-frame structures have pole lengths ranging between 70 and 100 feet. Embedment depths are typically 10 percent of the pole length plus 2 feet, which in the case of this Project is expected to range between 9 and 12 feet. The typical structure heights above ground vary from 60 to 90 feet.

345-kV Steel H-Frame Structures

The proposed 345-kV single-circuit line between the Anticline and Jim Bridger 345-kV Substations (Segment 3A) uses steel H-frame structures (Figure B-2). The 345-kV steel H-frames use either dulled galvanized or self-weathering steel, similar to the 230-kV structures. The average distance between H-frame structures is approximately 800 feet. Structure heights vary depending on terrain and the requirement to maintain minimum conductor clearances from ground. Typically, the 345-kV single-circuit H-frame structures have pole lengths ranging between 95 and 125 feet. Embedment depths are typically 10 percent of the pole length plus 5 feet, which for 345-kV structures will range between 14 and 18 feet. The structure heights above ground vary from 80 to 110 feet. Depending on underlying soil and rock conditions, the 345-kV H-frames may be supported by steel-reinforced concrete drilled piers.

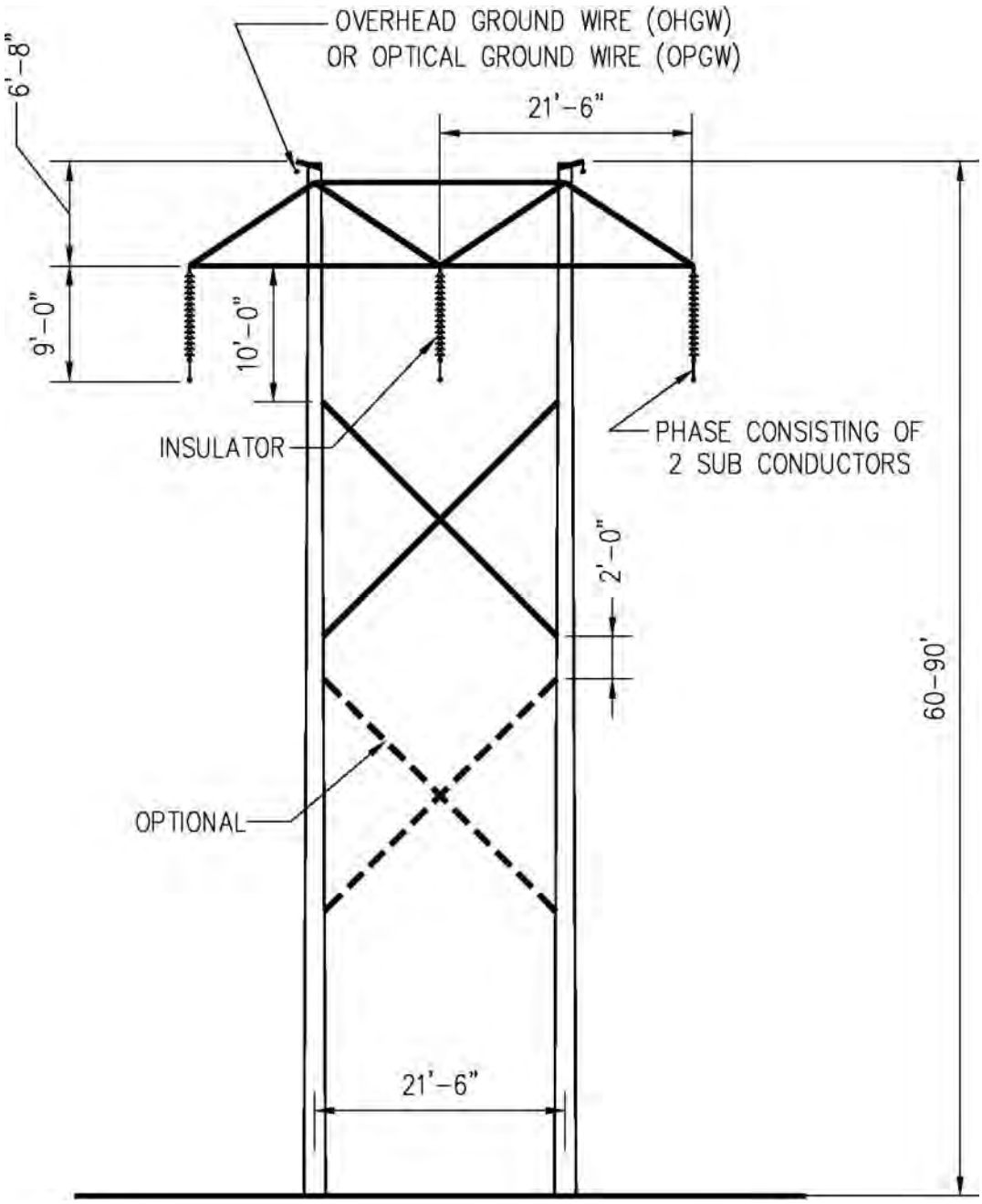


Figure B-1. Proposed Tangent Single-Circuit 230-kV H-Frame Structure

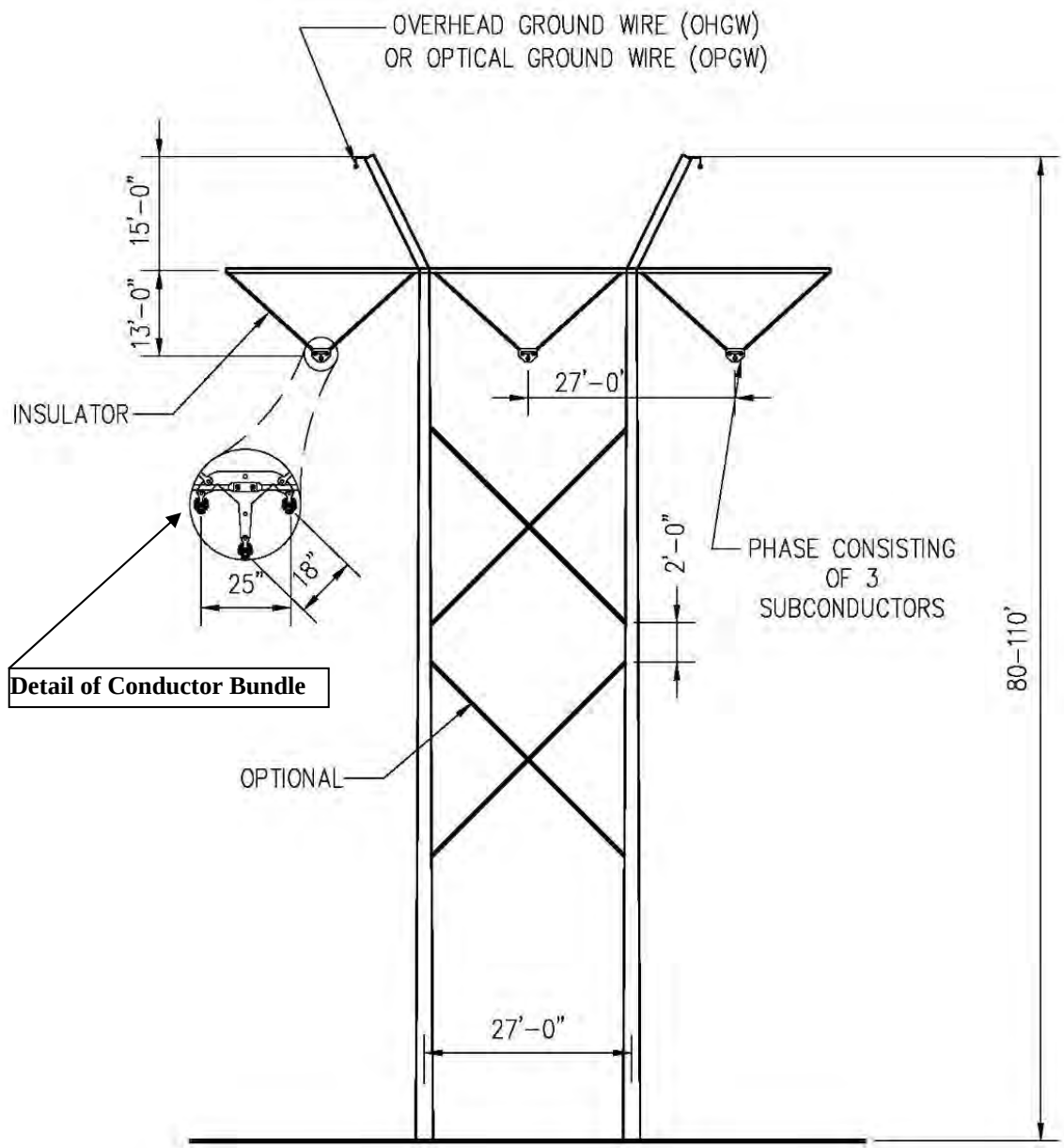


Figure B-2. Proposed Tangent Single-Circuit 345-kV H-Frame Structure

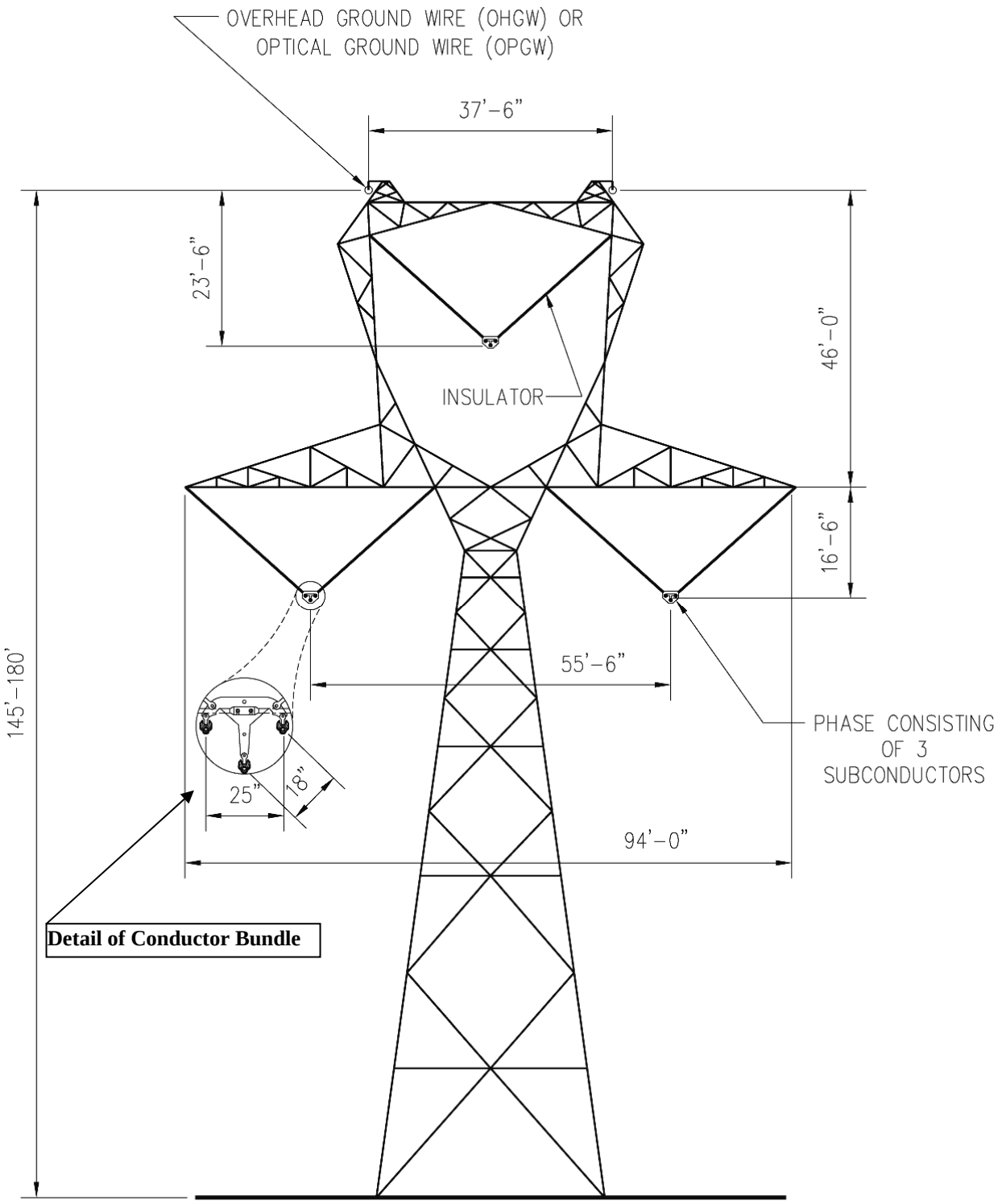


Figure B-3. Proposed Tangent Single-Circuit 500-kV Lattice Steel Structure

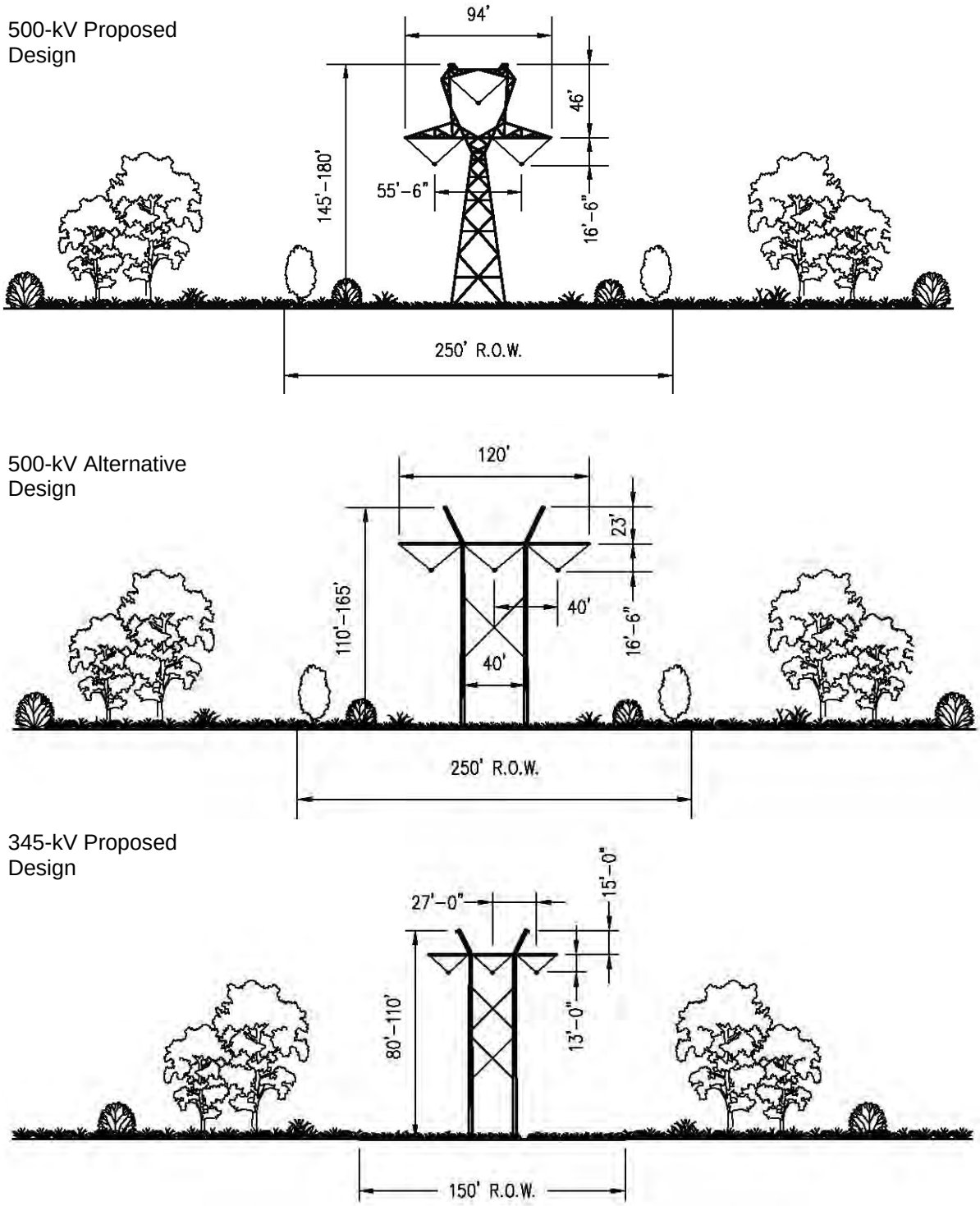


Figure B-4. Proposed 500-kV and 345-kV Single-Circuit ROW Configurations

230-kV Proposed Design

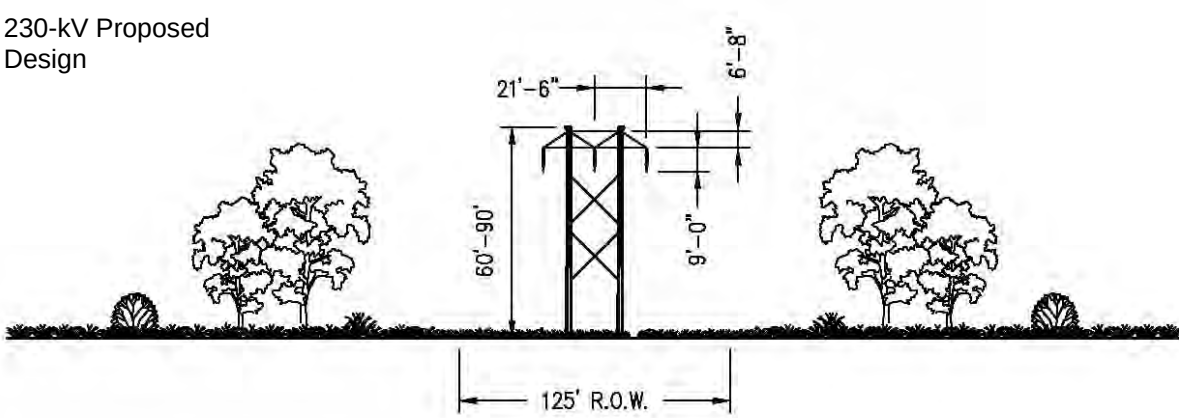
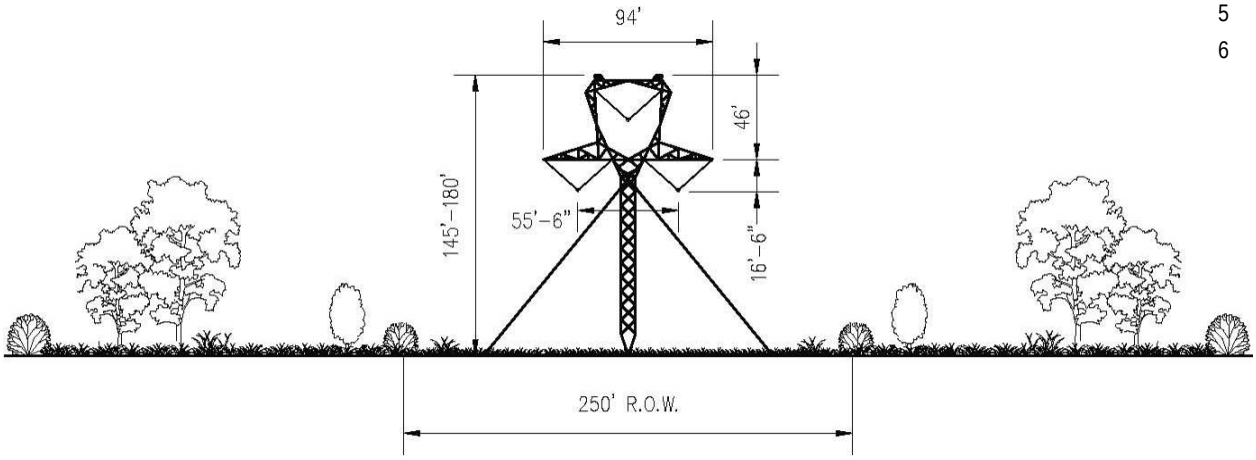
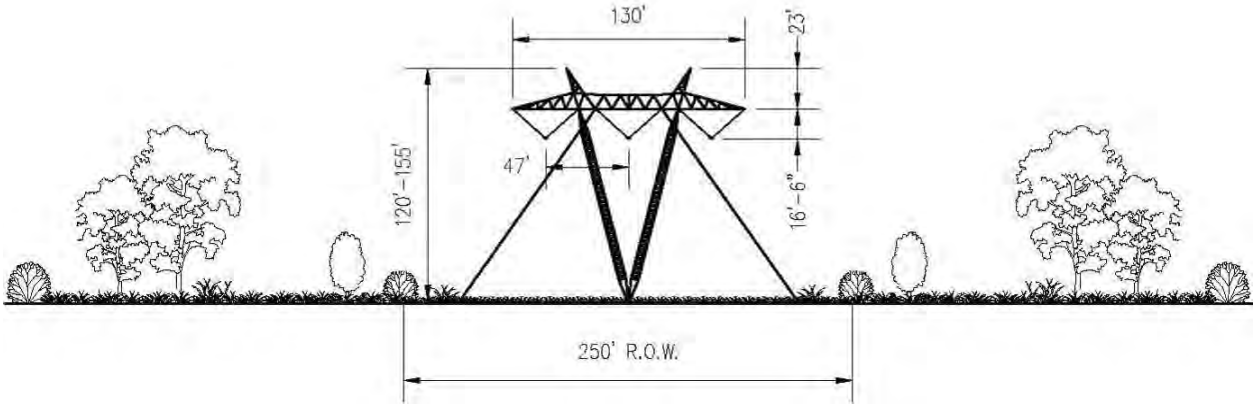


Figure B-5. Proposed 230-kV Single-Circuit ROW Configurations

Structure Variation



Guyed "Delta



Guyed "V"

Figure B-6. Single-Circuit 500-kV Guyed "Delta" and "V" Structure Types Considered but not Carried Forward

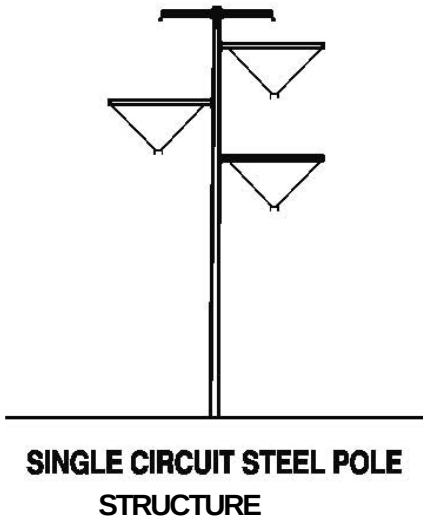


Figure B-7. 500-kV Monopole Structure Type Considered but not Carried Forward

500-kV Galvanized Lattice Steel Structures

Lattice steel towers are fabricated with galvanized steel members treated to produce a dulled galvanized finish. The average distance between 500-kV towers is 1,200 to 1,300 feet. Structure heights vary depending on terrain and the requirement to maintain minimum conductor clearances from ground. The 500-kV single-circuit towers vary in height from 145 to 180 feet. **Table B-1** describes the approximate number and type of structures by segments, typical height, typical distances between structures, and temporary and permanent disturbance areas by structure.

Transposition Structures

At certain points along a line segment, it may be desirable to install a transposition structure. A transposition structure is used to “transpose” each of the three phases in the transmission circuit so that each phase occupies the same physical position on the tower for approximately equal distances along the line segment between substations. The need to install a transposition structure in a particular line segment is dependent on the electrical characteristics and length of the line and the need to balance the electrical impedance of the transmission line between substations. Typically, for line segments less than 50 miles long, transpositions would be accommodated at the substation locations. For line segments over 50 miles, there would be three transpositions installed —two at intermediate points along the segment and one near the substation to return phases to original positions. The need for transposition structures in a particular line segment would be determined during final design. The transposition structures will have the same access and ground disturbance requirements as the 500-kV lattice steel structures, and would be similar in appearance.

Table B-1. Proposed Structure Configuration

Segment	Transmission Line Length (miles)	Structure Type	Typical Height (feet)	No. of Structures[1/]	Average Distance Between Structures[1/] (feet)	Temporary Disturbance Area per structure (sq. feet.)	Permanent Disturbance Area per structure (sq. feet.[2/])
1W(a)	73.8	230-kV Steel H-Frame Structure	60–90	531	800	ROW Width 125 feet x 150 feet = 0.43 acre	10 feet x 40 feet = 0.01 acre
1W(c)	73.6	230-kV Steel H-Frame Structure	60–90	547	existing span lengths assumed to be 800	ROW Width 125 feet x 150 feet = 0.43 acre	10 feet x 40 feet = 0.01 acre
2	91.9	500-kV Single-Circuit Lattice Tower	145–180	390	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
3	45.9	500-kV Single-Circuit Lattice Tower	145–180	194	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
3A	5.1	345-kV Single-Circuit Tubular Steel H-Frame	80-110	25	800	ROW Width 150 feet x 150 feet = 0.52 acres	15 feet x 40 feet = 0.01 acre
4	197.6	500-kV Single-Circuit Lattice Tower	145–180	856	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
5	55.7	500-kV Single-Circuit Lattice Tower	145–180	246	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
6	0.5	500-kV Single-Circuit Lattice Tower	145–180	10	varies	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
7	118.2	500-kV Single-Circuit Lattice Tower	145–180	523	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
8	131.5	500-kV Single-Circuit Lattice Tower	145–180	575	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
9	162.2	500-kV Single-Circuit Lattice Tower	145–180	708	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre
10	34.4	500-kV Single-Circuit Lattice Tower	145–180	157	1,200–1,300	ROW Width 250 feet x 250 feet = 1.43 acres	50 feet x 50 feet = 0.06 acre

1/ Reasonable estimate from preliminary engineering. In infrequent locations where spans between structures exceed typical span lengths anticipated (up to approximately 1,200 feet to 1,800 feet depending on voltage and ROW width), the right-of-way may need to be increased to provide clearance from conductors blown toward the right-of-way edge.
2/ Permanent disturbance estimated based on size of structures and a reasonable distance around each to allow for annual ground inspection and the vegetation control needed to allow for safety and inspection.

2.1.2 Structure and Conductor Clearances

Conductor phase-to-phase and phase-to-ground clearance parameters are determined in accordance with the NESC, ANSI C2, produced by the ANSI. This code provides for minimum distances between the conductors and ground, crossing points of other lines and the transmission support structure, and other conductors, and minimum working clearances for personnel during energized operation and maintenance activities (IEEE 2007). Typically, the clearance of conductors above ground is 35 feet for 500 kV, 30 feet for 345 kV, and 28 feet for 230 kV. During detailed design, clearances may be increased to account for localized conditions.

2.1.3 Structure Foundations

The 500-kV single -circuit lattice steel structures each require four foundations with one on each of the four corners of the lattice towers. The foundation diameter and depth will be determined during final design and are dependent on the structure type and type of soil or rock present at each specific site. Typically, the foundations for the single-circuit tangent lattice towers are composed of steel-reinforced concrete drilled piers with a typical diameter of 4 feet and a depth of approximately 22 feet. Typical foundation diameters and depths for the single -circuit structure families are shown in Table B-2.

Table B-2. Foundation Excavation Dimensions

Structure	No. of Holes	Depth (feet)	Diameter (feet)	Concrete (cubic yards)
500-kV Single Circuit - Tangent Lattice Tower	4	22.0	4	41
500-kV Single Circuit - Small Angle Lattice Tower	4	24.5	4	46
500-kV Single Circuit - Medium Angle Lattice Tower	4	27.0	4	50
500-kV Single Circuit - Medium Dead-End Lattice Tower[1/]	4	29.5	5	86
500-kV Single Circuit - Heavy Dead-End Lattice Tower	4	32.0	5	93

1/ "Dead-end structure" typically refers to a structure that is placed at a point where the transmission line requires extra support due to a sharp change in vertical or horizontal direction.

The 230-kV and 345kV single-circuit H-frame structures are directly embedded into the ground and do not require concrete foundations. The embedment depth is typically 10 percent of the pole length plus 2 feet for 230-kV and 10 percent of the pole length plus 5 feet for 345-kV, which for the Project is expected to be between 9 and 12 feet (230-kV) and between 14 and 18 feet (345-kV) based on the structure heights proposed for the Project. The diameter of the hole excavated for embedment is typically the pole diameter plus 18 inches. When a pole is placed in a hole, native or select backfill will be used to fill the voids around the perimeter of the hole.

Depending on underlying soil and rock conditions, the 345-kV H-frames may be supported by steel-reinforced concrete drilled piers. Additionally, all 345-kV angle structures will be self-supporting (i.e. no guys) such that they will require concrete drilled pier foundations. The foundation diameter and depth will be determined during final design and are dependent on the structure type and type of soil or rock present at each specific site. If required, each steel pole of a 345-kV structure will have its own drilled pier foundation.

2.2 Conductors

The proposed conductor for the 500-kV lines is 1,949.6 kcmil[2] 42/7 ACSR/TWD, "Athabaska/TW"[3]. Each phase of a 500-kV three-phase circuit[4] is composed of three subconductors in a triple bundle configuration. The individual 1,949.6 kcmil conductors are bundled in a triangular configuration with spacing of 18 and 25 inches between subconductors (see Figure B-2). The triple-bundled configuration is proposed to provide adequate current carrying capacity and to provide for a reduction in audible noise and radio interference as compared to a single large-diameter conductor. Each 500-kV subconductor has a 42/7 aluminum/steel stranding, with an overall conductor diameter of 1.504 inches and a weight of 2.199 pounds per foot and a non-specular finish[5].

For the 5.0 miles of Segment 3A, the proposed conductor for the 345-kV lines is 1,272 kcmil 45/7 ACSR "Bittern". Each phase of the 345-kV three-phase circuit is composed of three subconductors in a triple-bundle configuration. The individual 1,272 kcmil conductors are bundled in a triangular configuration with spacing of 18 and 25 inches between subconductors (see Figure B-3). The triple-bundle configuration is proposed to provide adequate current carrying capacity and to provide for a reduction in audible noise and radio interference when compared to a single large-diameter conductor. Each 345-kV conductor has a 45/7 aluminum/steel stranding, with an overall conductor diameter of 1.345 inches and a weight of 1.432 pounds per foot and a non-specular finish.

At 500 kV and 345 kV, where multiple conductors are utilized in a bundle for each phase, the bundle spacing is maintained through the use of conductor spacers at intermediate points along the conductor bundle between each structure. The spacers serve a dual purpose: in addition to maintaining the correct bundle configuration and spacing, the spacers are also designed to damp out wind-induced vibration in the conductors. The number of spacers required in each span between towers is determined during the final design of the transmission line.

The proposed conductor for the new 230-kV line and for reconstructing of the portion of the existing Dave Johnston – Rock Springs 230-kV line between the Dave Johnston Power Plant and existing Shirley Basin Substation is 1,272 kcmil 45/7 ACSR "Bittern." Each phase of a 230-kV three-phase circuit is composed of two subconductors in a double-bundle configuration. The individual 1,272 kcmil conductors are bundled in a vertical configuration with a spacing of 18 inches. The double-bundle configuration is proposed to provide adequate current carrying capacity and to provide for a reduction in audible noise and radio interference when compared to a single large-diameter conductor. Each 230-kV conductor has a 45/7 aluminum/steel stranding, with an overall

[2] Kcmil (1000 cmils) is a quantity of measure for the size of a conductor; kcmil wire size is the equivalent cross-sectional area in thousands of circular mils. A circular mil (cmil) is the area of a circle with a diameter of one thousandth (0.001) of an inch.
[3] Aluminum/steel refers to the conductor material composition. The preceding numbers indicate the number of strands of each material type present in the conductor (i.e., 42/7 aluminum/steel stranding has 42 aluminum strands wound around 7 steel strands).
[4] For transmission lines, a circuit consists of three phases. A phase may consist of one conductor or multiple conductors (i.e., subconductors) bundled together.
[5] Non-specular finish refers to a "dull" finish rather than a "shiny" finish.

conductor diameter of 1.345 inches and a weight of 1.432 pounds per foot and a non-specular finish.

The proposed conductor for reconstructing the portion of the existing Dave Johnston – Rock Springs 230-kV line between the existing Shirley Basin Substation and the proposed Aeolus Substation is 1,557.4 kcmil 36/7 ACSS/TW "Potomac." Each phase of a 230-kV three-phase circuit is composed of two subconductors in a double-bundle configuration. The individual 1,557.4 kcmil conductors are bundled in a vertical configuration with a spacing of 18 inches. The double-bundle configuration is proposed to provide adequate current carrying capacity and to provide for a reduction in audible noise and radio interference when compared to a single large-diameter conductor. Each 230-kV conductor has a 36/7 aluminum/steel stranding, with an overall conductor diameter of 1.345 inches and a weight of 1.755 pounds per foot and a non-specular finish.

Vertical double bundle configuration does not use spacers. Spacers are required only in the last span into a substation where the bundle rolls from vertical to horizontal.

2.3 Other Hardware

2.3.1 Insulators

As shown in Figure B-1, insulator assemblies for 230-kV H-frame tangent structures will consist of one insulator string hung vertically from the cross arm in the form of an "I." As shown in Figures B-2 and B-3, insulator assemblies for 345-kV and 500-kV tangent structures will consist of two strings of insulators normally in the form of a "V." These strings are used to suspend each conductor bundle (phase) from the structure, maintaining the appropriate electrical clearance between the conductors, the ground, and the structure. The V-shaped configuration of the 345-kV and 500-kV insulators also restrains the conductor so that it will not swing into the structure in high winds. Dead-end insulator assemblies for 230-kV, 345-kV, and 500-kV lines will use an I-shaped configuration, which consists of insulators connected horizontally from either a tower dead-end arm or a dead-end pole in the form of an "I." Insulators are composed of grey porcelain or green-tinted toughened glass or single unit polymer (non-ceramic insulators). Insulators will be made of materials that have reduced potential to reflect and refract light.

2.3.2 Grounding Systems

AC transmission lines such as the Gateway West transmission lines have the potential to induce currents on adjacent metallic structures such as transmission lines, railroads, pipelines, fences, or structures that are parallel to, cross, or are adjacent to the transmission line. Induced currents on these facilities occur to some degree during steady-state operating conditions and during a fault condition on the powerline. For example, during a lightning strike on the line, the insulators may flash over, causing a fault condition on the line and current flows down the structure through the grounding system (i.e., ground rod or counterpoise) and into the ground. The magnitude of the effects of the AC induced currents on adjacent facilities is highly dependent on the magnitude of the current flows in the transmission line, the proximity of the adjacent

facility to the line, and the distance (length) for which the two facilities parallel one another in proximity.

The methods and equipment needed to mitigate these conditions will be determined through electrical studies of the specific situation. As standard practice and as part of the design of the Project, electrical equipment and fencing at the substation is grounded. All fences, metal gates, pipelines, metal buildings, and other metal structures adjacent to the ROW that cross or are within the transmission line ROW will be grounded. If applicable, grounding of metallic objects outside of the ROW may also occur, depending on the distance from the transmission line as determined through the electrical studies. These actions take care of the majority of induced current effects on metallic facilities adjacent to the line by shunting the induced currents to ground through ground rods, ground mats, and other grounding systems, thus reducing the effect that a person may experience when touching a metallic object near the line (i.e., reduce electric shock potential). In the case of a longer parallel facility, such as a pipeline parallel to the Project over many miles, additional electrical studies are undertaken to identify any additional mitigation measures (more than the standard grounding practices) that need to be implemented to prevent damaging currents from flowing onto the parallel facility, and to prevent electrical shock to a person that may come in contact with the parallel facility. Some of the typical measures that could be considered for implementation, depending on the degree of mitigation needed, could include (NACE International 2003):

- **Fault Shields –** shallow grounding conductors connected to the affected structure adjacent to overhead electrical transmission towers, poles, substations, etc. They are intended to provide localized protection to the structure and pipeline coating during a fault event from a nearby electric transmission power system.
- **Lumped Grounding –** localized conductor or conductors connected to the affected structure at strategic locations (e.g., at discontinuities). They are intended to protect the structure from both steady-state and fault AC conditions.
- **Gradient Control Wires –** a continuous and long grounding conductor or conductors installed horizontally and parallel to a structure (e.g., pipeline section) at strategic lengths and connected at regular intervals. These are intended to provide protection to the structure and pipeline coating during steady-state and fault AC conditions from nearby electric transmission power systems.
- **Gradient Control Mats –** typically used for above ground components of a pipeline system, these are buried ground mats bonded to the structure, and are used to reduce electrical step and touch voltages in areas where people may come in contact with a structure subject to hazardous potentials. Permanent mats bonded to the structure may be used at valves, metallic vents, cathodic protection test stations, and other aboveground metallic and nonmetallic appurtenances where electrical contact with the affected structure is possible. In these cases there is no “standard” solution that would solve these issues every time. Instead, each case must be studied to determine the magnitude of the induced currents and the most appropriate mitigation given the ground resistivity, distance paralleled, steady-state and fault currents, fault clearing times expected on the transmission line, and distance between the line and the pipeline, to name

a few of the parameters. If the electrical studies indicate a need to install cathodic protection devices on a parallel pipeline facility, a distribution supply line interconnection may be needed to provide power to the cathodic protection equipment.

During final design of the transmission line segments, appropriate electrical studies will be conducted to identify the issues associated with paralleling other facilities and the types of equipment needed to be installed (if any) to mitigate the effects of the induced currents.

2.3.3 Minor Additional Hardware

In addition to the conductors, insulators, and overhead shield wires, other associated hardware will be installed on the tower as part of the insulator assembly to support the conductors and shield wires. This hardware includes clamps, shackles, links, plates, and various other pieces composed of galvanized steel and aluminum.

A grounding system will be installed at the base of each transmission structure that consists of copper ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by a buried copper lead. When the resistance to ground for each transmission structure is greater than 25 ohms with the use of ground rods, counterpoise is installed to lower the resistance with the intent to achieve 25 ohms or less. Counterpoise consists of a bare copper-clad or galvanized-steel cable buried a minimum of 12 inches deep, extending from structures (from one or more legs of structure) for approximately 200 feet within the ROW.

Other hardware that is not associated with the transmission of electricity may be installed as part of the Project. This hardware may include aerial marker spheres or aircraft warning lighting as required for the conductors or structures per FAA regulations.[6] Structure proximity to airports and structure height are the determinants of whether FAA regulations would apply based on an assessment of wire/tower strike risk. Structure lighting will not be required because proposed structures will be less than 200 feet tall and will not be near airports that require structure lighting. Site-specific exceptions may be made to comply with US Air Force requirements in restricted air space near the Jarbidge Military Operations Area and the Saylor Creek Air Force Range, or to comply with FAA requirements where structure adjustments are not feasible near regulated airports.

2.4 Communication Systems

2.4.1 Optical Ground Wire

Reliable and secure communications for system control and monitoring of Gateway West is very important to maintain the operational integrity of the Project and of the overall interconnected system. Primary communications for relaying and control is provided via the OPGW that will be installed on the transmission lines. For the 500-kV transmission lines, a secondary communications path is provided by the Companies' existing microwave system, which is currently installed from the Central Wyoming area

[6] U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular AC 70/7460-1K Obstruction Marking and Lighting, August 1, 2000; and Advisory Circular AC 70/7460-2K Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace, March 1, 2000.

near the Windstar Substation west to existing substations near Boise, Idaho. A secondary communication path may also be developed using a powerline carrier. No new microwave sites are anticipated for the Project. Updated microwave equipment may be installed at existing sites and at the substations.

Each structure has two lightning protection shield wires installed. For the 500-kV single-circuit lattice steel structures, shield wires are installed on the peaks of each of the structures (see Figure B-2). On the 230-kV and 345-kv H-frame structures (see Figure B-1) these lightning protection shield wires are installed near the top of each pole. On 500-kV, 345-kV, and 230-kV lines where communication is required, one of the shield wires is composed of extra high strength steel wire with a diameter of 0.495 inch and a weight of 0.517 pound per foot. The second shield wire is an OPGW constructed of aluminum and steel, which carries 48 glass fibers within its core. On the 500-kV lines, the OPGW has a diameter of 0.637 inch and a weight of 0.375 pound per foot; on the 345-kV lines, the OPGW has a diameter of 0.495 inch and a weight of 0.517 pound per foot. On the 230-kV lines, the OPGW has a diameter of 0.465 inch and a weight of 0.270 pound per foot. The glass fibers inside the OPGW shield wire will provide optical data transfer capability among the Companies' facilities along the fiber path. The data transferred are required for system control and monitoring. On lines where communication is not required, both of the shield wires are composed of extra high strength steel wires with a diameter of 0.495 inch and a weight of 0.517 pound per foot.

For the Gateway Project, all 500-kV line segments are designed to carry an OPGW. For the 230-kV lines, Segment 1W(a) and a portion of 1W(c) are designed to carry an OPGW. Between the new Anticline Substation and the existing Jim Bridger Substation, two communication paths (underground or aerial) are required for redundancy. One path is carried by the 345-kV line (Segment 3A). The second path is carried on Segment 4 for a couple of miles from Anticline to a point where the segment crosses existing 230-kV lines. At this point, the OPGW is routed along the existing 230-kV lines either overhead on the existing structures by replacing an existing shield wire with an OPGW, or installing the communication wire underground within the existing 230-kV ROW to Jim Bridger Substation.

2.4.2 Regeneration Stations

As the data signal is passed through the optical fiber cable, the signal degrades with distance. Consequently, signal regeneration stations are required to amplify the signals if the distance between substations or regeneration stations exceeds 55 miles. As summarized in Table B-3, a total of 13 regeneration stations are required.

Table B-3. Proposed Regeneration Station Locations

Segment	Number	Total Construction Acres	Total Operations Acres
Segment 1W(a) – Windstar to Aeolus	1	1	0.5
Segment 2 – Aeolus to Creston	1	1	0.5
Segment 3 – Creston to Anticline	1	1	0.5*
Segment 4 – Anticline to Populus	3	3	1.5
Segment 7 – Populus to Cedar Hill	2	2	1
Segment 8 – Midpoint to Hemingway	2	2	1
Segment 9 – Cedar Hill to Hemingway	3	3	1.5

* This regeneration station will be located in the vicinity of the Creston site.

A regeneration station may be housed within a substation control house in those cases where a substation is located along or near the final transmission route at an appropriate milepost; otherwise, land must be obtained or additional area requested. Where a new site is required, the typical site is 100 feet by 100 feet, with a fenced area of 75 feet by 75 feet. A 12-foot- by 32-foot- by 9-foot-tall building or equipment shelter (metal or concrete) is placed on the site, and access roads to the site and power from the local electric distribution circuits are required. An emergency generator with a liquid petroleum gas fuel tank is installed at the site inside the fenced area. Two diverse cable routes (aerial and/or buried) from the transmission ROW to the equipment shelter are required. Figure B-8 illustrates the plan arrangement of a typical regeneration station.

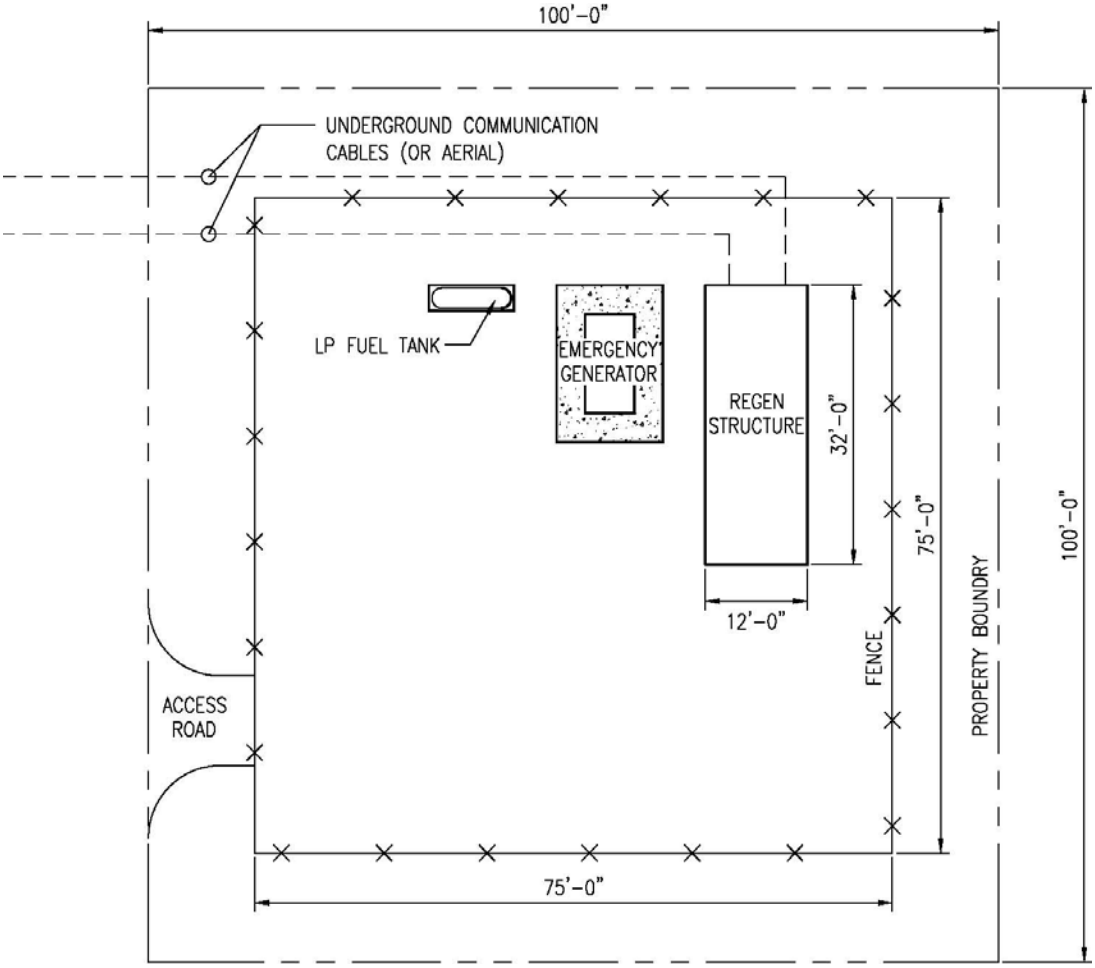


Figure B-8. Typical Regeneration Station Site

2.5 Roads Used During Construction and Operation

Access and service roads are an essential part of the construction and operation of the Gateway West transmission line. Large foundation auger equipment, heavily loaded trucks, cranes, and specialized line construction equipment will be required for construction, maintenance, and emergency restoration activities. Annual ground based inspections require vehicular access using 4x4 trucks or 4x4 all-terrain vehicles (ATVs)

to each structure site. Table B-4 summarizes the four types of roads needed for accessing the transmission line structures for the Project.

The only temporary roads are those that are constructed to access temporary use areas, where needed, including multi-purpose yards and fly yards.

Table B-4. Typical Road Requirements for Transmission Line System

Road Type	Access Roads for Construction	Access Roads for Routine Operations	Access Roads for Non-Routine Operations Use
Existing roads requiring no improvement	No change	No change	No change
Existing roads requiring improvement	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	For routine activities, an 8-foot portion of the road will be used and vehicles will drive over the vegetation (“two-track”).	For non-routine maintenance requiring access by larger vehicles, the full width of the access road may be used. Roads will be repaired, as necessary, but will not be routinely graded. In order to preserve the ability to enter rapidly, the road structure (cuts and fills) will be left in place.
New roads	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	For routine activities, an 8-foot portion of the road will be used and vehicles will drive over the vegetation (“two-track”).	
Temporary roads	Unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections at corners	None—contours will be restored, and the road will be ripped and seeded.	None

2.5.1 Construction Access Roads

During construction vehicular access will be required to each structure. New access roads will be constructed and existing roads widened as needed to provide a 14-foot-wide travel way. Roads not required for operations will be restored to their original condition or left as is, depending on landowner/land management agency requirements.

The largest of the heavy equipment needed, which dictates the minimum needed road dimensions, is a truck-mounted aerial lift crane, 100,000 pounds gross vehicle weight, 8x8 drive, 210-foot telescoped boom. Vehicle width is 8’6” (102 inches) or less and wheelbase is around 25 feet. To accommodate this equipment, the road specifications require a 14-foot-wide road top (travel way) and 16- to 20-foot-wide road width in turns. The required road disturbance area and travel way in areas of rolling to hilly terrain will require a wider disturbance to account for cuts and fills, turning radii, and/or where vehicles are required to pass one another while traveling in opposite directions.

Access road construction employs heavy equipment including bulldozers, front-end loaders, dump trucks, backhoes, excavators, both tracked and rubber-tired, and graders. Other specialized equipment, including boom trucks to install culverts in some areas, will be used where needed. Roads will be built to provide a stable, permanent 14-foot-wide travel surface at straight sections and 16- to 20-foot wide travel surface at turns. Depending on the side slope, this can include cuts and fills, crowning and

ditching, at-grade water bars, and various kinds of waterbody crossings. Figures B-9a and B-9b show the typical cross-sections created during construction of access roads.

Construction of new access roads begins with vegetation removal. Merchantable timber is cut and yarded to landings where the logs can be loaded on to trucks and hauled to market. Non-merchantable logs are stored along the edge of the ROW for later use in site restoration. Smaller vegetation will be lopped and scattered outside the road prism. Topsoil will be stripped from the road prism as required by federal land management agencies or landowners. Topsoil will be stored adjacent to the road or in a nearby workspace. Appropriate erosion control devices will be installed to prevent erosion or loss of the topsoil, including but not limited to tackifiers to prevent wind erosion and fugitive dust and silt fencing to prevent sediment runoff. Roads surfaces will be stabilized if needed with road base but will not be routinely paved with asphalt or concrete. Access roads will have either dirt surfaces or have road base as surfacing where needed. As needed, the construction pad and access road will be graded to allow for safe access and construction. The grading may include cut and fill as needed to achieve a workable safe surface.

"New Roads" will receive one of the following treatments:

- In areas of rolling to hilly terrain, roads may require blading as shown on Figure B-9a, for ditches, realignment, widening, cut and fill, graveling, or installation of culverts.
- In flatter areas overland travel may be used. Overland travel means following a staked road alignment, either cutting the vegetation and leaving the root crowns and then driving over it (clear and cut), or just driving over the vegetation if it is low enough (drive and crush). In either case, a blade may be used if needed to remove obstructions in limited places.

"Existing Roads Needing Improvement" will have varied conditions across the Project. These roads were classified as such to recognize that the Contractor MAY need to perform some level of improvement to provide the safe travel way required for construction. Based on the Contractor's construction plan and the construction techniques employed, it is anticipated that sections of the access roads classified as "Existing Roads Needing Improvement" will receive one of the following treatments.

- The existing road will be sufficient and provide a safe travel way throughout the duration of line construction.
- The existing road will be sufficient and provide a safe travel way during a portion of the line construction period. Weather events, progressive damage due to heavy use and larger heavier equipment needed are examples of reasons that an existing road would need some level of construction at one or more intermediate points during line construction.
- The existing road at project initiation needs more extensive construction, including blading, prior to the start of line construction.
- Portions of these roads will involve clear and cut, or just drive and crush.

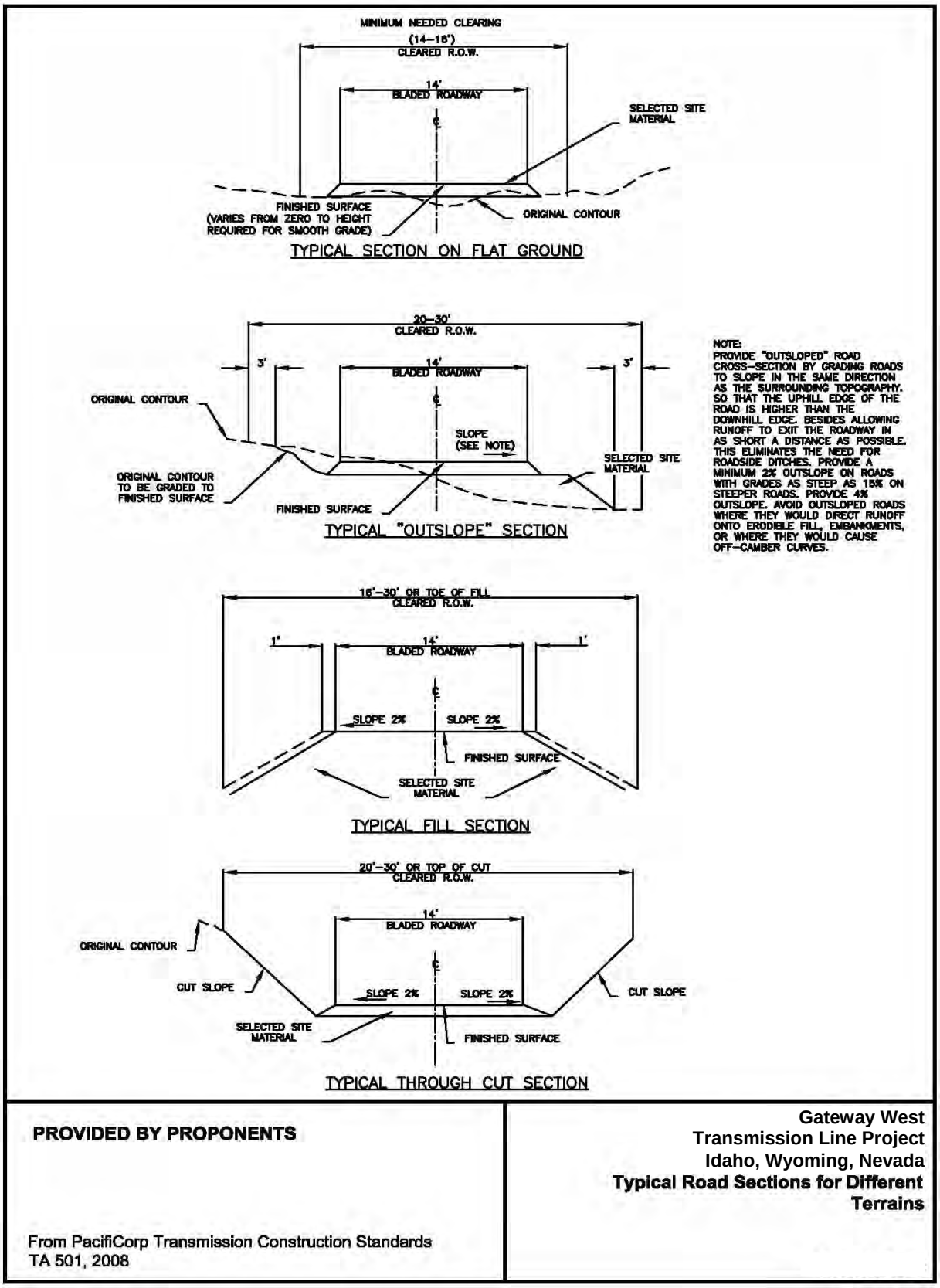


Figure B-9a. Typical Road Section for Different Terrains

TA 503

Roads—Water Bars and Water Dips

A. Scope

This standard describes drainage methods, including water bars, water dips, ditches, and outsloping, which can be used where intermittent or permanent streams cross roadways. Depending on the method used, drainage structures should be installed during or after basic road construction. For information on ditches and culverts see TA 504, *Roads—Culvert Installation*.

B. Water Bars and Dips

Water bars are narrow structures which can be constructed at various depths depending on the need. Deep bars are generally used on roads closed to vehicle traffic. Figure 1 shows a typical shallow water bar constructed across a road.

Figure 1—Water Bar

Water bars can be constructed with hand tools, but bulldozers are most commonly used. It is best to start at the end of the road and work outward so the bars are not damaged with frequent crossing by heavy machinery.

Water bars should be installed at an approximate 30° angle downslope. Figure 2 shows dimensions for construction of water bars and water dips with and without drainage ditches to be used on access and right-of-way roads. The outflow end of the water bar should prevent water from accumulating and should not flow directly into a stream. This will allow sediment to settle out of the water, preventing erosion. As a supplement to water bars on closed roads, logging slash can be lopped and scattered, grass can be planted, or both. Table 1 shows recommended spacing between water bars for various road grades.

Table 1—Distance Needed Between Water Bars

Road grade (percent)	Distance (feet)
2	250
5	135
10	80
15	60
20	45
25	40
30	35

Source: Kochenderfer 1970, p. 28

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1 **Figure B-9b.** Water Bars and Dips (TA 503, 1 of 3 pages)

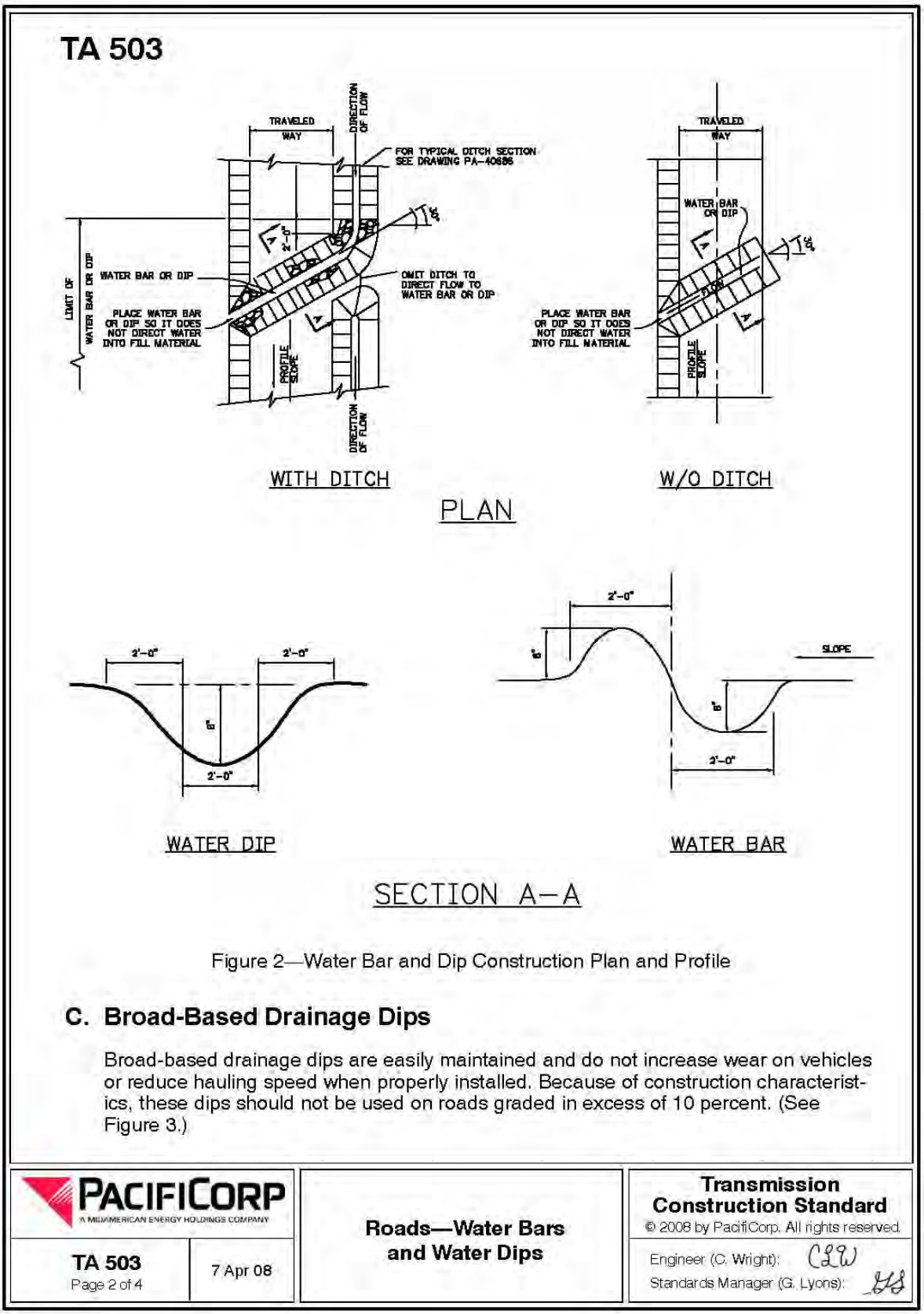

Figure 2—Water Bar and Dip Construction Plan and Profile

C. Broad-Based Drainage Dips

Broad-based drainage dips are easily maintained and do not increase wear on vehicles or reduce hauling speed when properly installed. Because of construction characteristics, these dips should not be used on roads graded in excess of 10 percent. (See Figure 3.)

Figure B-9b. Water Bars and Dips (TA 503, 2 of 3 pages)

TA 503

Table 2—Minimum Distance Needed Between Water Bars

Road grade (percent)	Distance (feet)
2 - 4	300 - 200
5 - 7	180 - 160
8 - 10	150 - 140

Source: Kochenderfer 1970, p. 19, 25

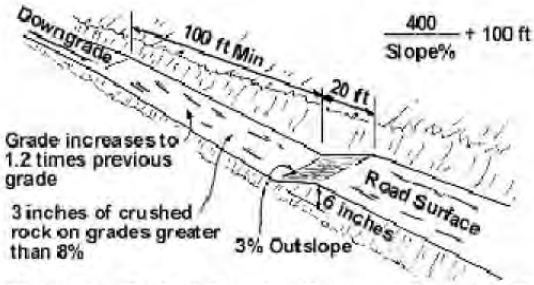

Figure 3—Typical Spacing Between Drainage Dips

As with a water bar, care should be taken to ensure adequate drainage at the outflow of a dip. Water dips should never be designed to discharge directly into a stream. The discharge area should be protected with stone, grass, sod, heavy litter cover, brush, logs, or other natural material which will reduce the velocity of the water. Natural litter may be adequate in many cases if the terrain is not too steep.

Table 2 presents the spacing of broad-based dips as computed with the formula shown in the figure.

Close attention should be paid to construction of broad-based dips, as they are often made too small. Figure 3 shows minimum dimensions. Dips should be armored with crushed rock or gravel. Figure 4 shows a practical example of how a broad-based drainage dip can be used.

Figure 4—Drainage Dip

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Figure B-9b. Water Bars and Dips (TA 503, 3 of 3 pages)

2.5.2 Operations Access Roads

Transmission line access roads are necessary for access to, and maintenance of, transmission lines, structures or ancillary facilities, but they are not part of the public or federal network of roads. They are generally closed to the public and will be maintained by the Companies.

During routine operations, vehicular access will be needed to reach each structure for periodic inspections and maintenance and to areas of forest or tall shrubs to control vegetation in the ROW for safe operation. The Companies plan to employ live-line maintenance techniques on the transmission line (see Section 3.1.3 of this appendix). Live line maintenance and repair techniques require the utilization of high-reach bucket trucks and other trucks and equipment. Roads required as routine access roads for the operational life of the Project will be revegetated following construction but will not be recontoured; they will be maintained free of trees and shrubs for a minimum 8-foot width.

For non-routine maintenance requiring access by larger vehicles, the full width of the access road may be used. Roads will be repaired, as necessary, but will not be routinely graded. In order to preserve the ability to enter rapidly, the road structure (cuts and fills) will be left in place. In an emergency (i.e., in the event of a tower or conductor failure) full emergency access, including cranes and other heavy equipment, will be needed. Based on historical reliability of H-frame and lattice structures, it is anticipated that only a small fraction of the tower sites will require emergency access over the life of the Project.

Other roads may be travelled over by the Companies during operations. However, roads not classified as access roads will not be maintained by the Companies except as noted.

Roads not classified as access roads include:

- Public roads, including state highways and county roads: These roads are for public use, and the appropriate state or county entity maintains them.
- Open roads on federal land: The appropriate federal agency (typically BLM or Forest Service) maintains these roads, which are open to the public. These roads, including drainage features, cuts, and fill slopes, will be repaired by the Companies if damaged during O&M activities but not maintained on a routine basis.
- Closed federal land roads: These roads are still needed for administrative or emergency functions, but they have been closed to the public because of management policies to protect natural resources or reduce maintenance costs. If utilized during O&M activities, the Companies would assume some maintenance responsibilities proportionate to their use for O&M purposes.

2.5.3 Waterbody Crossings with Access Roads

Access roads will be constructed to minimize disruption of natural drainage patterns. Estimates of relative frequencies of crossing types and disturbance estimates for each are based on local engineering experience in Wyoming and Idaho. Each crossing will

be designed with the roads as advanced engineering is completed, and crossing disturbance will vary. However, these estimates are conservative and consistent across all alternatives. On all federally managed lands, the Companies will consult with the managing agency regarding relevant standards and guidelines pertaining to road crossing methods at waterbodies. Consultation includes site assessment, design, installation, maintenance, and decommissioning. Appendix I, Stream, Wetlands, Well and Spring Protection Plan, describes waterbody crossing types that will be used as part of the construction specifications. For EIS analysis purposes, three types of waterbody crossings as well as avoidance are considered as part of the Project (see Figures B-10 and B-11). They are:

- **Type 1—Drive through:** Crossing of a channel with only minimal vegetation removal and no cut or fill needed. This is typical for much of the low-precipitation sagebrush country with rolling topography and streams that rarely flow with water.
- **Type 2—Ford:** Crossing of a channel that includes grading and stabilization. Stream banks and approaches will be graded to allow vehicle passage and stabilized with rock or other erosion control devices. The stream bed will in some areas be reinforced with coarse rock material, where approved by the land-management agency, to support vehicle loads, prevent erosion and minimize sedimentation into the waterway. The rock will be installed in the stream bed such that it would not raise the level of the streambed, thus allowing continued movement of water, fish and debris. A ford crossing results in an average disturbance profile of 25 feet wide (along the waterbody) and 50 feet long (along the roadway) for 1,250 square feet or 0.03 acre at each crossing. Disturbance amount is estimated based on need to get equipment into the riparian area to build the 14-foot-wide travelway and protect it from erosion by adding armoring.
- **Type 3—Culvert:** Crossing of a waterbody that includes installation of a culvert and a stable road surface established over the culvert for vehicle passage. Culverts are designed and installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and aquatic biologist where required by the land management agency, recommends placement locations; culvert gradient, height, and sizing; and proper construction methods. Culvert design considers bedload and debris size and volume. The disturbance footprint for culvert installation is estimated to be 50 feet wide (along the waterbody) and 150 feet long (along the road) for 7,500 square feet or 0.17 acre at each crossing. Ground-disturbing activities will comply with Agency-approved BMPs. Construction will occur during periods of low water or normal flow. The use of equipment in streams will be minimized. All culverts will be designed and installed to meet desired riparian conditions, as identified in applicable unit management plans. Culvert slope will not exceed stream gradient. Typically, culverts are partially buried in the streambed to maintain streambed material in the culvert. Sandbags or other non-erosive material are placed around the culverts to prevent scour or water flow around the culvert. Adjacent sediment control structures such as silt fences, check dams, rock armoring, or riprap may be necessary to prevent erosion or sedimentation. Stream banks and approaches may be stabilized with rock or other erosion control devices. Culverts will be inspected and maintained annually for the life of the Project (estimated at 50 years or longer) for proper operation and to protect water quality.

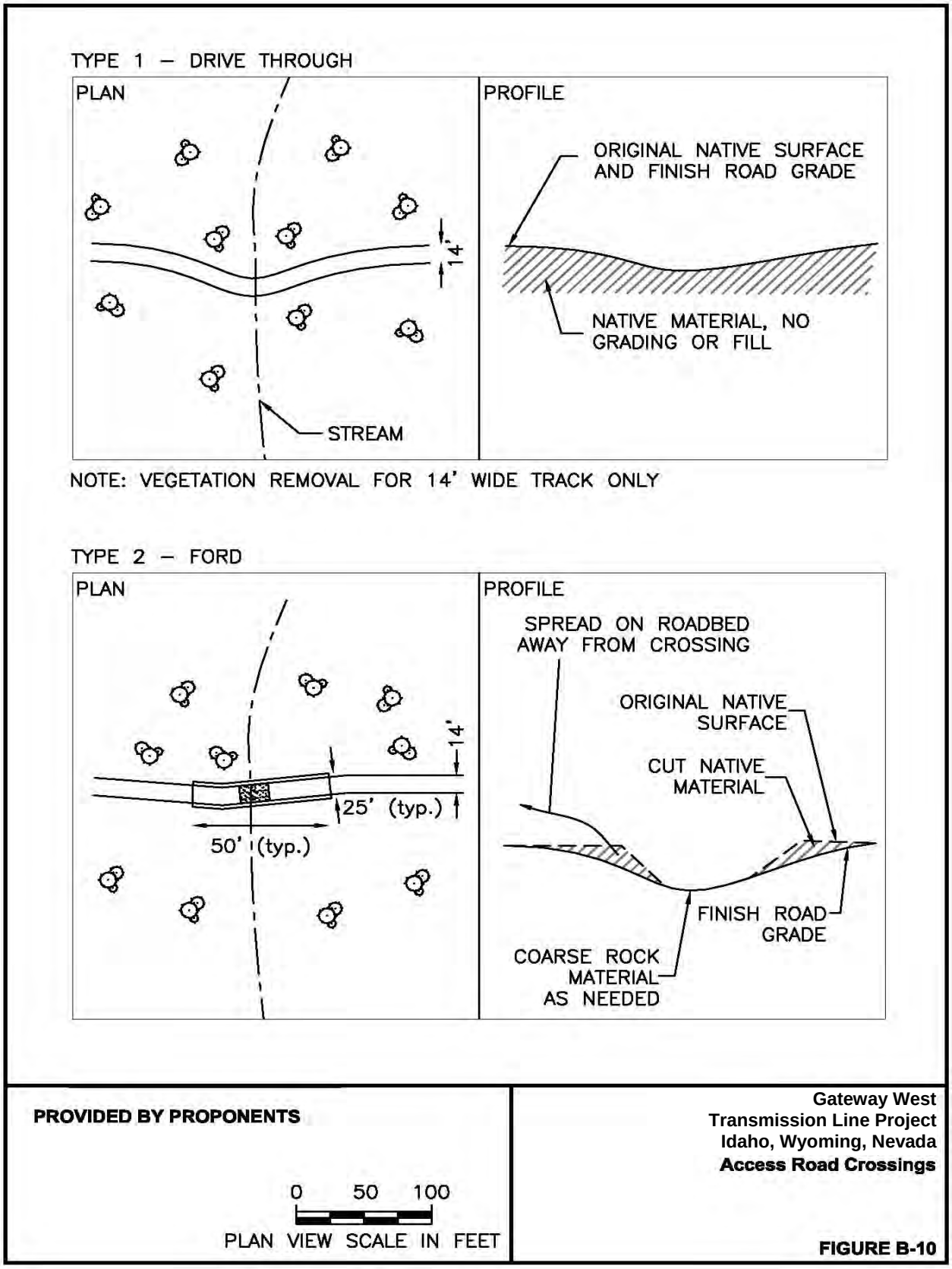


Figure B-10. Access Road Dry Crossings

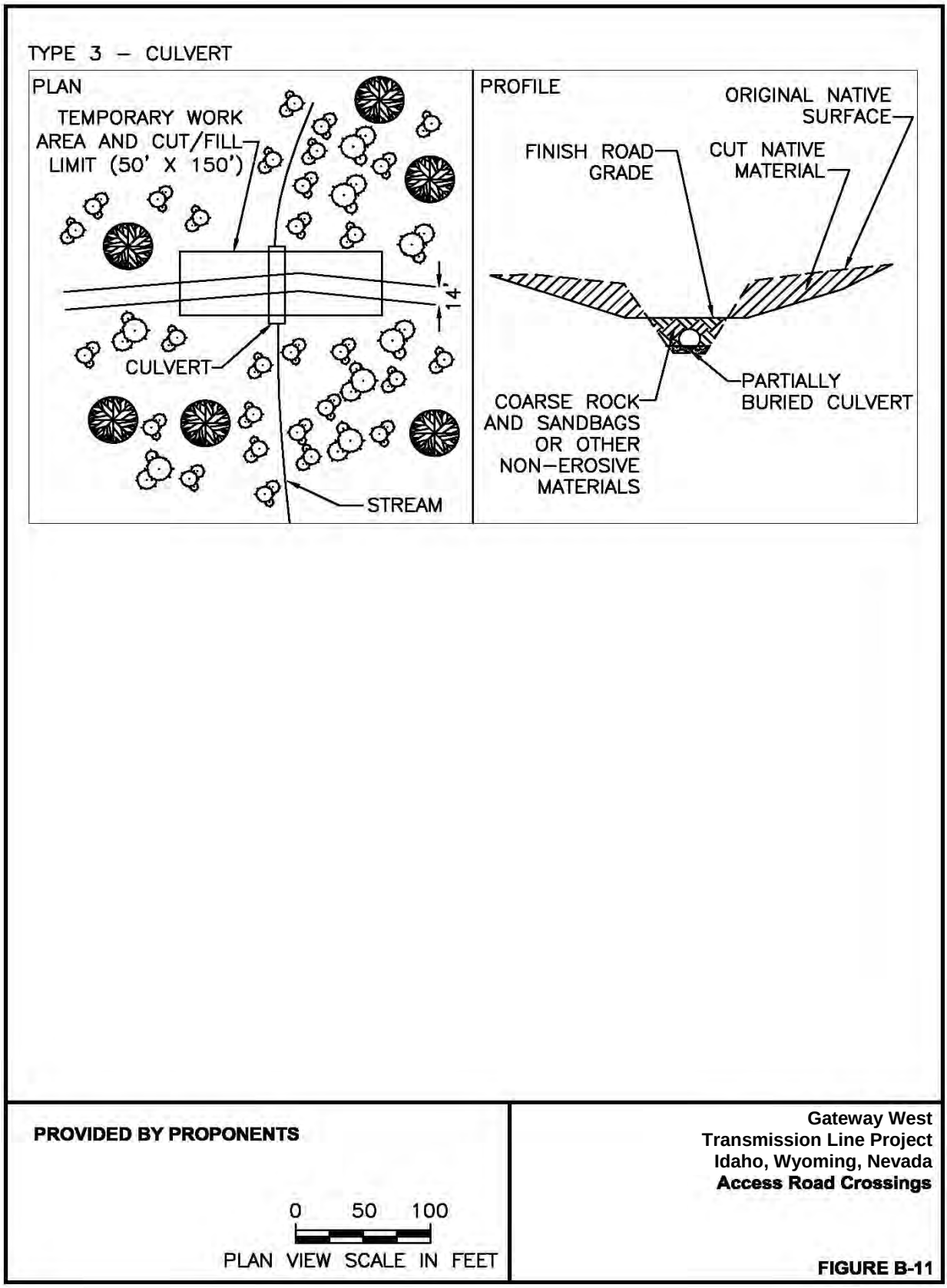


Figure B-11. Access Road Wet Crossings

- **Avoid Crossing:** Where constructing a new waterbody crossing is impractical or would require a bridge or a very large (>48-inch-diameter) culvert, existing waterbody crossings will be used and access redesigned to avoid a new crossing. All canals and ditches will be avoided by using existing crossings, as would all large perennial bodies like rivers.

The performance of low water stream crossings will be monitored for the life of the access road, and maintained or repaired as necessary to protect water quality.

2.5.4 Wetlands Crossings with Access Roads

During construction and for routine and emergency operations, access across wetlands to each structure location is necessary. Two methods of minimizing impact to wetlands were evaluated but are not proposed:

- Constructing at-grade roads with geotextiles and road materials which allow for water through-flow. This type of road would be below water during certain times of the year which would make locating the roads difficult, and the depth of the water over the drivable surface may make travel over the submerged road surface impractical or not feasible.
- Constructing using helicopters in wetlands. The single-circuit 500kV towers will be designed such that they can be erected by helicopter if needed. In each case, the use of ground based vehicles is still required, thus not eliminating the need for an access road to each structure to complete construction or during inspections and live-line maintenance activities.

A combination of methods for road construction in wetlands is proposed:

- Construction of permanent above-grade roads that will be utilized during construction, operation, and maintenance. This will typically entail placement of permanent fill in wetlands such that the travel surface would be higher in elevation than the ordinary high water level. The construction of above-grade access roads allows for the use of the types of equipment needed for construction, operation, maintenance; and for expedited access for emergency restoration throughout the year.
- Construction or use of temporary roads during construction, followed by restoration of the disturbance after construction. The Companies only propose this approach in the area of extensive wetlands in the Bear River Plain, in part because it is feasible to store the amount of matting needed for emergency access in the immediate vicinity. Smaller wetland and riparian area crossings will be constructed using permanent crossing methods because it would not be feasible to provide for temporary crossing materials for scattered crossings along a thousand miles of the Project. Where feasible in areas where temporary roads will be used, construction equipment may travel overland if the area is dry. If construction occurs when the ground is solidly frozen, ice roads could be constructed.

If construction must occur when the ground is wet, temporary matting materials will be installed to allow access for heavy vehicles and equipment. The mats typically come in

the form of heavy timbers bolted together. They are often used over a geotextile that is applied directly over the wet soil surface. When construction use is complete, the mats are removed and the geotextile taken up. This approach will be used where feasible, since it further reduces vegetation damage and compaction and reduces the time for full restoration. Mats spread the concentrated axle loads from equipment over a much larger surface area than the tires alone, thereby reducing the bearing pressure on fragile soils. Matting has a limited service life before replacement is required and must be stored for maintenance and emergency restoration activities. Table B-5 shows an estimate of miles of temporary roads for construction access in the three largest wetland areas crossed by the Proposed Route. Though exact locations may change during final design, the Companies are committed to using temporary crossings wherever feasible in these three important wetland areas.

Table B-5. Access Road Wetland Crossings in the Bear River Plain

Location	Segment 4 Mileposts	Approximate Miles			
		Total New or Improved Access Roads	New or Improved Access Road in Uplands	Proposed for Permanent Fill in Wetlands	Proposed for Temporary Access in Wetlands
Cokeville	123.0-126.8	2.2	1.3	0.0	0.9
Bear River	133.5-134.5	1.8	0.0	0.0	1.8
Montpelier	148.0-153.6	7.9	5.1	0.0	2.8

Where temporary road access is utilized, road areas will be rehabilitated after construction. Any geotextiles and matting used will be removed and wetland vegetation allowed to return. No permanent roads will be available for routine operations inspections or repairs. Operational inspections and repairs will be scheduled for times when the ground is dry or frozen and access will be overland along the road alignment by ATV. Emergency repairs requiring heavy equipment will access the damaged area using matting if necessary. After emergency repairs are completed, matting will be removed and the wetland areas allowed to restore naturally.

Waterbody and wetland disturbances will be conducted under the terms of a USACE CWA Section 404 permit, the NPDES Construction Stormwater Permit (CWA 402), and State 401 water quality certification requirements governing activities within waters of the United States. In Idaho, there is an additional requirement for a stream channel alteration permit for activities in stream beds.

2.6 Substations

The Project includes three proposed substations and expansion at nine existing substations.

2.6.1 Substation Components

The following sections describe key components of substations.

2.6.1.1 Bay

A substation “bay” is the physical location within a substation fenced area where the high-voltage circuit breakers and associated steel transmission line termination structures, high-voltage switches, bus supports, controls, and other equipment are

installed. For each transmission line, 500-kV, 345-kV, and 230-kV circuit breakers, high-voltage switches, bus supports, and transmission line termination structures are typically installed. The 500-kV transmission line termination structures are approximately 125 to 135 feet tall. Additional equipment including 500/230-kV or 500/345-kV transformers and 500-kV shunt reactors (which resemble a transformer in appearance), and 230-kV shunt capacitor banks will be installed.

The appearance of the new and expanded substations is similar to the appearance of the existing substations. The tallest structures in the substations are the 500-kV, 345-kV, and 230-kV dead-end structures, which vary in height from approximately 70 feet (230 kV) to 125 to 135 feet (500 kV), and/or a microwave antenna tower, which would be in the range of 100 feet or more, depending on the height needed to maintain line of sight to the nearest microwave relay site. Figure B-12 includes a perspective sketch and an elevation view illustrating the appearance of a typical 500-kV substation with multiple line connections.

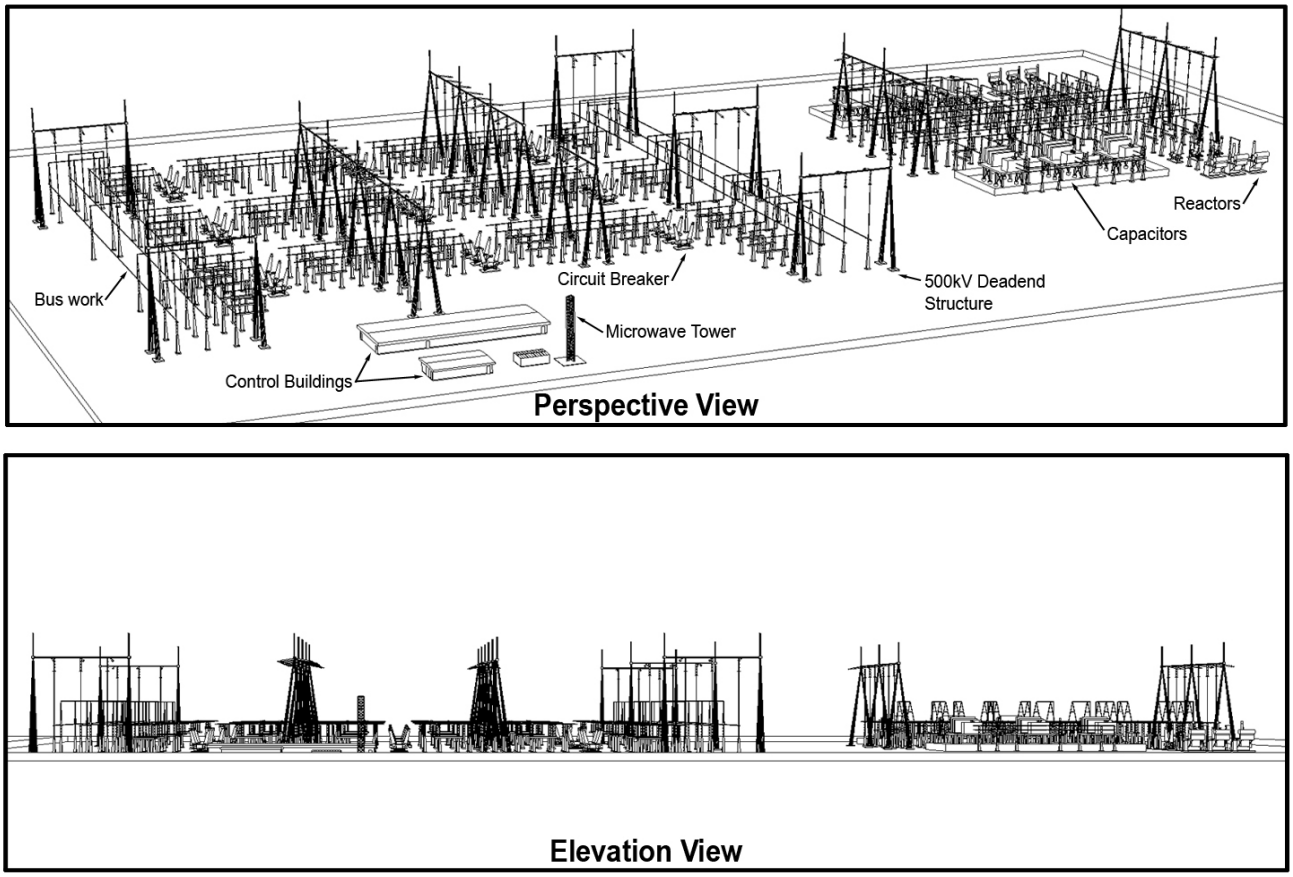


Figure B-12. Typical 500-kV Substation

2.6.1.2 Access Road

Permanent all-weather access roads are required at substation sites to provide access for personnel, material deliveries, vehicles, trucks, heavy equipment, low-boy tractor trailer rigs (used for moving large transformers), and ongoing maintenance activities at each site. Substation access roads are normally well-compacted, graded gravel roads approximately 20 feet in width with a minimum 110-foot turning radius to accommodate the delivery of large transformers to the site. A new access road of less than 1 mile will be developed from the public road to the Anticline Substation. Access to the Aeolus Substation requires an upgrade of a portion of CR 121. Access roads are in place for all other substation locations.

2.6.1.3 Control Building

One or more control buildings are required at each substation to house protective relays, control devices, battery banks for primary control power, and remote monitoring equipment. The size and construction of the building depends on individual substation requirements. Typically, the control building is constructed of concrete block, pre-engineered metal sheathed, or composite surfaced materials. Special control buildings may be developed within the substation developments to house other control and protection equipment. For example, at Aeolus a static var compensation (SVC) building will be developed to protect power electronic equipment, controls, and cooling equipment.

2.6.1.4 Fencing and Landscaping

Security fencing will be installed around the entire perimeter of each new or expanded substation to protect sensitive equipment and prevent accidental contact with energized conductors by third parties. This 7-foot-high fence is constructed of chain link with steel posts, with one foot of barbed wire above the chain link, and with locked gates. If required by the landowner or permitting agency, landscaping will be established using drought-resistant vegetation where allowed.

2.6.2 Distribution Supply Lines

Station service power is required at each substation or regeneration station. Typically, station service power is provided from a local electric distribution line, located in proximity to the substation or regeneration station. The voltage of the distribution supply line is typically 34.5 kV or lower and carried on wood poles. For new sites, it will be necessary to extend the electric distribution line from a suitable take-off point on an existing distribution line to the new substation site. The location and routing of the existing distribution lines to the new substation sites is determined during the final design process. For Gateway West, new distribution line extensions to provide station service power are anticipated for the Anticline, Cedar Hill Substation and Aeolus substations. The distance between existing distribution supply and the substations ranges from 200 feet to 11 miles. The remaining substation locations are at existing station sites and new distribution line extensions to provide station service power will not be required. However, modifications to the existing distribution facilities may be necessary to provide increased capacity to support the expansions at the existing substation sites.

3.0 SYSTEM CONSTRUCTION

The following section and subsections detail construction activities for the Project, including transmission line, substation communication, and associated ancillary features.

3.1 Land Requirements and Disturbance

3.1.1 Right-of-Way Width

The Companies propose to acquire a permanent 250-foot-wide ROW for the 500-kV single-circuit sections of the Project, a 150-foot-wide ROW for 345-kV single-circuit sections of the Project, and a 125-foot-wide ROW for the 230-kV single-circuit sections of the Project. However, in the isolated situation where spans between structures significantly exceed the typical span lengths anticipated (up to 1,200 feet or 1,800 feet depending on voltage and standard ROW width), the ROW width may need to be increased to provide appropriate clearance from conductors blown toward the ROW edge. Figures B-4 through B-5 illustrate the ROW width requirements. The determination of these widths is based on two criteria:

- Sufficient clearance must be maintained during a high wind event when the conductors are blown towards the ROW edge.
- Sufficient room must be provided within the ROW to perform transmission line maintenance. See Section 3.1.2 of this appendix for details of maintenance requirements.

During construction, temporary permission will be required from landowners and land management agencies for off-ROW access, multi-purpose yards, helicopter fly yards, and material storage. During operation, Project land requirements will be restricted to the ROW, including access roads, substations, and communication facilities. Access to the ROW (including off-ROW access roads) will be in accordance with the land rights obtained as part of the easement acquisition process. Off-ROW access roads will be used where permitted for operations as well as construction. As further details of the final Project design are engineered, the amount of land required may change.

3.1.2 Right-of-Way Acquisition

All segments must obtain new ROWs through a combination of ROW grants and easements negotiated between the Companies and various federal, state, and local governments; other companies (e.g., utilities and railroads); and private landowners.

Close coordination with all property owners and land agencies during surveys and the construction phase of the Project is essential for successful completion of the Project. In the early stages of the Project, landowners were contacted to obtain right-of-entry for surveys and for geotechnical drilling at selected locations. Additional landowners will be contacted as needed throughout the project for additional surveys, including geotechnical work. Each landowner along the final centerline route will be contacted to explain the Project and to secure right-of-entry and access to the ROW.

Table B-6. Summary of Land Required for Construction and Operations

Segment	Land Required for Construction (acres) [1/, 2/]	Land Required for Operations (acres) [1/]
Segment 1W(a) – Windstar to Aeolus (230-kV Line)		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	1,168	1,117
Off-ROW Multi-purpose yard	–	–
Off-ROW Fly Yards	–	–
Off-ROW Access Roads	352	107
OPGW Regeneration Station(s) - 1	1	0.5
Windstar and portion of Aeolus Substations	35	35
Segment Subtotal	***1,556***	***1,260***
Segment 1W(c) – Dave Johnston to Aeolus (230-kV Reconstruction)		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	1,170	1,114
Off-ROW Multi-purpose yard	30	–
Off-ROW Fly Yards	307	–
Off-ROW Access Roads	155	47
OPGW Regeneration Station(s) - 0	–	–
Heward and portion of Aeolus Substations	37	30
Segment Subtotal	***1,699***	***1,191***
Segment 2 – Aeolus to Creston		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	2,942	2,776
Off-ROW Multi-purpose yard	60	–
Off-ROW Fly Yards	240	–
Off-ROW Access Roads	419	128
OPGW Regeneration Station(s) - 1	1	0.5
Portion of Aeolus Substation	60	50
Segment Subtotal	***3,722***	***2,955***
Segment 3 – Creston to Anticline		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	1,459	1,392
Off-ROW Multi-purpose yard	40	–
Off-ROW Fly Yards	112	–
Off-ROW Access Roads	143	44
OPGW Regeneration Station(s) - 1	1	0.5
Portion of Anticline Substation	45	40
Segment Subtotal	***1,800***	***1,477***
Segment 3A – Anticline to Bridger		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	97	93
Off-ROW Multi-purpose yard	–	–
Off-ROW Fly Yards	12	–
Off-ROW Access Roads	12	4
OPGW Regeneration Station(s) - 0	0	0
Jim Bridger 345-kV and portion of Anticline Substations	40	40
Segment Subtotal	***161***	***137***

Table B-6. Summary of Land Required for Construction and Operations (continued)

Segment	Land Required for Construction (acres) [1/, 2/]	Land Required for Operations (acres) [1/]
Segment 4 – Anticline to Populus		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	6,325	5,983
Off-ROW Multi-purpose yard	120	
Off-ROW Fly Yards	554	
Off-ROW Access Roads	997	307
OPGW Regeneration Station(s) - 3	3	1.5
Portions of Anticline and Populus Substations	105	97
Segment Subtotal	***8,104***	***6,389***
Segment 5 – Populus to Borah		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	1,799	1,682
Off-ROW Multi-purpose yard	40	
Off-ROW Fly Yards	171	
Off-ROW Access Roads	263	80
OPGW Regeneration Station(s) - 0	0	0
Portions of Populus and Borah Substations	50	44
Segment Subtotal	***2,323***	***1,806***
Segment 6 – Borah to Midpoint		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	17	17
Off-ROW Multi-purpose yard	Multi-purpose yards from adjacent segments will be used.	–
Off-ROW Fly Yards	Fly yards from adjacent segments will be used.	–
Off-ROW Access Roads	Minimal roads will be required around substations for required work.	–
OPGW Regeneration Station(s) - 0	0	–
Portions of Borah and Midpoint Substations	35	31
Segment Subtotal	***52***	***48***
Segment 7 – Populus to Cedar Hill		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	3,795	3,571
Off-ROW Multi-purpose yard	56	–
Off-ROW Fly Yards	398	–
Off-ROW Access Roads	367	112
OPGW Regeneration Station(s) - 2	2	1
Portions of Populus and Cedar Hill Substations	52	45
Segment Subtotal	***4,670***	***3,729***
Segment 8 – Midpoint to Hemingway		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	4,230	3,982
Off-ROW Multi-purpose yard	100	–
Off-ROW Fly Yards	487	–
Off-ROW Access Roads	323	99
OPGW Regeneration Station(s) - 2	2	1
Portion of Midpoint Substation	15	13
Segment Subtotal	***5,157***	***4,095***

Table B-6. Summary of Land Required for Construction and Operations (continued)

Segment	Land Required for Construction (acres) 1/, 2/	Land Required for Operations (acres) 1/
Segment 9 – Cedar Hill to Hemingway		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	5,229	4,916
Off-ROW Multi-purpose yard	120	–
Off-ROW Fly Yards	563	–
Off-ROW Access Roads	663	203
OPGW Regeneration Station(s) - 3	3	1.5
Portion of Cedar Hill Substation	22	18
Segment Subtotal	***6,600***	***5,139***
Segment 10 – Midpoint to Cedar Hill		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	1,122	1,030
Off-ROW Multi-purpose yard	20	–
Off-ROW Fly Yards	120	–
Off-ROW Access Roads	50	15
Off-ROW Crossings	–	–
OPGW Regeneration Station(s) - 0	–	–
Portions of Midpoint and Cedar Hill Substations	36	31
Segment Subtotal	***1,348***	***1,076***
Total Project		
T-Line ROW (including Off ROW Wire Pulling/ Splicing Sites)	29,353	27,673
Off-ROW Multi-purpose yard	586	–
Off-ROW Fly Yards	2,964	–
Off-ROW Access Roads	3,744	1,146
OPGW Regeneration Station(s) - 13	13	6.5
Substation	532	464
Total Project	***37,192***	***29,290***

1/ The exact land requirements will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, and economics. Alignment options may also slightly increase or decrease these values.
2/ Acreages in table are rounded to the nearest acre; columns therefore may not sum exactly.
3/ Values are given in 0.5-acre increments because regeneration sites are typically 0.5 acre each.
Assumptions/Notes:
1. ROW width for 500-kV single circuit segments is 250 feet. The ROW width for 230-kV H-frame segments is 125 feet and for 345-kV H-frame on 3A is 150 feet. The dimensions of the tower construction pads and area permanently occupied by towers after restoration are based on the dimensions specified in Table B-1.
2. The multi-purpose yards will serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, fabrication assembly and stations for equipment maintenance, and concrete batch plants.
3. Multi-purpose yards will be approximately 20 acres for 500 kV and 10 acres for 230 kV. They will be located at each end of a segment, and every 20 to 30 miles along the line.
4. Fly yards will be 10 to 15 acres located approximately every 5 miles. Values in table assume helicopter construction for all segments. The construction contractor may choose to construct using ground-based techniques, therefore not utilizing fly yards.
5. For 500-kV, wiring pulling/splicing sites will be the ROW width x 700 feet located approximately every 9,200'; for 230-kV and 345-kV, ROW width x 400 feet located every 9,200 feet. Typically, only sites that would be off of the ROW would be at large angle dead-ends. It is estimated that one in four sites will be off of the ROW.
6. Refer to Table B-9 for access road mileages for each segment.

All negotiations with landowners are conducted in good faith, and the Project's effect on the parcel or other concerns the landowner may have will be addressed. ROWs for transmission line facilities on private lands are obtained as perpetual easements. Land for substation or regeneration stations is obtained in fee simple where located on private land. A good faith effort will be made to purchase the land and/or obtain easements on private lands through reasonable negotiations with the landowners.

Chapter 1, Section 1.3.3.3 describes NERC and WECC reliability standards and capacity needs for Gateway West. To receive a rating from WECC that allows for the capacity needed to serve present and future loads within the Companies' service areas, the Gateway West transmission lines must be located at least 1,500 feet from the nearest existing 230 kV or higher-voltage transmission lines and is being designed to be located the maximum span distance away when adjacent to longer spans. Land between ROWs that are separated to meet reliability criteria would not be encumbered with an easement but could practically be limited in land uses due to the proximity of two or more large transmission lines.

3.1.3 Land Disturbance

Land disturbance as described in Table B-7 is the estimated amount of land that will be disturbed during construction or required to be permanently converted to operational uses. These uses are less than the amount of land for which operational controls are required over the life of the Project as described in Table B-6.

Estimates for construction disturbances are based on best professional judgment and experience with this type of project. Estimates were made of disturbance areas resulting from each construction activity involving structure placement, access roads, yards, and new and expanded substations. Sections 2.2 through 2.4 of this appendix describe typical disturbance areas for each construction activity.

3.2 Transmission Line Removal (Segment 1W(c) only)

3.2.1 Access for Removal

In order to construct Segment 1W(c), the existing 230kV transmission line must be removed between the existing Dave Johnston Power Plant substation and the proposed Aeolus Substation. This line will be replaced in its entirety, including structures. Section 3.3, below, details the construction of the new transmission line.

Existing access roads or overland travel, including the roads and trails used for construction, maintenance and inspection of the line, will be used to remove the existing line. All roads or access ways or required disturbance areas utilized for line removal work will be surveyed, cleared and staked prior to any construction. On completion of line removal work, all access or spur roads shall be removed in their entirety and in accordance with project requirements and restrictions.

3.2.2 Site Preparation

In general, the existing pads surrounding existing structures are sufficient to allow access for the bucket trucks and small cranes needed to remove the structures. If needed, vegetation on the existing pads may be cut or crushed to allow safe equipment access. Grading will only be used if essential for worker safety. Erosion control

Table B-7. Summary of Land Disturbance Resulting from Construction and Operations

Segment/Project Component	Land Affected During Construction (acres) [1/, 2/]	Land Affected During Operations (acres) [1/]
Segment 1W(a)		
One Single-Circuit Tower 230-kV Pad	229	5
Dead-end Angle 230-kV Pulling Sites	44	–
Existing Roads, Needing Improvement	288	89
New Access Roads	177	63
Fly Yards	–	–
OPGW Regeneration Station – 1	1	0.5
Single Circuit Pulling-Tensioning 230-kV	13	–
Multi-Purpose Yards 230-kV	–	–
Portion of Windstar and Aeolus Substations	35	25
Segment 1W(a) Subtotal	***787***	***182***
Segment 1W(c)		
One Single-Circuit Tower 230-kV Pad	236	5
Dead-end Angle 230-kV Pulling Sites	50	
Existing Roads, Needing Improvement	219	74
New Access Roads	72	25
Fly Yards	312	–
OPGW Regeneration Station – 0	–	–
Single-Circuit Pulling-Tensioning 230-kV	14	–
Multi-Purpose Yards 230-kV	30	–
Heward Substation & portion of Aeolus Substation	37	30
Segment 1W(c) Subtotal	***970***	***134***
Segment 2		
One Single--Circuit Tower 500k-V Pad	560	22
Dead-end Angle Pulling Single--Circuit 500-kV	200	–
Existing Roads, Needing Improvement	340	105
New Access Roads	208	73
Fly Yards	250	–
OPGW Regeneration Station – 1	1	0.5
Single-Circuit Pulling-Tensioning 500-kV	112	–
Multi-Purpose Yards 500-kV	60	–
Portion of Aeolus Substation	60	50
Segment 2 Subtotal	***1,791***	***250***
Segment 3		
One Single--Circuit Tower 500-kV Pad	278	11
Dead-end Angle Pulling Single--Circuit 500-kV	48	
Existing Roads, Needing Improvement	65	20
New Access Roads	136	46
Fly Yards	112	
OPGW Regeneration Station – 1	1	0.5
Single-Circuit Pulling-Tensioning 500-kV	85	
Multi-Purpose Yards 500-kV	40	
Portion of Anticline Substation	45	40
Segment 3 Subtotal	***810***	***118***
Segment 3A		
One Single-Circuit Tower 345-kV Pad	13	–
Dead-end Angle Pulling Single-Circuit 345-kV	7	–
Existing Roads, Needing Improvement	1	–
New Access Roads	16	5
Fly Yards	12	–
OPGW Regeneration Station – 0	–	–
Single-Circuit Pulling-Tensioning 345-kV	–	–
Multi-Purpose Yards 500-kV	–	–

Table B-7. Summary of Land Disturbance Resulting from Construction and Operations (continued)

Segment/Project Component	Land Affected During Construction (acres) [1/, 2/]	Land Affected During Operations (acres)
Segment 3A (continued)		
Jim Bridger 345-kV and portion of Anticline Substations	40	40
Segment 3A Subtotal	***89***	***45***
Segment 4		
One Single-Circuit Tower 500-kV Pad	1,229	49
Dead-end Angle Pulling Single-Circuit 500-kV	324	–
Existing Roads, Needing Improvement	663	204
New Access Roads	550	186
Fly Yards	562	–
OPGW Regeneration Station – 3	3	1.5
Single-Circuit Pulling-Tensioning 500-kV	346	–
Multi-Purpose Yards 500-kV	120	–
Portion of Anticline and Populus Substations	105	97
Segment 4 Subtotal	***3,902***	***538***
Segment 5		
One Single-Circuit Tower 500-kV Pad	353	14
Dead-end Angle Pulling Single-Circuit 500-kV	138	–
Existing Roads, Needing Improvement	198	61
New Access Roads	140	49
Fly Yards	175	–
OPGW Regeneration Station – 0	–	–
Single-Circuit Pulling-Tensioning 500-kV	85	–
Multi-Purpose Yards 500-kV	40	–
Portion of Populus and Borah Substations	50	44
Segment 5 Subtotal	***1,179***	***169***
Segment 6		
Portion of Borah and Midpoint Substations	35	31
Substation Additional Disturbance	17	17
Segment 6 Subtotal	***52***	***48***
Segment 7		
One Single-Circuit Tower 500-kV Pad	751	30
Dead-end Angle Pulling Single-Circuit 500-kV	227	–
Existing Roads, Needing Improvement	270	85
New Access Roads	300	107
Fly Yards	400	–
OPGW Regeneration Station – 2	2	1
Single-Circuit Pulling-Tensioning 500-kV	193	–
Multi-Purpose Yards 500-kV	60	–
Portion of Populus and Cedar Hill Substation	52	45
Segment 7 Subtotal	***2,255***	***268***
Segment 8		
One Single-Circuit Tower 500-kV Pad	825	33
Dead-end Angle Pulling Single-Circuit 500-kV	255	–
Existing Roads, Needing Improvement	310	96
New Access Roads	277	106
Fly Yards	512	–
OPGW Regeneration Station – 2	2	1
Single-Circuit Pulling-Tensioning 500-kV	221	–
Multi-Purpose Yards 500-kV	100	–
Portion of Midpoint Substation	15	13
Segment 8 Subtotal	***2,517***	***249***

Table B-7. Summary of Land Disturbance Resulting from Construction and Operations (continued)

Segment/Project Component	Land Affected During Construction (acres) [1/, 2/]	Land Affected During Operations (acres)
Segment 9		
One Single-Circuit Tower 500-kV Pad	1,016	41
Dead-end Angle Pulling Single-Circuit 500-kV	337	–
Existing Roads, Needing Improvement	562	175
New Access Roads	355	128
Fly Yards	612	–
OPGW Regeneration Station – 3	3	1.5
Single-Circuit Pulling-Tensioning 500-kV	270	–
Multi-Purpose Yards 500-kV	120	–
Portion of Cedar Hill Substation	22	18
Segment 9 Subtotal	***3,297***	***364***
Segment 10		
One Single-Circuit Tower 500-kV Pad	225	9
Dead-end Angle Pulling Single-Circuit 500-kV	117	–
Existing Roads, Needing Improvement	61	19
New Access Roads	45	17
Fly Yards	125	–
OPGW Regeneration Station – 0	–	–
Single-Circuit Pulling-Tensioning 500-kV	46	–
Multi-Purpose Yards 500-kV	20	–
Portion of Midpoint Substation and Cedar Hill Substations	36	31
Segment 10 Subtotal	***675***	***76***
Project Totals		
Pads (including Segment 6)	5,732	237
Deadend Pulling	1,747	–
Existing Road - Improved	2,977	928
New Road	2,276	805
Fly Yard	3,072	
Regeneration Site – 13	13	6.5
Pulling-Tensioning	1,385	
Multi-purpose yard	590	
Substations	532	464
Grand Total	**18,324**	**2,441**

1/ The exact land requirements will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, and economics. Alignment options may also slightly increase or decrease these values.
2/ Acreages in table are rounded to the nearest acre; columns therefore may not sum exactly.
3/ Values are given in 0.5-acre increments because regeneration sites are typically 0.5 acre each.
Assumptions/Notes:
1. ROW width for 500-kV single circuit segments is 250 feet, for the 345-kV H-Frame segment 150 feet, and for 230-kV H-frame segments is 125 feet.
2. The multi-purpose yards will serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, fabrication assembly and stations for equipment maintenance, and concrete batch plants.
3. Multi-purpose yards will be approximately 20 acres for 500-kV and 10 acres for 230-kV. They will be located at each end of a segment, and every 20 to 30 miles along the line.
4. Fly yards will be 10 to 15 acres located every 5 miles. Values in table assume helicopter construction throughout all single-circuit 500-kV and 230 kV-segments. The construction contractor may choose to construct using ground-based techniques, therefore not utilizing fly yards.
5. For 500- kV, wiring pulling/splicing sites will be the ROW width x 700 feet located every 9,200 feet; for 230-kV and 345-kV, ROW width x 400 feet located every reel length or approximately 9,200 feet. Typically, only sites that would be off of the ROW would be at large angle dead-ends. It is estimated that one in four sites will be off of the ROW.
6. Refer to Table B-9 for access road mileages for each segment.

measures as specified in the SWPPP and Appendix Z of this POD will be employed where needed.

3.2.3 Remove Conductors

The next step after establishment of access and a safe work area for the lineworkers is to remove the conductors and shield wire. To remove the conductors, the line is taken out of service. Bucket trucks are generally used to hoist the workers to the wire positions to allow workers to remove the hardware holding the wires in place, and drop the wires to the ground. In some cases workers may climb the structures to accomplish this. A wire spooling machine is attached to one end of each wire after the wires are all on the ground. Each wire is wound onto reels to be hauled to one of the designated multi use yards, or to an approved offsite disposal area.

Where wires to be removed cross over other energized lines, guard equipment or structures are used to prevent the wires being removed from coming in contact with the energized wires (utilizing the same process as used when installing new wires).

3.2.4 Remove Structures

Structure removal follows wire removal. In most cases, a 20-30T lift capacity crane attaches to the structure upper section and holds it in place while the poles are cut off near ground and the structure is laid to the ground for disassembly. In a few instances, workers in bucket trucks or climbing remove the insulators, hardware, braces and crossarms in the air and lower them to the ground, leaving the poles standing. Once all the equipment has been removed, the poles are cut off near ground and allowed to fall (or may be supported by crane and lowered to ground).If there are any guy wires and anchors they will be removed at this time as well. All materials are loaded onto trucks and hauled to a multi-purpose yard or to a preapproved disposal site. Any treated wood that is or given away to an outside party will be accompanied by a Bill of Sale and Consumer Information Sheets that describe any health and environmental risks associated with different types of treated wood (i.e. proper and improper uses).

3.2.5 Site Reclamation

After conductors, structures, and associated hardware have been removed, workers dig out around the base of the remaining pole section and cut off the pole below ground. The resulting holes are filled and compacted with soils that have been approved for backfill and from approved sources if not available on-site. The final step is to remove and restore work areas, pads, and other disturbed areas to a condition agreed upon by the landowner, tenant or managing agency. Appendix D of this POD, the Reclamation Plan, and Appendix Z, Mitigation Measures, contain the plans and requirements for site restoration and reclamation.

3.3 Transmission Line Construction

The following sections detail the transmission line construction activities and procedures for Gateway West. Construction equipment and work force requirements are described in Section 2.6. Figure B-13 illustrates the transmission line construction sequence. Substation construction is described in Section 2.4 of this appendix. Various construction activities will occur during the process, with several crews operating

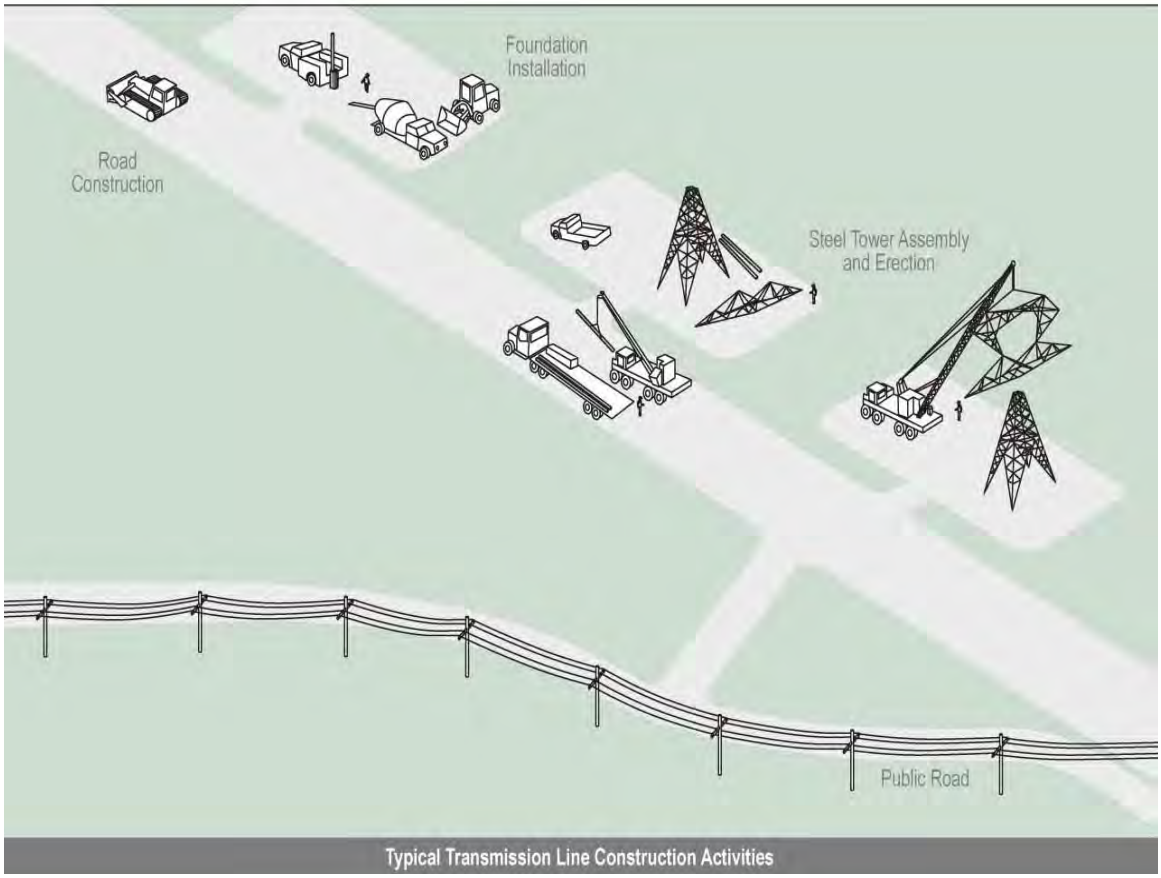


Figure B-13. Transmission Line Construction Sequence

simultaneously at different locations. The proposed construction schedule is described in Section 3.6.4 of this appendix.

For the entire Proposed Route, 990 miles of transmission lines and associated support structures will be constructed, including 74 miles to be reconstructed. Of this total, 837.9 miles will be constructed using 500-kV structures. Approximately 147.4 miles will be constructed using 230-kV steel H-frame structures and approximately 5.1 miles will be 345-kV construction between the proposed Anticline Substation and the expansion of the existing 345-kV substation at the Jim Bridger Power Plant.

3.3.1 Transmission Line System Roads

Construction of the new 230-kV, 345-kV, and 500-kV transmission lines will require vehicle, truck, and crane access to each new structure site for construction crews, materials, and equipment. Similarly, construction of other Project components such as yards and substation sites will require vehicle access.

Transmission line ROW access will be a combination of new access roads, improvements to existing roads, and use of existing roads as is. New access roads or improvements to existing access roads will be constructed using a bulldozer or grader, followed by a roller to compact and smooth the ground. Front-end loaders will be used to move the soil locally or off site. Typically, access to the transmission line ROW and tower sites requires a 14-foot-wide travel way for straight sections of road and a 16- to

20-foot-wide travel way at corners to facilitate safe movement of equipment and vehicles. Wherever possible, new access roads will be constructed within the proposed transmission line ROW, or existing roads will be used. In other cases, access roads will be required between the proposed transmission line and existing roads. Erosion control and sedimentation measures such as at-grade water bars, culverts, sediment basins, or perimeter control will be installed as required to minimize erosion during and subsequent to construction of the Project.

On level terrain where underlying soils conditions are suitable, road construction may only require back-dragging a blade to remove brush to facilitate construction. In the 2010 POD, we estimated the average disturbance across the entire project due to access road construction to be 16 feet wide. Upon more careful evaluation of the side slopes these roads do or will cross, we have revised that estimate to 24 feet as an average across the approximately 1,000 miles of the proposed route.
This average was estimated based on the assumption that the travelway will be 14 feet wide for straight segments of the road and 16 to 20 feet wide in turns. To achieve this travelway width, a variable amount of disturbance, including cuts and fills, ditching, and other drainage will occur. The steeper the side slope, the larger the disturbance width, because the cuts (into the bank above the road) and fills (compacted material forming the support for the travelway below the road) need to be sloped away from the road to be stable, depending on the parent material and soil type crossed. Where the road curves on steeper ground to follow topography or uses switchbacks to ascend a hill, the wider travelway (16 – 20') is required to accommodate the heavy equipment used during construction. Table B-8, below, summarizes the assumed average road widths for various side slope classes.

Table B-8. Slope Class and Estimated Average Road Width

Slope Class (% slope)	Average Estimated Road Disturbance for Construction (feet)	% of Proposed Route that Crosses This Slope Class	Weighted Relative Road Width (feet)
0-5	18	53	9
5-10	20	20	4
10-20	30	15	4
>20	50	12	6
Average			24

After Project construction, existing and new permanent access roads will be used by maintenance crews and vehicles for inspection and maintenance activities. New roads created to access tower sites will be revegetated but not restored to original contours to allow for emergency access to the tower location and for periodic inspection and maintenance activities. Temporary construction roads not required for future maintenance access will be reclaimed and restored to as similar to original contours as practicable after completion of Project construction. For example, access roads to yards will not be required once the yard is regraded and vegetated. Gates will be installed as required to restrict unauthorized vehicular access to the ROW. Roads retained for operations will be seeded with a grass mix and allowed to revegetate. For normal maintenance activities, an 8-foot portion of the road will be used and vehicles would drive over the vegetation. For non-routine maintenance requiring access by

larger vehicles, the full width of the access road may be used. Access roads will be repaired, as necessary, but not be routinely graded. Vegetation (e.g., taller shrubs and trees) that may interfere with the safe operation of equipment will be managed on a cyclical basis.

Table B-9 lists the estimated miles of proposed access roads by segment based on preliminary engineering.

Table B-9. Miles of New and Improved Access Roads[1/]

Segment	New Access Roads		Existing Access Roads to be Improved		Totals	
	Miles	Acres[2/]	Miles	Acres[2/]	Miles	Acres[2/]
Segment 1W(a)	64.8	177	91.6	288	156.4	465
Segment 1W(c)	26.1	72	76.5	219	102.6	291
Segment 2	75.6	208	107.7	340	183.3	548
Segment 3	48.0	136	20.7	65	68.7	201
Segment 3A	5.3	16	0.4	<1	5.7	17
Segment 4	192.4	550	210.7	663	403.1	1,213
Segment 5	51.8	140	63.1	198	114.9	338
Segment 6[3/]	–	–	–	–	–	–
Segment 7	113.2	300	87.6	270	200.8	570
Segment 8	112.7	277	98.7	310	211.4	587
Segment 9	135.5	355	180.1	562	315.6	917
Segment 10	18.5	45	20.1	61	38.6	106
Total	844	2,276	957	2,977	1,801	5,253

1/ Includes on- and off-ROW access roads outside the disturbance of the tower pads, pulling and tensioning sites, and on-ROW fly yards.
2/ Acreages in table are rounded to the nearest acre and were calculated based on an average 26-foot width; column therefore may not sum exactly.
3/ The disturbance for new or improved access roads for Segment 6 is accounted for under tower disturbance calculation in Table B-7.

3.3.2 Soil Borings

At the discretion of the Companies, soil borings will be completed along the route to determine depth to bedrock and the engineering properties of the soil. Based on the soil properties, foundation designs will be completed for transmission line towers and other structures. Borings will be made with truck- or track-mounted equipment. The borings are approximately 4 inches in diameter, range from 15 to over 60 feet deep, and be backfilled with the excavated material upon completion of soil sampling.

3.3.3 Multi-Purpose Yards

Construction of Gateway West will begin with the establishment of multi-purpose yards (yards). Yards, about 20 acres each for 500-kV construction and 10 acres each for 230-kV construction, are typically located approximately every 20 to 30 miles along or in proximity to the route. Because Segment 3A, the only portion of 345kV line, is only 5.1 miles long, it will utilize one of the substations or existing yards established for Segments 3 or 4. Where feasible, yards are located near a distribution power source, where public services such as water are available, along well-improved and maintained county roads, and near or on road types that can support the amount and type of traffic needed during the construction process.

The yards serve the following functions:

- Material storage yards (sites for material and equipment storage)
- Structure work sites (where structures to be transported to their installation sites can be partially or completely assembled in advance)
- Concrete batch plant locations or sites
- Show up yards (reporting locations for workers and parking space for vehicles)
- Staging yards (locations where materials from larger storage areas can be assembled for a particular task)
- Laydown yards
- Temporary use yards
- Temporary work areas (including but not limited to vehicle and equipment maintenance)

3.3.4 Fly Yards

Helicopter Fly Yards (Fly Yards) may be located approximately every 5 miles along the route where helicopter construction is planned, and occupy approximately 10 to 15 acres. These yards are generally more temporary in nature than multi-purpose yards and are located along the project ROW when feasible and terrain is suited. Generally the fly yard does not require the same level of access or services as the multi-purpose yard, as the bulk of their intended use is for temporary staging, assembling, and then flying out of products or completed assemblies. However, all activities listed above for multi-purpose yards may occur in a fly yard, but at a smaller scale in comparison.

When necessary, multi-purpose yards and helicopter fly yards will be fenced and their gates locked. Security guards will be stationed where needed. Yard locations will be finalized following discussion with the land management agency or negotiations with landowners. In some areas, the yard may need to be scraped by a bulldozer and a temporary layer of rock laid to provide an all-weather surface. Unless otherwise directed by the landowner or land manager, the rock will be removed from the yard upon completion of construction and the area will be restored.

Table B-10 lists the frequency and estimated acreage disturbance for multi-purpose yards and helicopter fly yards by segment based on preliminary engineering. In locating yards, the preference is for relatively flat areas with easy existing access to minimize site grading and new road construction. The multi-purpose yards will be located in previously disturbed sites or in areas of minimal vegetative cover where possible.

Table B-10. Construction Multi-purpose Yards and Helicopter Fly Yards

Proposed Segment	Multi-Purpose Yards			Fly Yards		
	Quantity	Approximate Acreage Per Location	Approximate Acreage Total	Quantity	Approximate Acreage Per Location	Approximate Acreage Total
Segment 1W(a)[1/]	–	–	–	–	–	–
Segment 1W(c)	3	10	30	25	12.5	312
Segment 2	3	20	60	20	12.5	250
Segment 3	2	20	40	9	12.5	112
Segment 3A	–	–	–	1	12.5	12.5
Segment 4	6	20	120	45	12.5	562
Segment 5	2	20	40	14	12.5	175
Segment 6[2/]	–	–	–	–	–	–
Segment 7	3	20	60	32	12.5	400
Segment 8	5	20	100	41	12.5	512
Segment 9	6	20	120	49	12.5	612
Segment 10	1	20	20	10	12.5	125

1/ Co-located with Segment 1W(c).
2/ Multi-purpose yard and fly yard disturbance are accounted for in the substation calculation.

3.3.5 Site Preparation

Individual structure sites will be cleared to install the transmission line support structures and facilitate access for future transmission line and structure maintenance. Clearing individual structure sites will be done using a bulldozer to blade the required area. At each single-circuit 500-kV structure location, a flat area approximately 250 feet by 250 feet will be needed for construction laydown, tower assembly, and erection at each tower site. An area approximately 150 feet by 125 feet is required for 230-kV structures and an area 150 feet by 150 feet for 345-kV structures. This flat area provides a safe working space for placing equipment, vehicles, and materials. The work area is cleared of vegetation only to the extent necessary.

Where a structure is located on steep side slopes, a flat work area for structure installation and maintenance will require cutting into the side slope and using the cut material as fill to form part of the flat work area, or making a full bench cut and sidecasting the spoil below the pad. The actual dimensions of the flat work area disturbance may vary depending on factors such as terrain and vegetation. Total disturbance, including cuts and fills or spoils, will be larger than the flat work area and varies by side slope and soil type. Table B-11, below, provides rough estimates of the range of additional disturbance where structures must be installed on steep ground. The estimates include sidecast spoil as well as the amount of area needed for the cut and fill to create the pad itself.

Table B-11. Estimated Disturbance from Structure Pads by Slope Class

Slope class (% slope)	Disturbance Dimension (ft)	Acres of Total Disturbance Per Pad
0-5	250 x 250	1.4
5-10	375 x 300	2.6
10-20	450 x 300	3.1
>20	600 x 350	4.8

Disturbed soil will be managed during construction to limit erosion and sedimentation as specified in the SWPPP.

After line construction, all areas not needed for normal transmission line maintenance, including fire and personnel safety clearance areas, will be graded to blend as near as possible with the natural contours, then revegetated as required. Structure pads will be revegetated but not recontoured as the entire work area may be needed for maintenance. On steep slopes, the cuts and fills will be revegetated but not recontoured as the flat work area will be retained for safe live line maintenance (see Section 4.1.3 and Figures B-16 through B-18, below) and emergency response.

Additional equipment may be required if solid rock is encountered at a structure location. Rock-hauling, hammering, or blasting may be required to remove the rock. Excess rock that is too large in size or volume to be spread at the individual structure sites will be hauled away and disposed of at approved landfills or at a location specified by the landowner.

3.3.6 Install Structure Foundations

Table B-1 lists the number of 500-kV, 230-kV, and 345-kV support structures to be installed. Note that the short interconnection between the proposed Anticline Substation and the 345-kV yard at the existing Jim Bridger Substation is separately listed as Segment 3A.

H-Frame Installation

Each 230-kV and each 345-kV tangent H-frame would require the poles to be directly embedded in the ground. Holes are drilled in the ground using a truck- or track-mounted auger. The diameter of the hole excavated for embedment is typically the pole diameter plus 18 inches. The depth is typically 10 percent of the pole length plus 2 feet for 230-kV and 10 percent of the pole length plus 5 feet for 345-kV; in the case of this Project, it will be between 9 and 12 feet for 230-kV and 14 to 18 feet for 345-kV. Depending on underlying soil and rock conditions, the 345-kV H-frames may be supported by steel-reinforced concrete drilled piers.

When the pole is placed in the hole, native or select backfill is used to fill the voids around the perimeter of the hole. When backfill must be imported, material is obtained from commercial sources or from areas free of noxious weed species. See Section 1.1.1 of this appendix for a description of an H-frame structure and Figure B-1 for an illustration. Similarly, where solid rock is encountered, blasting (see Section 2.5.1 of this appendix) may be required.

Lattice Steel Tower Foundations

Each 500-kV support structure requires the installation of foundations, which are typically drilled concrete piers. Each 345-kV angle structure (and possibly each 345-kV H-frame structure) also requires the installation of foundations, which are typically drilled concrete piers. First, holes are excavated for each structure depending on the structure type - 4 holes for lattice, 3 holes for 345-kV angle structures, and 2 holes for H-frames (if necessary). The holes are drilled using truck- or track-mounted augers of various sizes depending on the diameter and depth requirements of the hole to be drilled. Table B-2 provides the dimensions of each of the foundation holes required for each structure. See Section 1.1.1 of this appendix for a description of each structure type and Figures B-2 and B-3 for structure illustrations. Prior to excavation, topsoil is

stripped from the area around the tower and stockpiled to prevent contamination. Excavation spoils are spread around the tower pad upon completion of the foundations. As part of final restoration, the stockpiled topsoil is spread over the excavation spoils and revegetated. Each foundation extends approximately 1 foot above the ground level.

Where solid rock is encountered, blasting (see Section 2.5.1 of this appendix), rock hauling, or the use of a rock anchoring or micropile system may be required. Micropiles are high capacity, small diameter (5-inch to 12-inch) drilled and grouted in-place piles designed with steel reinforcement to resist structural loading. The rock anchoring or micropile system will be used in areas where site access is limited or adjacent structures could be damaged as a result of blasting or rock hauling activities.

In environmentally sensitive areas with very soft soils, a HydroVac, which uses water pressure and a vacuum, may be used to excavate material into a storage tank. Alternatively, a temporary casing may be used during drilling to hold the excavation open, after which the casing is withdrawn as the concrete is placed in the hole. Alternatively, in areas where soil conditions preclude temporary casing withdrawal, it may be abandoned in place. The steel is cut below grade and backfilled once the foundation reveal has cured. In areas where it is not possible to operate large drilling equipment due to access or environmental constraints, hand digging may be required.

Reinforced-steel anchor bolt cages are installed after excavation and prior to structure installation. These cages are designed to strengthen the structural integrity of the foundations and are assembled at the nearest multi-purpose yard and delivered to the structure site via flatbed truck or helicopter. These cages are inserted in the holes prior to pouring concrete. The excavated holes containing the reinforcing anchor bolt cages are filled with concrete (Table B-2).

Typically, and because of the remote location of much of the transmission line route, concrete will be provided from portable batch plants set up approximately every 25 miles along the line route in one of the multi-purpose yards. Concrete will be delivered directly to the site in concrete trucks with a capacity of up to 10 cubic yards. In the more developed areas along the route and in proximity to the substations, the construction contractor may use local concrete providers to deliver concrete to the site when economically feasible.

3.3.7 Erect Support Structures

The 230-kV and 345-kV H-frame structures will be framed on site. Two methods of assembly can be used to accomplish this, the first of which is to assemble the poles, braces, cross arms, hardware, and insulators on the ground. A crane is then used to set the fully framed structure by placing the poles in the excavated holes. Alternatively, aerial framing can be used by setting the poles in the ground first and assembling the braces, cross arms, hardware, and insulators in the air. A crane moves along the ROW from structure to structure site setting the structures.

The 500-kV lattice steel structures are assembled on site, except where helicopter delivery is employed, as described in Section 2.5.2 of this appendix. Steel members for each structure are delivered to the site by flatbed truck. Assembly is facilitated on site by a truck-mounted crane. Subsequent to assembly, the structures are lifted onto

foundations using a large crane designed for erecting towers. The crane moves along the ROW from structure to structure site erecting the towers. Figure B-13 illustrates the tower erection sequence.

3.3.8 String Conductors, Shield Wire, and Fiber Optic Ground Wire

Conductor, shield wire, and OPGW are placed on the transmission line support structures by a process called stringing. The first step to wire stringing is to install insulators (if not already installed on the structures during ground assembly) and stringing sheaves. Stringing sheaves are pulleys that are temporarily attached to the lower portion of the insulators at each transmission line support structure to allow conductors to be pulled along the line. Figure B-14 illustrates the sequence of steps in installing conductors.

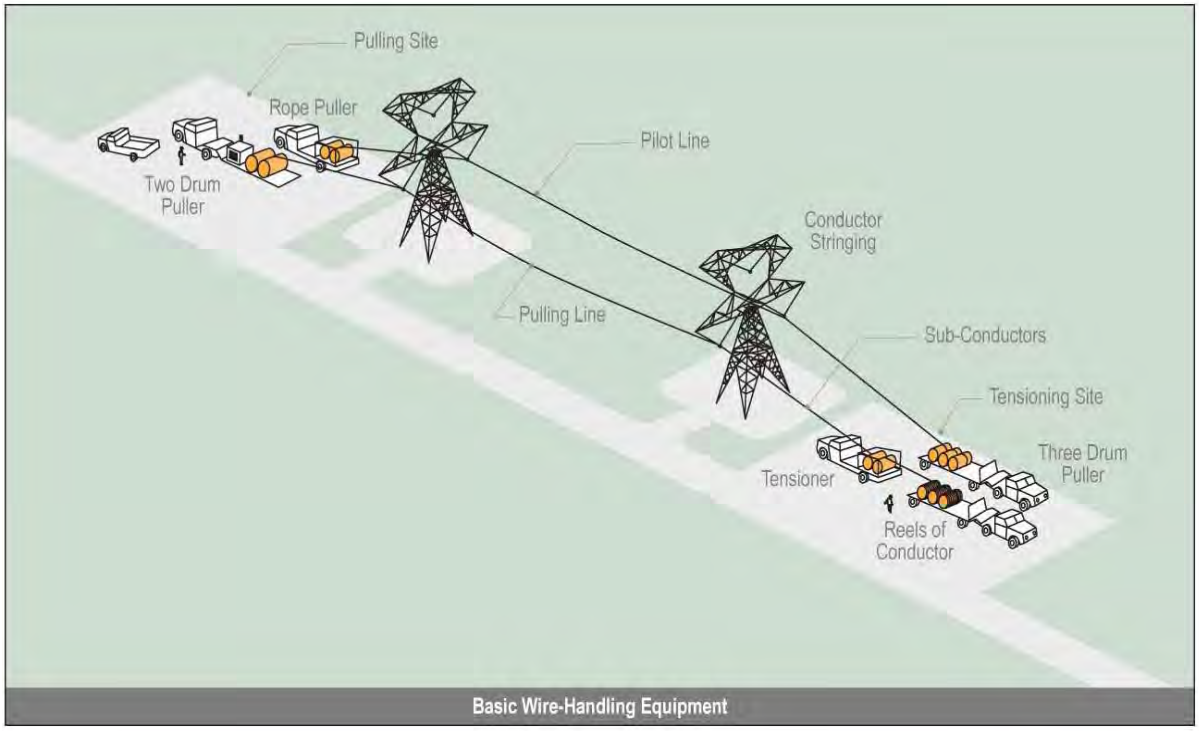


Figure B-14. Conductor Installation

Temporary clearance structures (also called guard structures) are erected where required prior to stringing any transmission lines. The temporary clearance structures are typically vertical wood poles with cross arms and are erected at road crossings or crossings with other energized electric and communication lines to prevent contact during stringing activities. Bucket trucks may also be used to provide temporary clearance. Bucket trucks are trucks fitted with a hinged arm ending in an enclosed platform called a bucket, which can be raised to let the worker in the bucket service portions of the transmission structure as well as the insulators and conductors without climbing the structure.

Once the stringing sheaves and temporary clearance structures are in place, the initial stringing operation commences with the pulling of a lighter weight sock line through the sheaves along the same path the transmission line follows. Typically the sock line is

pulled in via helicopter. The sock line is attached to the hard line, which follows the sock line as it is pulled through the sheaves. The hard line is then attached to the conductor, shield wire, or OPGW to pull them through the sheaves into their final location. Pulling the lines may be accomplished by attaching them to a specialized wire stringing vehicle. Following the initial stringing operation, pulling and tensioning the line is required to achieve the correct sagging of the transmission lines between support structures.

Pulling and tensioning sites for 500-kV construction are required approximately every 3 miles along the ROW and are approximately 4 acres each to accommodate required equipment. Pulling and tensioning sites for 230-kV and 345-kV construction are required for each reel length (9,250 feet or approximately every 2 miles) along the ROW and are approximately 1.2 acres each to accommodate required equipment. Equipment at sites required for pulling and tensioning activities includes tractors and trailers with spooled reels that hold the conductors and trucks with the tensioning equipment. To the extent practicable, pulling and tensioning sites are located within the ROW. Depending on topography, minor grading may be required at some sites to create level pads for equipment. Finally, the tension and sag of conductors and wires are fine-tuned, stringing sheaves are removed, and the conductors are permanently attached to the insulators at the support structures.

At the tangent and small angle structures, the conductors are attached to the insulators using clamps to “suspend” the conductors from the bottom of the insulators. At the larger angle dead-end structures, the conductors cannot be pulled through and so are cut and attached to the insulator assemblies at the structure “dead ending” the conductors. There are two primary methods to attach the conductor to the insulator assembly at the dead-end structure. The first method, hydraulic compression fittings, uses a large press and pump that closes a metal clamp or sleeve onto the conductor. This method requires heavy equipment and is time consuming. The second method, implosive fittings, uses explosives to compress the metal together. Implosive fittings do not require heavy equipment, but do create noise similar to a gunshot when the primer is struck. Implosive sleeves may be set off either one at a time or in groups. The implosive type sleeve is faster to install and results in a secure connection between the conductor and the sleeve. Implosive sleeves are planned for the Project.

The 500-kV and 345-kV single-circuit lines use a three conductor bundle for each phase. At each single-circuit 500-kV or 345-kV dead-end structure, 18 implosive dead-end sleeves (six per phase, one for each of the three subconductors on each of the three phases, and on each side of the structure) will be required. Additionally, 18 compression or implosive sleeves will be required to fabricate and install the jumpers that connect the conductors from one side of the dead-end structure to the other, for a total of 36 sleeves for each single-circuit dead-end structure.

The 230-kV single-circuit lines use a two-conductor bundle for each phase. Each 230-kV dead-end structure requires 12 implosive or compression type sleeves to dead-end the conductors and 12 sleeves to fabricate the jumpers, for a total of 24 sleeves at each dead-end structure. For the overall Project, approximately 16,000 to 18,000 compression or implosive fittings will be used.

3.3.9 Cleanup and Site Reclamation

Construction sites, yards, and access roads will be kept in an orderly condition throughout the construction period. Approved enclosed refuse containers will be used throughout the Project. Refuse and trash will be removed from the sites and disposed of in an approved manner. Oils or chemicals will be hauled to a disposal facility authorized to accept such materials. Open burning of construction trash will not be allowed.

Disturbed areas not required for access roads and maintenance areas around structures will be restored and revegetated, as required by the property owner or land management agency. Service roads will be decompacted and the topsoil replaced. The road prism will not be restored to original contours so that a stable road base is present if equipment is needed to access a tower during operation. The landowner, land-management agency, or local Natural Resources Conservation Service will be consulted regarding the appropriate seed mix and rate to revegetate the road surface. Vegetation on an 8-foot width of road surface may be periodically managed to allow equipment travel if necessary. Temporary culverts will be removed. Drivable at-grade waterbars will be installed where needed with frequency proportional to road slope to prevent erosion of the roadbed. Applicable agency BMPs and unit management plan requirements will be implemented. All practical means will be applied to restore the land outside the minimum areas needed for safe operation to its original contour and to restore natural drainage patterns along the ROW.

3.4 Communication System

OPGW for the communication system will be installed at the same time as the conductors on each of the transmission line structures. It will be spliced and tensioned in the same way.

3.4.1 Regeneration Stations

Similar to the substations, the selected area is graded, vegetation is removed, and a layer of crushed rock is installed. Typically, a 12-foot by 32-foot by 9-foot tall building or equipment shelter (metal or concrete) is constructed on the site. An emergency generator with a liquid petroleum gas fuel tank is installed at the site inside the fenced area. Two diverse cable routes (aerial and/or buried) from the transmission ROW to the equipment shelter are installed.

3.4.2 Access Road

Regeneration station roads are constructed using a bulldozer or grader, followed by a roller to compact and smooth the ground. Front-end loaders are used to move the soil locally or off site. Either gravel or asphalt is applied to the prepared base layer for the access road into all regeneration stations.

3.5 Substation Construction

There will be substation construction activities at 12 locations for the Project. A summary of construction equipment to be used at each substation is included in Section 2.6 of this appendix. The proposed Heward, Aeolus, Anticline, and Cedar Hill Substations are needed to electrically connect the new transmission line segments. In

addition, expansion of the substation yards at the existing Windstar, Jim Bridger (345-kV yard), Populus, Borah, and Midpoint Substations would be required. Additional work within the existing substation yard perimeter would be needed at Dave Johnston, Shirley Basin, and Hemingway Substations.

3.5.1 Substation Roads

Substation roads are constructed using a bulldozer or grader, followed by a roller to compact and smooth the ground. Front-end loaders are used to move the soil locally or offsite. Either gravel or asphalt is applied to the prepared base layer.

3.5.2 Soil Boring

Typically, soil borings are made on a 600-foot grid spacing within the substation, particularly at the approximate location of large structures and equipment such as transmission line dead ends and transformers, to determine the engineering properties of the soil. Borings are made with truck- or track-mounted equipment. The borings are approximately 4 inches in diameter, range from 15 to over 60 feet deep, and are backfilled with the excavated material upon completion of soil sampling.

3.5.3 Clearing and Grading

Clearing of all vegetation is required for the entire substation area, including a distance of about 10 feet outside the fence. This is required for personnel safety due to grounding concerns and because of lower clearances to energized conductors within the substations as compared to transmission lines. These lower clearances are allowed by the NESC because the entire substation is fenced.

An insulating layer on the surface of the substation is required to protect personnel from high currents and voltages during electrical fault conditions. Typically, vegetation is removed and a 4- to 6-inch layer of crushed rock is applied to the finished surface of the substation. Then the substation is usually treated with a soil sterilizer to prevent vegetation growth because the vegetation would degrade the insulating qualities of the crushed rock. The entire substation area will be graded essentially flat, with just enough slope to provide for runoff of precipitation. The substation is graded to use existing drainage patterns to the extent possible. In some cases, drainage structures, such as ditches or culverts, may be required. Clearing and grading material will be disposed of in compliance with local ordinances. Material from off site is obtained at existing borrow or commercial sites and is trucked to the substation using existing roads and the substation access road.

3.5.4 Multi-Purpose Yards

Construction multi-purpose yards may be located outside the substation-fenced area near the substation. These yards may be part of the substation property or leased by the contractor. After construction is completed, all debris and unused materials will be removed and the yards returned to preconstruction conditions by the construction contractor.

3.5.5 Grounding

A grounding system is required in each substation for detection of faults and for personnel safety. The grounding system typically consists of buried copper conductor

arranged in a grid system and driven ground rods, typically 8 to 10 feet long. The ground rods and any equipment and structures are connected to the grounding conductor. The amount of conductor and length and number of ground rods required are calculated based on fault current and soil characteristics.

3.5.6 Fencing

Security fencing is installed around the entire perimeter of each new or expanded substation to protect sensitive equipment and prevent accidental contact with energized conductors by third parties. This 7-foot-high fence is constructed of chain link with steel posts. One foot of barbed wire or other similar material is installed on top of the chain link yielding a total fence height of 8 feet. Locked gates are installed at appropriate locations for authorized vehicle and personnel access.

3.5.7 Foundation Installation

Foundations for supporting structures are of two types—spread footings or drilled piers. Spread footings are placed by excavating the foundation area, placing forms and reinforcing steel and anchor bolts, and pouring concrete into the forms. After the foundation has been poured, the forms are removed, and the surface of the foundation dressed. Pier foundations are placed in a hole generally made by a track- or truck-mounted auger. Reinforcing steel and anchor bolts are placed into the hole using a track- or truck-mounted crane. The portion of the foundation above ground is formed. The portion below ground uses the undisturbed earth of the augered hole as the form. After the foundation has been poured, the forms are removed, the excavation backfilled, and the surface of the foundation dressed.

Equipment foundations for circuit breakers and transformers will be slab-on-grade type. These foundations are placed by excavating the foundation area; placing forms, reinforcing steel, and anchor bolts (if required); and placing concrete into the forms. After the foundations have been poured, the forms are removed, and the surface of the foundation dressed. Where necessary, provision is made in the design of the foundations to mitigate potential problems due to frost. Reinforcing steel and anchor bolts are transported to each site by truck, either as a prefabricated cage or loose pieces, which is then fabricated into cages on the site. Concrete is hauled to the site in concrete trucks. Excavated material is spread at the site or disposed of in accordance with local ordinances. Structures and equipment are attached to the foundations by means of threaded anchor bolts embedded in the concrete. Some equipment such as transformers and reactors may not require anchor bolts.

3.5.8 Oil Containment

Some types of electrical equipment, such as transformers and some types of reactors and circuit breakers, are filled with an insulating mineral oil. Containment structures are required to prevent equipment oil from getting into the ground or waterbodies in the event of a rupture or leak. These structures take many forms depending on site requirements, environmental conditions, and regulatory restrictions. The simplest type of oil containment is a pit, of a calculated capacity, under the oil-filled equipment that has an oil-impervious liner. The pit is filled with rock to grade level. In case of an oil leak or rupture, the oil captured in the containment pit is pumped into tanks or barrels and transported to a disposal facility. If required, more elaborate oil containment

systems can be installed. This may take the form of an on- or off-site storage tank and/or oil-water separator equipment depending on site requirements.

3.5.9 Structure and Equipment Installation

Supporting steel structures are erected on concrete foundations as noted above. These are set with a track- or truck-mounted crane and attached to the foundation anchor bolts by means of a steel base plate. These structures are used to support the energized conductors and certain types of equipment. This equipment is lifted onto the structure by means of a truck-mounted crane and bolted to the structures; electrical connections are then made. Some equipment, such as transformers, reactors, and circuit breakers, are mounted directly to the foundations without supporting structures. These are set in place by means of a truck-mounted crane. Some of this equipment requires assembly and testing on the pad. Electrical connections to the equipment are then made.

3.5.10 Control Building Construction

One or more control buildings are required at each substation to house protective relays, control devices, battery banks for primary control power, and remote monitoring equipment. The size and construction of the building depends on individual substation requirements. Typically, the control building is constructed of concrete block, pre-engineered metal sheathed, or composite surfaced materials. Once the control house is erected, equipment is mounted and wired inside. Typically an emergency generator will be located near the control house within the substation fenced area.

3.5.11 Conductor Installation

The two main types of high voltage conductors used in substations are tubular aluminum for rigid bus sections and/or stranded aluminum conductor for strain bus and connections to equipment. Rigid bus is be a minimum of 4 inches in diameter for this Project and is supported on porcelain or polymer insulators on steel supports. The bus sections are welded together and attached to special fittings for connection to equipment. Stranded aluminum conductors are used as flexible connectors between the rigid bus and the station equipment.

3.5.12 Conduit and Control Cable Installation

Most substation equipment requires low-voltage connections to protect relaying and control circuits. These circuits allow metering, protective functions, and control (both remote and local) of the power system. Connections are made from the control building to the equipment through multi-conductor control cables installed in conduits and/or pre-cast concrete cable trench system.

3.5.13 Construction Cleanup and Landscaping

The cleanup operation will be performed after construction activities are completed. All waste and scrap material will be removed from the site and deposited in local permitted landfills in accordance with local ordinances. Ruts and holes outside the substation fence due to construction activities will be regraded. Revegetation and restoration will be conducted as required. Landscaping required by the permitting agency will use drought-tolerant plant materials

3.6 Special Construction Techniques

3.6.1 Blasting

As described in Section 2.2.5 of this appendix, 500-kV lattice tower foundations are normally installed using drilled shafts or piers and 230-kV and 345-kV H-frame structures are normally directly embedded. If hard rock is encountered within the planned drilling depth, blasting may be required to loosen or fracture the rock in order to reach the required depth to install the structure foundations. Areas where blasting will likely occur have been identified based on the geologic setting of the proposed alignment. Table B-12 summarizes the shallow bed rock conditions within each segment. More precise locations where blasting is expected will be identified based on a site-specific geotechnical study carried out as part of detailed design.

Table B-12. Summary of Shallow Bedrock by Segment

Segment Number	Depth to Bedrock (feet) by Percent of Analysis Area			
	1 to 4	4 to 8	8 to 12	Total Percent of Analysis Area
1	7	<1	14	21
2	–	–	–	–
3	66	6	–	72
4	40	1	3	44
5	8	25	–	33
6	47	29	–	75
7	15	23	8	46
8	16	51	14	81
9	42	21	15	78
10	20	2	2	24

The construction contractor will be required to prepare an overall Blasting Plan as outlined in Appendix M of the POD for the Project, subject to the approval of the Companies. The Blasting Plan would detail the contractor's proposals for compliance with the Companies' blasting specifications and details the general concepts proposed to achieve the desired excavations using individual shot plans. In addition, the plan will address proposed methods for controlling fly rock, for blasting warnings, and for use of non-electrical blasting systems. The contractor will be required to provide data to support the adequacy of the proposed efforts regarding the safety of structures and slopes and to ensure that an adequate foundation is obtained. When utilized, blasting will take place between sunrise and sunset.

The shot plans will detail, including sketches, the drilling and blasting procedures; the number, location, diameter, and inclination of drill holes; the amount, type, and distribution of explosive per hole and delay; and pounds of explosive per square foot for presplitting and smooth blasting. The contractor would be required to maintain explosives logs.

Blasting near buildings, structures, and other facilities susceptible to vibration or air blast damage will be carefully planned by the contractor and the Companies and controlled to eliminate the possibility of damage to such facilities and structures. The Blasting Plan will include provisions for control to eliminate vibration, fly rock, and air blast damage.

Blasting will be very brief in duration (milliseconds), and the noise dissipates with distance. Blasting produces less noise and vibration than comparable non-blasting methods to remove hard rock. Non-blasting methods include track drill rigs, rock breakers, jack hammers, rotary percussion drills, core barrels, and rotary rock drills with rock bits, each of which takes substantially longer to excavate approximately the same amount of rock as blasting.

No readily available data were found to evaluate depth to bedrock at depths greater than 12 feet. In 2010, drilling began in some areas of Segments 1 through 4 to support geotechnical evaluations for transmission line structures. The drilling was conducted on public land and private land where landowner permission was obtained. The drilling data indicate that several borings contained bedrock at depths less than 20 feet. Therefore, it is assumed that shallow bedrock could be encountered in any of the segments. As a conservative measure, it was assumed that all shallow bedrock that will need to be removed will require blasting.

Due to the lack of depth to bedrock data deeper than 12 feet, the amount of shallow bedrock presented in Table B-9 likely underestimates the amount of shallow bedrock that will be intercepted during construction.

3.6.2 Helicopter Use

Access roads are required to each tower site for construction and for operation and maintenance activities. Helicopters may be used to support these activities. Project construction activities potentially facilitated by helicopters may include delivery of construction laborers, equipment, and materials to structure sites; structure placement; hardware installation; and wire stringing operations. Helicopters may also be used to support the administration and management of the Project by the Companies. The use of helicopter construction methods for this Project will not change the length of the access road system required for operating the Project because vehicle access is required to each tower site regardless of the construction method employed.

In some cases it may be desirable to employ heavy lift helicopters in the single-circuit 500-kV tower erection process[7]. To allow the construction contractor flexibility in what construction methods can be used, the construction specification will be written to allow the contractor the option of using ground-based or helicopter construction methods, or a combination thereof. Use of a helicopter for structure erection may be driven by various factors, including access to the structure locations, construction schedule, and/or construction economics.

When helicopter construction methods are employed, helicopter construction activities are based at a fly yard. The fly yards will be sited at locations to permit a maximum fly time of 4 to 8 minutes to reach structure locations, typically at about 5-mile intervals. Fly yards are used for material storage and erection of structure sections prior to transport to the final structure locations for installation. Additionally, fueling trucks, maintenance trucks, and operations crews are based in the fly yards. Appropriate dust control measures will be implemented at these fly yard locations as well as the locations where helicopters are used along the route.

[7] For the Gateway West Project, a typical 500-kV single-circuit tangent tower weighs approximately 46,000 pounds.

Prior to installation, each tower structure is assembled in multiple sections at the fly yard. Tower sections or components are assembled by weight based on the lifting capacity of the helicopter in use. The lift capacity of helicopters is dependent on the elevation of the fly yard, the tower site, and the intervening terrain. The heavy lift helicopters that could be used to erect the single-circuit 500-kV tower sections are able to lift a maximum of 15,000 to 20,000 pounds per flight, depending on elevation.

After assembly at the fly yard, the tower sections are attached by cables from the helicopter crane to the top four corners of the structure section and airlifted to the structure location. Upon arrival at the structure location, the section is placed directly on to the foundation or atop the previous structure section. Guide brackets attached on top of each section will assist in aligning the stacked sections. Once aligned correctly, line crews climb the structures to bolt the sections together permanently.

It should be noted that the fly yard locations provided are considered approximate and subject to change, additions, or deletions upon acquisition of an installation contractor prior to the beginning of construction. Upon completion of field review, a final determination is made on the necessity of certain fly yards and the respective locations that provide the most efficient, economic, safest, and least impact use of the fly yards that are needed.

3.6.3 Water Use

Construction of the transmission lines and substations requires water. Major water uses are for transmission line structure and substation foundations, and dust control during ROW and substation grading and site work. A minor use of water during construction will include the establishment of substation landscaping where required. Table B-13 lists the amount of water required for the Project.

Transmission lines use water for two primary purposes: foundation construction and ROW dust control. The required water will be procured from municipal sources, from commercial sources, or under a temporary water use agreement with landowners holding existing water rights. No new water rights will be required. In the construction of foundations, water is transported to the batch plant site where it will be used to produce concrete. From the batch plant, the wet concrete is transported to the structure site in concrete trucks for use in foundation installation (refer to Section 2.2.4 of this appendix for more details on foundation installation).

Construction of the transmission lines and related facilities generates a temporary increase in fugitive dust. If the level of fugitive dust is too high in specific Project areas, as determined in cooperation with the landowner or agency, water will be applied to disturbed areas to minimize dust. The construction contractor will be required to develop fugitive dust plan(s) as outlined in Appendix N of the POD.

Water usage for substation construction is primarily for dust control during site preparation work. During this period, construction equipment will be cutting, moving, and compacting the subgrade surface. As a result, water trucks patrolling the site to control dust will make up to one pass per hour over the station site. Once site preparation work is complete, concrete for the placement of foundations becomes the largest user of water and dust control becomes minimal.

Table B-13. Estimated Water Usage by Component, Segment, and Activity

Transmission Line Segments	Total Miles	No of Structures[1/]	Foundation Gallons per Segment[2/]	Dust Control Gallons per Segment[3/]	Total Gallons per Segment
1W(a)	73.8	531	–	1,726,656	1,726,656
1W(c)	73.6	547	–	1,561,498	1,561,498
2	91.9	390	1,174,149	1,553,990	2,728,139
3	45.9	194	717,535	949,660.8	1,667,196
3A	5.1	25	35,400	121,700	157,100
4	197.6	856	2,532,644	3,351,965	5,884,609
5	55.7	246	694,846	919,632	1,614,478
6	0.5	10	28,361	37,536	65,897
7	118.2	523	1,514,481	2,004,422	3,518,904
8	131.5	575	1,636,434	2,165,827	3,802,261
9	162.2	708	2,005,128	2,653,795	4,658,923
10	34.4	157	439,597	581,808	1,021,405
Total Transmission Line Water Usage (million gallons = MG)					28.4
Substations	Acres of Construction Disturbance	Gallons for Concrete	Gallons for Grading/Site Work/Dust Control[3/]	Gallons for Substation Landscaping	Total Gallons per Substation
Windstar Substation	5	9,200	1,703,196	–	1,712,396
Dave Johnston Substation	–	–	–	–	–
Heward Substation	7	5,400	993,531	–	998,931
Shirley Basin Substation	-	-	-	-	-
Aeolus Substation	120	130,000	24,128,610	–	24,258,610
Anticline Substation	150	103,000	19,160,955	–	19,263,955
Jim Bridger 345-kV Substation	10	7,700	1,419,330	–	1,427,030
Populus Substation	90	69,000	12,773,970	–	12,842,970
Borah Substation	40	34,000	5,677,320	–	5,711,320
Midpoint	44	34,000	5,677,320	–	5,711,320
Cedar Hill Substation	65	39,000	7,096,650	–	7,135,650
Hemingway Substation	–	–	–	–	–
Total Substation Water Usage (MG)					79.1
Regeneration Sites			**Number**	**Gallons for all Activities**	**Total Gallons Regen Sites**
Sites			13	800	10,400
Total Project (MG)					107.5

1/ Water usage per structure is used to make concrete at the batch plant site.
2/ All 230-kV structures will be directly embedded. Concrete foundations are not required; therefore, no water is required.
3/ The amount of water used for dust control varies significantly based on many conditions. Estimates are based on reasonable construction experience.

Once site grading is complete, the balance of the substation construction work will be performed on bare subgrade soil or subgrade with a thin layer of rock. Fire risk is minimal due to the bare ground or rock surface and will be contained within the confines of station fenced area.

3.7 Construction Elements

3.7.1 Construction Workforce

The proposed Project will be constructed primarily by contract personnel, with the Companies responsible for Project administration and inspection. The construction workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel who will perform the construction tasks. Estimated construction workforce requirements are summarized by EPC[8] contract in Figure B-15. These projections were developed for the various Project components by the Companies' transmission engineering contractor using project planning computer software. Overall, Phase 1 Project construction is expected to occur between June 2015 and December 2018, with multiple contractors working concurrently on the separate line segments and substations of Gateway West in order to meet the planned in-services dates. The first phase will extend from Windstar to Populus, and the second phase will extend from Populus to Hemingway, with the last segment being complete by the end of 2021.

The Companies' proposed schedule identifies general construction timeframes by segment and substation, generally 4 to 5 years (see Table B-20). Construction times by segment are, however, expected to range from about 8 months to 27 months; similarly, substation construction times range from 6 to 24 months. This construction will take place within the broader timeframes identified in Table B-20, but the exact timing is unknown. The combined labor requirements by EPC shown in Figure B-15 are, therefore, based on a representative Project schedule that is used in the EIS for the purposes of analysis.

Project-wide, the Project workforce will reach a peak of 745 workers in weeks 58 and 59. The construction personnel peak on site in any line segment will be when the wire stringing operations begin while several other operations are occurring at the same time, which will likely include excavating holes, installing foundations (500-kV), hauling materials, assembling structures, and erecting/setting structures.

With respect to each substation, installation of the ground grid, installation of the conduit and cable trench system, assembly and erection of steel structures, construction of the control building, and installation of major equipment will start when the foundations are 50 percent complete and will overlap with each other, resulting in the highest concentration of the work force on site.

[8] EPC contract means that the final engineering, all or some of the procurement, and the construction are performed by one contractor.

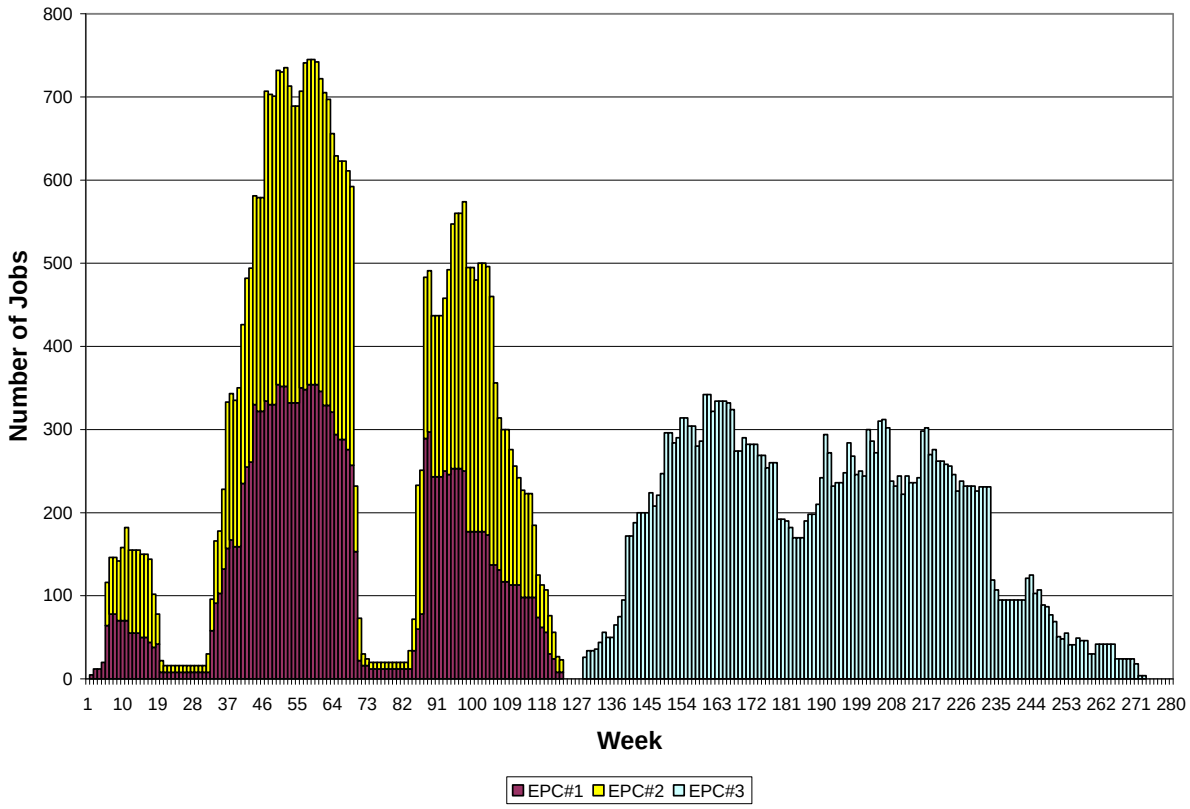


Figure B-15. Total Projected Labor Force by EPC Analysis Area and Week

The substation work is estimated to take between 40 and 60 personnel at each site. Site grading requires a small number of people including a surveyor, heavy equipment operators, foreman, and construction management personnel. Each station requires numerous concrete crews in order to complete the below grade construction and concrete placement on schedule. Concrete will be provided by a batch plant producing approximately 160 cubic yards per day delivered in 8 cubic yard trucks. Other below-grade crews will be needed to install conduit, cable trench, and ground mat material. The below-grade crews will be on site overlapping the schedule of the concrete crew. Several three-person crews working with boom trucks and bucket trucks will erect the steel and install the physical equipment in the yard. Considering the size of the substation expansions, this requires approximately three fully equipped crews per station. Electrical installation will be handled by 20 people arranged into two-person teams alternating between indoor and outdoor activity. Construction will generally occur between 7 a.m. and 7 p.m., Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities.

3.7.2 Construction Equipment and Traffic

Equipment required for construction of the Gateway West transmission lines and substations will include, but is not limited to, that listed in Tables B-14 through B-17. These tables also include the anticipated daily duration of equipment use for each segment for each type. Table B-18 provides an estimate of the average and peak construction traffic during the construction period.

Table B-14. Transmission Line Construction Equipment Requirements – Segments 1–4

Equipment	Segment 1W(a)			Segment 1W(c)			Segment 2			Segment 3 and 3A			Segment 4		
	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk
Pickup	10	8	6	10	8	6	37	8	6	37	8	6	37	8	6
Bulldozer	3	4	6	3	4	6	6	4	6	6	4	6	6	4	6
Motor Grader	2	4	6	2	4	6	4	4	6	4	4	6	4	4	6
Water Truck	2	6	6	2	6	6	5	6	6	5	6	6	5	6	6
Hole Digger	2	8	6	2	8	6	3	8	6	3	8	6	3	8	6
Truck (2-ton)	3	5	6	3	5	6	5	5	6	5	5	6	5	5	6
Concrete Truck	0	6	6	0	6	6	6	6	6	6	6	6	6	6	6
Carry All	12	6	6	12	6	6	26	6	6	26	6	6	26	6	6
Hydro Crane	0	7	6	0	7	6	1	7	6	1	7	6	1	7	6
Crane	7	7	6	7	7	6	22	7	6	22	7	6	22	7	6
Wagon Drill	0	5	6	0	5	6	1	5	6	1	5	6	1	5	6
Steel Haul Truck	2	7	6	2	7	6	4	7	6	4	7	6	4	7	6
Fork Lift	3	6	6	3	6	6	5	6	6	5	6	6	5	6	6
Wire Reel Trailer	6	7	6	6	7	6	12	7	6	12	7	6	12	7	6
Diesel Tractor	5	5	6	5	5	6	12	5	6	12	5	6	12	5	6
Boom Truck (5-ton)	3	6	6	3	6	6	6	6	6	6	6	6	6	6	6
Splicing Truck	1	3	6	1	3	6	4	3	6	4	3	6	4	3	6
3-Drum Puller	2	4	6	2	4	6	4	4	6	4	4	6	4	4	6
Single Drum Puller	1	3	6	1	3	6	2	3	6	2	3	6	2	3	6
Tensioner	1	4	6	1	4	6	4	4	6	4	4	6	4	4	6
Sagging Dozer	2	3	6	2	3	6	4	3	6	4	3	6	4	3	6
Static Wire Reel Trailer	2	5	6	2	5	6	4	5	6	4	5	6	4	5	6
Dump Truck	2	4	6	2	4	6	3	4	6	3	4	6	3	4	6
Loader	3	4	6	3	4	6	3	4	6	3	4	6	3	4	6
Light Helicopter	1	6	6	1	6	6	2	6	6	2	6	6	2	6	6
Heavy Helicopter	0	6	6	0	6	6	2	6	6	2	6	6	2	6	6

Table B-15. Transmission Line Construction Equipment Requirements – Segments 5-10

Equipment	Segment 5			Segment 6[1/]			Segment 7			Segment 8			Segment 9			Segment 10		
	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days / wk	Qty.	hrs/ day	days / wk	Qty.	hrs/ day	days / wk	Qty.	hrs/ day	days / wk
Pickup	30	8	6	10	8	6	30	8	6	30	8	6	30	8	6	30	8	6
Bulldozer	6	4	6	2	4	6	6	4	6	6	4	6	6	4	6	6	4	6
Motor Grader	4	4	6	2	4	6	4	4	6	4	4	6	4	4	6	4	4	6
Water Truck	3	6	6	1	6	6	3	6	6	3	6	6	3	6	6	3	6	6
Hole Digger	3	8	6	3	8	6	3	8	6	3	8	6	3	8	6	3	8	6
Truck (2-ton)	4	5	6	2	5	6	4	5	6	4	5	6	4	5	6	4	5	6
Concrete Truck	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Carry All	17	6	6	4	6	6	17	6	6	17	6	6	17	6	6	17	6	6
Hydro Crane	1	7	6	1	7	6	1	7	6	1	7	6	1	7	6	1	7	6
Crane	16	7	6	2	7	6	16	7	6	16	7	6	16	7	6	16	7	6
Wagon Drill	1	5	6	1	5	6	1	5	6	1	5	6	1	5	6	1	5	6
Steel Haul Truck	4	7	6	4	7	6	4	7	6	4	7	6	4	7	6	4	7	6
Fork Lift	5	6	6	3	6	6	5	6	6	5	6	6	5	6	6	5	6	6
Wire Reel Trailer	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6
Diesel Tractor	6	5	6	6	5	6	6	5	6	6	5	6	6	5	6	6	5	6
Boom Truck (5-ton)	3	6	6	3	6	6	3	6	6	3	6	6	3	6	6	3	6	6
Splicing Truck	2	3	6	2	3	6	2	3	6	2	3	6	2	3	6	2	3	6
3-Drum Puller	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6
Single Drum Puller	1	3	6	1	3	6	1	3	6	1	3	6	1	3	6	1	3	6
Tensioner	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6
Sagging Dozer	2	3	6	2	3	6	2	3	6	2	3	6	2	3	6	2	3	6
Static Wire Reel Trailer	2	5	6	2	5	6	2	5	6	2	5	6	2	5	6	2	5	6
Dump Truck	3	4	6	1	4	6	3	4	6	3	4	6	3	4	6	3	4	6
Loader	3	4	6	1	4	6	3	4	6	3	4	6	3	4	6	3	4	6
Light Helicopter	1	6	6	1	6	6	1	6	6	1	6	6	1	6	6	1	6	6
Heavy Helicopter	1	6	6	1	6	6	1	6	6	1	6	6	1	6	6	1	6	6

1/ Construction work will involve approximately five transmission line structures at each end of Segment 6 to tie into new substation positions.

Table B-16. Substation Equipment Requirements – Segments 1–4

Equipment	Windstar			Dave Johnston			Heward			Shirley Basin			Aeolus			Anticline		
	Qty.	hrs/ day	days/wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days / wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/wk	Qty.	hrs/ day	days / wk
Below Grade																		
Auger	2	10	6	2	10	6	2	10	6	2	10	6	10	10	6	20	10	6
Backhoe	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6	4	10	6
Front Loader	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6
Ditch Witch	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6	4	10	6
Concrete Truck	2	10	6	2	10	6	2	10	6	2	10	6	10	10	6	20	10	6
Water Truck	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Dump Truck	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	4	10	6
Trailer	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6
Crew Truck/Car	2	10	6	2	10	6	2	10	6	2	10	6	4	10	6	8	10	6
Hauler	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Skid Steer Loader	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6
Batch Plant	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Drill Rig	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6
Truck with Trailer	2	10	6	2	10	6	2	10	6	2	10	6	4	10	6	4	10	6
Compressor	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6	4	10	6
Construction Fork	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6
980 Loader	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6
Vibrating Roller	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6
Inspection Truck	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Above Grade																		
Crane	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Bucket Truck	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6	4	10	6
Boom Truck	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6	3	10	6
Fork Lift	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	2	10	6

Table B-17. Substation Equipment Requirements – Segments 5–10

Equipment	Jim Bridger 345-kV Yard			Populus			Borah			Cedar Hill			Midpoint			Hemingway		
	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk	Qty.	hrs/ day	days/ wk
Below Grade																		
Auger	2	10	6	10	10	6	10	10	6	20	10	6	10	10	6	10	10	6
Backhoe	1	10	6	2	10	6	2	10	6	4	10	6	2	10	6	2	10	6
Front Loader	1	10	6	1	10	6	1	10	6	2	10	6	1	10	6	1	10	6
Ditch Witch	1	10	6	2	10	6	2	10	6	4	10	6	2	10	6	2	10	6
Concrete Truck	2	10	6	10	10	6	10	10	6	20	10	6	10	10	6	10	10	6
Water Truck	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Dump Truck	1	10	6	1	10	6	1	10	6	4	10	6	1	10	6	1	10	6
Trailer	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6
Crew Truck/Car	2	10	6	4	10	6	4	10	6	8	10	6	4	10	6	4	10	6
Hauler	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Skid Steer Loader	1	10	6	1	10	6	1	10	6	2	10	6	1	10	6		10	6
Batch Plant	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Drill Rig	1	10	6	1	10	6	1	10	6	2	10	6	1	10	6	1	10	6
Truck with Trailer	2	10	6	4	10	6	4	10	6	4	10	6	4	10	6	4	10	6
Compressor	1	10	6	2	10	6	2	10	6	4	10	6	2	10	6	2	10	6
Construction Fork	1	10	6	1	10	6	1	10	6	2	10	6	1	10	6	1	10	6
980 Loader	1	10	6	1	10	6	1	10	6	2	10	6	1	10	6		10	6
Vibrating Roller	1	10	6	1	10	6	1	10	6	2	10	6	1	10	6		10	6
Inspection Truck	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Above Grade																		
Crane	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6	1	10	6
Bucket Truck	2	10	6	2	10	6	2	10	6	4	10	6	2	10	6	2	10	6
Boom Truck	2	10	6	2	10	6	2	10	6	3	10	6	2	10	6	2	10	6
Fork Lift	1	10	6	1	10	6	1	10	6	2	10	6	1	10	6	1	10	6

Table B-18. Average and Peak Construction Traffic

Vehicle Type	Average Daily Round Trips	Peak Daily Round Trips
Segment 1W(a)		
Construction Workers	13	20
Delivery	2	4
Heavy Trucks	7	11
Water Trucks	2	4
Total	**24**	**39**
Segment 1W(c)		
Construction Workers	13	20
Delivery	2	4
Heavy Trucks	7	11
Water Trucks	2	4
Total	**24**	**39**
Segment 2		
Construction Workers	35	50
Delivery	5	8
Heavy Trucks	18	27
Water Trucks	5	8
Total	**63**	**93**
Segment 3		
Construction Workers	35	50
Delivery	5	8
Heavy Trucks	18	27
Water Trucks	5	8
Total	**63**	**93**
Segment 3A		
Construction Workers	13	20
Delivery	2	4
Heavy Trucks	7	11
Water Trucks	2	4
Total	**24**	**39**
Segment 4		
Construction Workers	35	50
Delivery	5	8
Heavy Trucks	18	27
Water Trucks	5	8
Total	**63**	**93**
Segment 5		
Construction Workers	25	40
Delivery	3	6
Heavy Trucks	13	21
Water Trucks	3	6
Total	**44**	**73**
Segment 6		
Construction Workers	18	30
Delivery	2	4
Heavy Trucks	9	15
Water Trucks	2	4
Total	**31**	**53**

Table B-18. Average and Peak Construction Traffic (continued)

Vehicle Type	Average Daily Round Trips	Peak Daily Round Trips
Segment 7		
Construction Workers	25	40
Delivery	3	6
Heavy Trucks	13	21
Water Trucks	3	6
Total	**44**	**73**
Segment 8		
Construction Workers	25	40
Delivery	3	6
Heavy Trucks	13	21
Water Trucks	3	6
Total	**44**	**73**
Segment 9		
Construction Workers	25	40
Delivery	3	6
Heavy Trucks	13	21
Water Trucks	3	6
Total	**44**	**73**
Segment 10		
Construction Workers	25	40
Delivery	3	6
Heavy Trucks	13	21
Water Trucks	3	6
Total	**44**	**73**
Windstar Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Dave Johnston Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Heward Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Shirley Basin Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**

Table B-18. Average and Peak Construction Traffic (continued)

Vehicle Type	Average Daily Round Trips	Peak Daily Round Trips
Aeolus Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Anticline Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Jim Bridger 345-kV Yard		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Populus Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Borah Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Cedar Hill Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Midpoint Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**
Hemingway Substation		
Construction Workers	2	4
Delivery	2	4
Heavy Trucks	8	12
Water Trucks	8	10
Total	**20**	**30**

Construction access will occur at several locations along the transmission line route, resulting in dispersed construction traffic. The construction contractor will be required to develop traffic plan as outlined in Appendix L of the POD. The equipment required for

transmission line construction is similar for the 500-kV, 345-kV, and 230-kV lines, although the equipment needed for 345-kV and 230-kV line construction is generally smaller than for 500-kV construction. The following is a summary of anticipated equipment to be used for each construction activity. Survey work only requires the use of pickup trucks or ATVs. Road construction will utilize pickups, bulldozers, motor graders, and water trucks. To dig holes and directly embed the 230-kV and 345-kV H-frame poles or install 500-kV foundations it is anticipated that pickup trucks, 2-ton trucks, hole diggers, bulldozers, concrete trucks, water trucks, carry alls, cranes, hydro crane, wagon drill, dump trucks, and front-end loaders will be used. Hauling steel, or poles, braces and hardware for the 230-kV and 345-kV lines to the structure sites requires the use of steel haul trucks, carry alls, cranes, and forklifts. For assembly and erection of structures it is anticipated that pickup trucks, 2-ton trucks, carry alls, cranes, and a heavy lift helicopter may be used. Wire installation requires the most equipment including pickups, wire reel trailers, diesel tractors, cranes, 5-ton boom trucks, splicing trucks, three drum pullers, single drum pullers, tensioners, sagging dozers, carry alls, static wire reel trailers, and a light helicopter. Final cleanup, reclamation, and restoration utilize pickups, 2-ton trucks, bulldozers, motor graders, dump trucks, front-end loaders, and water trucks. The highest level of traffic will occur when the wire stringing operations begin while several other operations are occurring at the same time which will likely include excavating holes, installing foundations, hauling steel, assembling structures, and erecting structures.

For the substation work, the highest level of traffic will be during site grading and foundation installation. As tabulated in Table B-19, varying amounts of solid waste and soil not suitable for re-use at each site will have to be disposed of off-site at a remote location. Dump trucks will be leaving and returning to the site on a constant basis each day for the duration of the site grading. The volume of concrete required at each site will vary in proportion to the size of the substation site, and may be up to 7,000 cubic yards of concrete at the very large substations. Delivering, placing, and finishing concrete is labor intensive. Once concrete placement is complete, traffic on the surrounding roads will subside. Workers arrive in the morning and leave at the end of the day. The balance of daily traffic is material deliveries from storerooms, which will probably be one or two trips per day. Each substation requires the delivery of permitted loads such as transformers and/or reactors. Each reactor or transformer bank delivered will require four large multiple-axle lowboy trucks. Delivery will be scheduled to match the completion of their respective foundations.

3.7.3 Removal of Facilities and Waste Disposal

Substation and ROW construction generate a variety of solid wastes including concrete, hardware, and wood debris. The solid wastes generated during construction will be recycled or hauled away for disposal. Excavation along the ROW and at substations generates solid wastes that could potentially be used as fill; however, some of the excavated material will be removed for disposal. Excavated material that is clean and dry will be spread along the ROW. The volumes shown in Table B-19 shows that no waste is expected to be hauled away and not disposed of in the ROW for each segment during construction of Gateway West.

Table B-19. Solid Waste Generation from Construction Activities

Activity	Segment 1W(a) Excavation Removal Total (yard³)	Segment 1W(a) Other Solid Waste Total (yard³)	Segment 1W(c) Excavation Removal Total (yard³)	Segment 1W(c) Other Solid Waste Total (yard³)	Segment 2 Excavation Removal Total (yard³)	Segment 2 Other Solid Waste Total (yard³)	Segment 3[1] Excavation Removal Total (yard³)	Segment 3[1] Other Solid Waste Total (yard³)	Segment 4 Excavation Removal Total (yard³)	Segment 4 Other Solid Waste Total (yard³)
230-kV Structure Installation										
230-kV Sgl Ckt - H-frame Family (includes angle & dead-ends)	0	163,500	0	160,100	-	-	-	-	-	-
500-kV Structure Installation										
500-kV Sgl Ckt - Tangent Lattice Tower	-	-	-	-	0	114,765	0	57,320	0	246,763
500-kV Sgl Ckt - Small Angle Lattice Tower	-	-	-	-	0	16,395	0	8,189	0	35,252
500-kV Sgl Ckt - Medium Angle Lattice Tower	-	-	-	-	0	8,197	0	4,094	0	17,626
500-kV Sgl Ckt - Medium Dead-End Lattice Tower	-	-	-	-	0	16,395	0	8,189	0	35,252
500-kV Sgl Ckt - Heavy Dead-End Lattice Tower	-	-	-	-	0	8,197	0	4,094	0	17,626

Activity	Segment 6 Excavation Removal Total (yard³)	Segment 6 Other Solid Waste Total (yard³)	Segment 7 Excavation Removal Total (yard³)	Segment 7 Other Solid Waste Total (yard³)	Segment 8 Excavation Removal Total (yard³)	Segment 8 Other Solid Waste Total (yard³)	Segment 9 Excavation Removal Total (yard³)	Segment 9 Other Solid Waste Total (yard³)	Segment 10 Excavation Removal Total (yard³)	Segment 10 Other Solid Waste Total (yard³)
230-kV Structure Installation										
230-kV Sgl Ckt - H-frame Family (includes angle & dead-ends)	-	-	-	-	-	-	-	-	-	-
500-kV Structure Installation										
500-kV Sgl Ckt - Tangent Lattice Tower	0	2,933	0	147,530	0	164,248	0	198,271	0	41,355
500-kV Sgl Ckt - Small Angle Lattice Tower	0	419	0	21,076	0	23,464	0	28,324	0	5,908
500-kV Sgl Ckt - Medium Angle Lattice Tower	0	210	0	10,538	0	11,732	0	14,162	0	2,954
500-kV Sgl Ckt - Medium Dead-End Lattice Tower	0	419	0	21,076	0	23,464	0	28,324	0	5,908
500-kV Sgl Ckt - Heavy Dead-End Lattice Tower	0	210	0	10,538	0	11,732	0	14,162	0	2,954

Total Solid Waste by Substation (cubic yards)

Activity	Windstar Substation	Heward Substation	Shirley Basin Substation	Aeolus Substation	Dave Johnston Substation	Anticline Substation	Jim Bridger 345-kV Yard	Populus Substation	Borah Substation	Cedar Hill Substation	Midpoint Substation	Hemingway Substation
Substation Grading/ Site Work	250	250	250	8,700	50	16,200	250	2,500	1,400	5,400	4,800	-
Substation Construction (Below Grade)	65	65	65	474	18	1272	65	601	148	1,075	729	229
Substation Construction (Above Grade)	144	144	144	192	120	432	144	192	192	432	192	192

The majority of waste associated with substation construction results from spoils created during site grading. The values shown in Table B-19 reflect the amount of vegetation and rock larger than 6 inches in diameter that cannot be processed and converted into backfill for compaction. Very little of the soil excavated during foundation installation is waste product. Above-grade waste will be packing material such as crates, pallets, and paper wrapping to protect equipment during shipping. It is assumed a 12-yard dumpster will be filled once a week with waste material for the duration of each substation project.

3.7.4 Construction Schedule

The Companies intend to continue to refine the design of the Gateway West during the BLM approval process in order to immediately commence construction if the Project is approved. Final engineering surveys will determine the exact locations of towers, access roads, and other features prior to the start of construction and will be included in the Plan of Development. Due to the broad scope of construction, the varied nature of construction activities, and the geographic diversity of the Project area, the Companies intend to hire multiple contractors to complete Project work within the projected timeframe and in accordance with industry performance standards. The Project may involve up to three separate EPC contracts. Table B-20 shows the planned construction start and end dates for each phase. Multiple segments will be under construction at the same time. The Companies developed a Project construction schedule based on this strategy.

Although the construction rate of progress is reduced in the winter, the Companies have planned an aggressive schedule and it is anticipated that construction will continue through the winter months in the lower-elevation areas of the Project, except during winter storms. In the higher-elevation areas of the Project, winter storms and snow will limit access to the ROW, for example in Segment 4 in western Wyoming and eastern Idaho. In these areas, it is expected that construction will be suspended on some portions of the ROW during the peak winter months and construction resources will either be demobilized or shifted to other segments of the Project.

Transmission line construction commences with contractor mobilization. The contractor will mobilize equipment and personnel to the construction site at various stages in the Project schedule depending on operational requirements. This will cumulatively require approximately 6 weeks throughout the schedule for each segment. Construction management, engineering support, inspection, materials handling, and administration are required throughout the Project. First, surveyors start at one end of the segment and stake the locations of access roads. Road construction can start 1 to 2 weeks after the surveyors begin, which may require clearing in higher elevations where tree removal is required prior to road construction. After a couple of weeks of road construction another survey crew can begin staking the structure locations. A week or two after the survey crew starts staking structure locations, excavation of holes for foundations for 500-kV towers, or for directly embedded poles for 230-kV or 345-kV structures, can begin. For 500-kV construction, the installation of the concrete pier foundations would begin within the next couple of weeks. The foundations need time to cure and develop to full structural strength (i.e., compression capacity) before lattice towers can be

Table B-20. Construction Schedule

Segment Number	Segment or Substation Name	Primarily Wyoming		Idaho	
		Start June 2015	End Dec 2018	Start June 2017	End Dec 2021
	Windstar Substation	Windstar Expansion			
	Dave Johnston 230-kV Substation	Dave Johnston 230-kV Substation			
	Heward Substation	Heward Substation			
	Aeolus Substation	Aeolus Substation			
	Populus Substation	Populus Expansion			
	Anticline Substation	Anticline Substation and 345-kV bays at existing Jim Bridger Substation			
1W(a)	Windstar – Aeolus #1	Single-Circuit 230-kV and rebuild a short section of the existing single-circuit 230-kV line			
1W(c)	Dave Johnston – Heward –Aeolus	Rebuild the existing single circuit 230-kV and build a short section a new single-circuit 230 kV line			
2	Aeolus – Creston	Single-Circuit 500-kV			
3	Creston – Anticline	Single-Circuit 500-kV			
3A	Anticline – Jim Bridger	Single-Circuit 345-kV			
4	Anticline – Populus	Single-Circuit 500-kV			
	Populus Substation			Populus Expansion	
	Cedar Hill Substation			Cedar Hill Substation	
	Hemingway Substation			Hemingway Expansion	
7	Populus – Cedar Hill			Single-Circuit 500-kV	
9	Cedar Hill – Hemingway			Single-Circuit 500-kV	
10	Midpoint – Cedar Hill			Single-Circuit 500-kV	
	Borah Substation			Borah Expansion	
	Midpoint Substation			Midpoint Expansion	
	Hemingway Substation			Hemingway Expansion	
5	Populus – Borah			Single-Circuit 500-kV	
6	Borah – Midpoint [1]			Existing single-circuit	
8	Midpoint – Hemingway			Single-Circuit 500-kV	

installed. Five to six weeks after foundation installation has begun, lattice tower assembly and erection can begin. For 230-kV and 345-kV construction, structure assembly and setting can begin immediately after the excavation of holes has begun. For 230-kV, 345-kV,and 500-kV construction, the wire installation crews start approximately 8 to 12 weeks after assembly and erection/setting begins. This is followed by final cleanup, reclamation, and restoration.

Substation construction includes five activities: 1) site grading (grading and access road development), 2) below-grade construction (primarily the installation of foundations, 3) above-grade construction (steel erection and building construction), 4) electrical (installation and termination of control wiring), and 5) testing (functional testing of control and monitoring schemes). Typically, these activities overlap and complement each other, allowing the construction of a substation to proceed more quickly than line construction. It is estimated that the site grading activity and access road work for

Gateway West substations will take 4 to 8 weeks to complete, depending on the size of the site.

Below-grade construction can be completed in 3 months or less for all substations that are expansions of existing substations. In these cases the basic infrastructure is already in place, having been installed with the initial substation and designed for the future expansion requirements. Only the new substations will take longer to complete.

Above-grade construction duration is highly dependent on the level of construction force the contractor chooses. Due to the size of each station, many crews can work on steel erection and equipment assembly without interfering with each other. It is estimated that for the majority of the substations the erection of steel, bus assembly, and major equipment assembly can be completed in between 4 months for the smaller substations and 6 months for the larger substations.

Electrical construction is a long and labor-intensive task. Although multiple crews can work in a yard at any given time, the space in a control building is very limited and will determine the length of this task. In the case of each of these stations, given the size and type of equipment to be installed, there will be miles of cable to be pulled into conduit and duct banks and thousands of connections to be made and double checked prior to the start of testing. New substations will take longer than existing substations that already have the basic infrastructure in place.

Prior to starting construction, the Companies may be required to conduct on-site surveys in accordance with applicable protocols or mitigation measures adopted by BLM and other agencies as Project conditions. Accordingly, adjustments might occur to the Project schedule as necessary to avoid sensitive resources. Pre-construction activities, including pre-construction environmental surveys, materials procurement, design, contracting, ROW acquisition, and permitting efforts, are not shown in the summary schedule.

The schedule is predicated upon the Companies' ability to complete the following tasks in a timely manner:

- Secure all necessary permit approvals;
- Secure agency support;
- Complete biological and cultural survey work;
- Construct within environmental time constraints;
- Order and receive equipment;
- Secure construction contractor resources and associated construction equipment; and
- Maintain continuous construction activity with no delay due to environmental, administrative, or legal issues.

4.0 SYSTEM OPERATIONS AND MAINTENANCE

The 500-kV transmission lines to be constructed as part of the Project will comprise critical infrastructure of the RMP and Idaho Power transmission systems, and of the western U.S. electrical grid. Limiting the duration of unplanned outages and planning

for the use of live-line maintenance techniques to minimize the requirement for any outages is an important part of the design, construction, and operations/maintenance requirements for this Project.

4.1 Routine System Operation and Maintenance

The goal of the Companies is to provide their customers with a reliable supply of electricity while maintaining the overall integrity of the regional electrical grid. The Companies' obligation to maintain reliable operation of the electrical system is documented in the Companies' agreements with the various states through the public service commissions and is directed through compliance with industry standard codes and practices such as the NESC (ANSI C2), which governs the design and operation of high-voltage electric utility systems.

In 2005, Congress passed the Energy Policy Act of 2005, which provided a regulatory basis for the implementation of specific incentives (and penalties) for maintaining reliable service, among other issues. As a result of the passage of the Act, the FERC selected the NERC to act as the enforcement agency for compliance with electric utility reliability and operating standards, among other issues. The Companies are required to be in compliance with the various reliability standards promulgated through the implementation of the NERC policies and procedures. Additionally, PacifiCorp and Idaho Power are governed by the WECC standards that may be in addition to or more stringent than those currently required by NERC (see also Section 1.3.3.3 for further description of these regulatory agencies). In response, the Companies have prepared internal operation and maintenance policies and procedures designed to meet the requirements of the NERC, WECC, and the state public utility commissions, while remaining in compliance with the applicable codes and standards with respect to maintaining the reliability of the electrical system.

Operations and maintenance activities include transmission line patrols, climbing inspections, structure and wire maintenance, insulator washing in selected areas as needed, and access roads repairs. The Companies will keep necessary work areas around structures clear of vegetation and will limit the height of vegetation along the ROW. Periodic inspection and maintenance of each of the substations and communications facilities is also a key part of operating and maintaining the electrical system. The following sections provide details on the anticipated operation and maintenance activities for Gateway West.

After the transmission line has been energized, land uses that are compatible with safety regulations will be permitted in and adjacent to the ROW. Existing land uses such as agriculture and grazing are generally permitted within the ROW. Incompatible land uses within the ROW include construction and maintenance of inhabited dwellings and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses that comply with local regulations will be permitted adjacent to the ROW. Compatible uses of the ROW on public lands would have to be approved by the appropriate agency. Permission to use the ROW on private lands will have to be obtained from the utility owning the transmission line.

4.1.1 Routine System Inspection, Maintenance, and Repair

Regular inspection of transmission lines, substations, and support systems is critical for safe, efficient, and economical operation of the Project.

4.1.2 Transmission Line Maintenance

Regular ground and aerial inspections will be performed in accordance with the Companies' established policies and procedures for transmission line inspection and maintenance. The Companies' transmission lines and substations will be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other mechanical problems. The need for vegetation management will also be determined during inspection patrols.

Inspection of the entire transmission line system is conducted semi-annually. Aerial inspection is conducted by helicopter semi-annually and requires two or three crew members, including the pilot. Detailed ground inspections take place on an annual basis using access roads to each structure. Ground inspection uses 4x4 trucks or 4x4 ATVs. The inspector assesses the condition of the transmission line and hardware to determine if any components need to be repaired or replaced, or if other conditions exist that require maintenance or modification activities. The inspector also notes any unauthorized encroachments and trash dumping on the ROW that could constitute a safety hazard. The inspector accesses each of the structure locations along each line and uses binoculars and spotting scopes to perform this inspection.

4.1.3 Hardware Maintenance and Repairs

Routine maintenance activities are ordinary maintenance tasks that have historically been performed and are regularly carried out on a routine basis. The work performed is typically repair or replacement of individual components (no new ground disturbance), performed by relatively small crews using a minimum of equipment, and usually is conducted within a period from a few hours up to a few days. Work requires access to the damaged portion of the line to allow for a safe and efficient repair of the facility. Equipment required for this work may include 4-wheel-drive trucks, material (flatbed) trucks, bucket trucks (low reach), boom trucks (high reach), or personnel lifts. This work is scheduled and is typically required due to issues found during inspections. Typical items that may require periodic replacement on a 500-kV tower include insulators, hardware or tower members. It is expected that these replacements will be required infrequently.

The Companies plan to conduct maintenance on the critical 500-Kv, 345-kV and 230-kV system using live line maintenance techniques. Maintenance on the transmission lines can be completed safely using live line techniques thereby avoiding an outage to the critical transmission line infrastructure. High reach bucket trucks along with other equipment are used to conduct these activities. For the 500-kV lattice tower structures, this requires that adequate space be available at each structure site so that the high reach bucket truck can be positioned to one side or the other of the structure and reach up and over the lower phases to access the upper center phase for live-line maintenance procedures. For the 230-kV H-frame structures, this requires that adequate space be available at each structure site so that a bucket truck can be positioned to access the outside phases. To allow room at each structure for these

activities, in low slope areas a pad area is required with the structure in the center of 250 feet (ROW width) by 100 feet for the single-circuit 500-kV structure, 150 feet by 50 feet for the 345-kV H-frame structure, and 125 feet by 50 feet for the 230-kV H-frame structure. Figures B-16 through B-18 depict the space requirements for live-line maintenance. The size and location of these required pads near the structures may vary depending on the side slope and access road at each site. The work areas and pads are cleared to the extent needed to safely complete the work. These pads remain in place after construction, but are revegetated after the initial construction is completed.

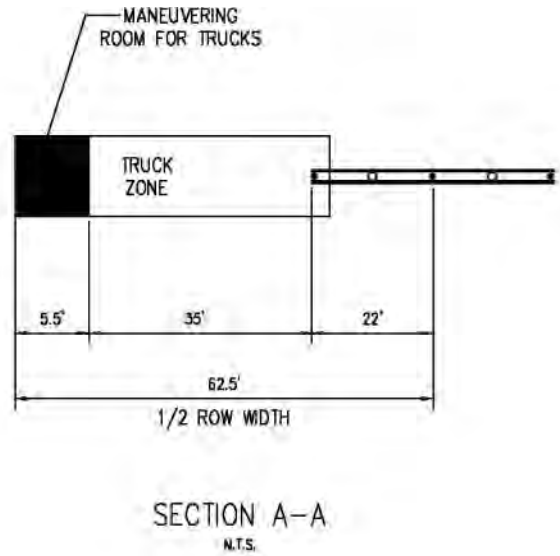
4.1.4 Access Road and Work Area Repair

ROW repairs include grading or repair of existing maintenance access roads and work areas, and spot repair of sites subject to flooding or scouring. Required equipment may include a grader, backhoe, four-wheel-drive pickup truck, and a tracked-loader or bulldozer. The cat-loader has steel tracks whereas the grader, backhoe, and truck typically have rubber tires. Repairs to the ROW are scheduled as a result of line inspections, or occur in response to an emergency situation.

4.1.5 Vegetation Management

The Companies must maintain work areas adjacent to electrical transmission structures and along the ROW for vehicle and equipment access necessary for operations, maintenance, and repair, including for live-line maintenance activities as described in Section 3.1.3, under Hardware Maintenance and Repairs. Figures B-16 through B-19 illustrate the typical equipment and space needed for live-line maintenance. During scheduled vegetation management activities, tall growing species, large shrubs and other obstructions are removed near structures to facilitate a safe working environment for inspection and maintenance of equipment and to ensure system reliability. At a minimum, trees and large brush are cleared within a 25-foot radius of the base or foundation of all electrical transmission structures, and to accommodate equipment pads to conduct live line maintenance operations as noted.

Vegetation management practices along the ROW will be in accordance with the Idaho Power and PacifiCorp clearing specifications and vegetation management plans (Idaho Power 2008; PacifiCorp 2007c; and Appendix R). Much of the transmission line route traverses arid country characterized by low-growing vegetation, while higher elevations receive more precipitation and exhibit more vegetation. The wire-border zone method to controlling vegetation is an approach used by PacifiCorp (2007c). This method results in two zones of clearing and revegetation. The wire zone is the linear area along the ROW under the wires and extending 10 feet outside of the outermost phase conductor. After initial clearing, vegetation in the wire zone will be maintained to consist of native grasses, legumes, herbs, ferns, and other low-growing shrubs that remain under 5 feet tall at maturity. The border zone is the linear area along each side of the ROW extending from the wire zone to the edge of the ROW. Vegetation in the border zone will be maintained to consist of tall shrubs or short trees (up to 25 feet high at maturity), grasses, and forbs. These cover plants benefit the ROW by competing with and excluding undesirable plants. The width of the wire and border zones is depicted in Figure B-19 for the 230-kV and 345-kV H-frames and 500-kV single -circuit tower line segments. During operations, vegetation growth will be monitored and managed to



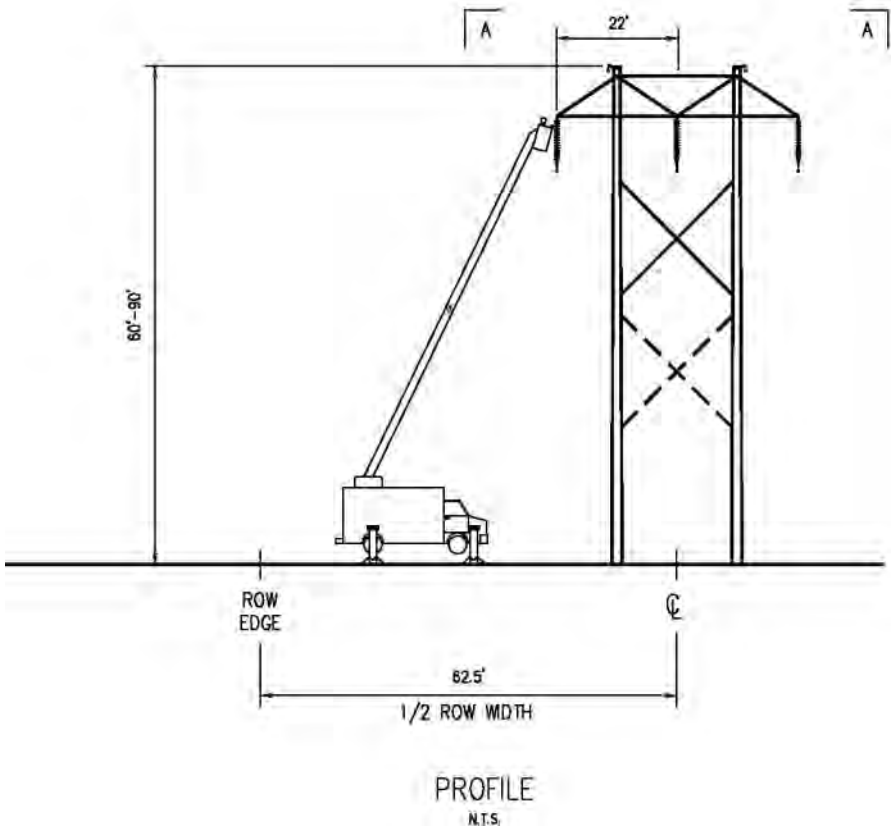
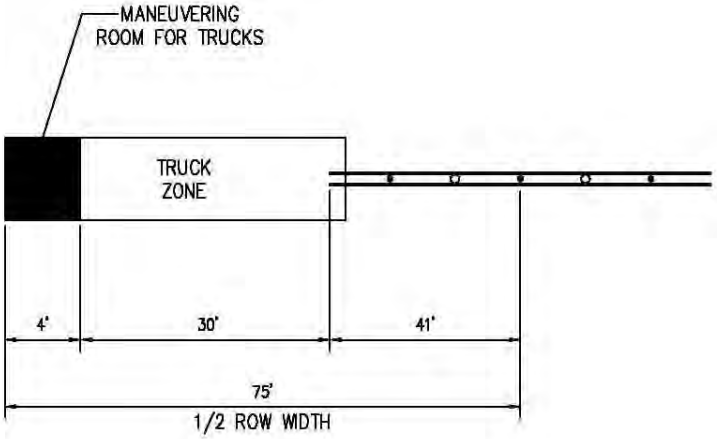
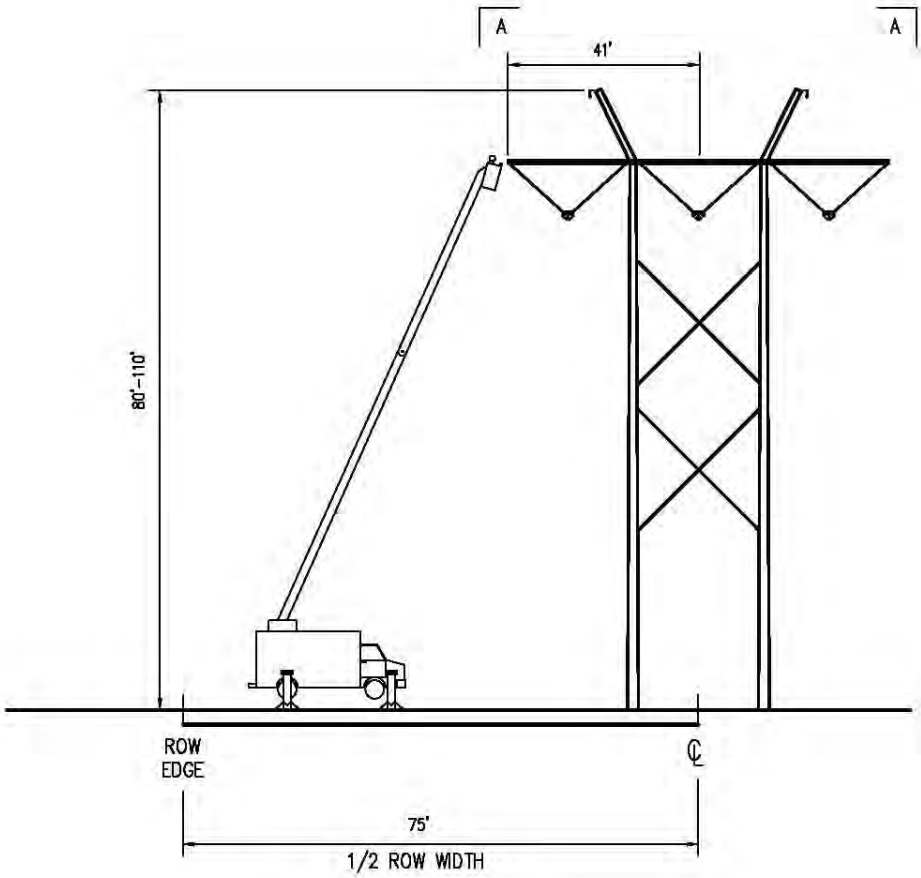


Figure B-16. Live-line Maintenance Space Requirements, 230 kV



SECTION A–A
N.T.S.



PROFILE
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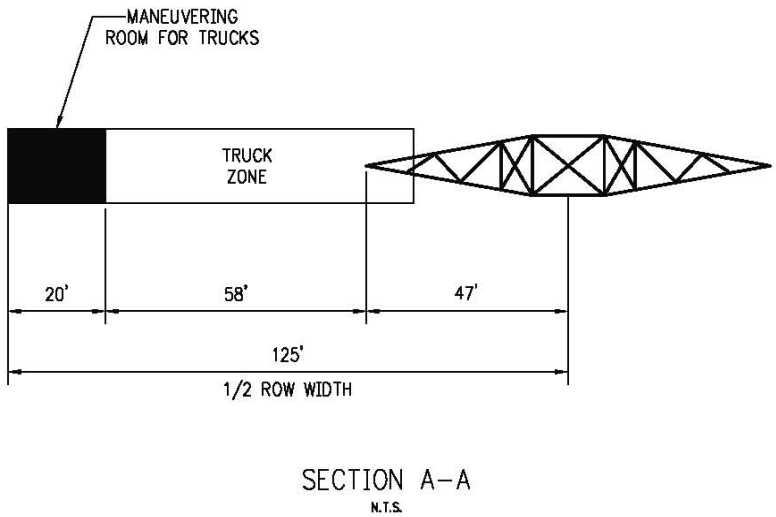
Figure B-17. Live-line Maintenance Space Requirements, 345 kV



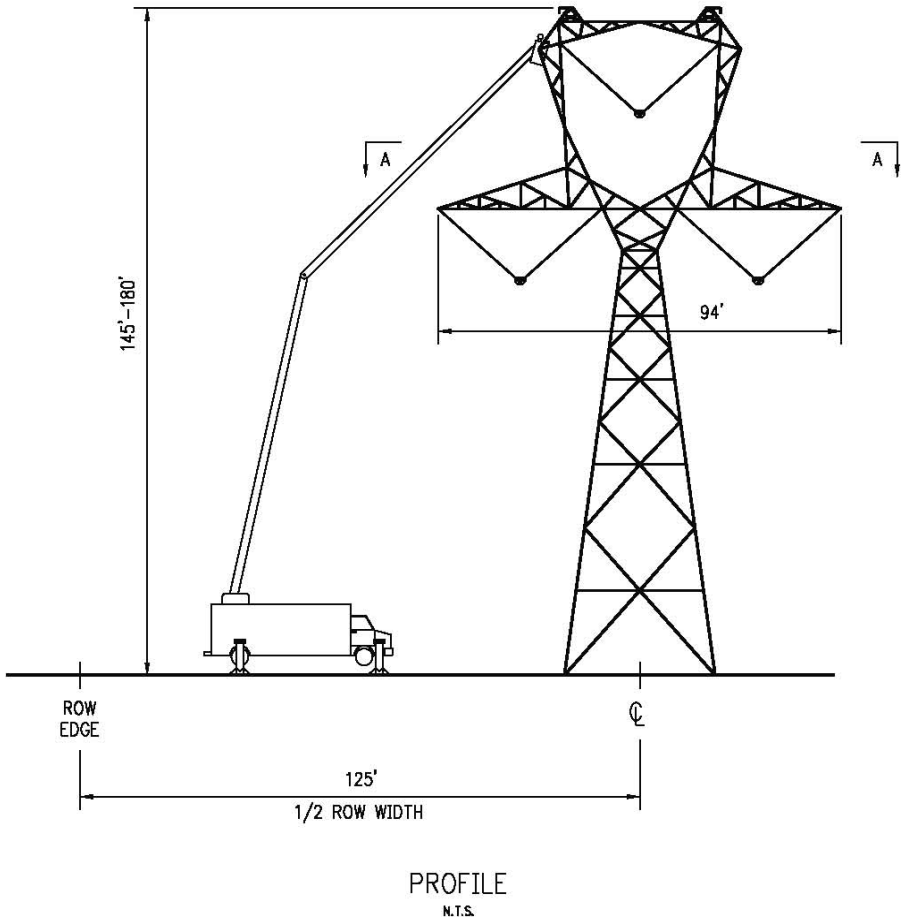
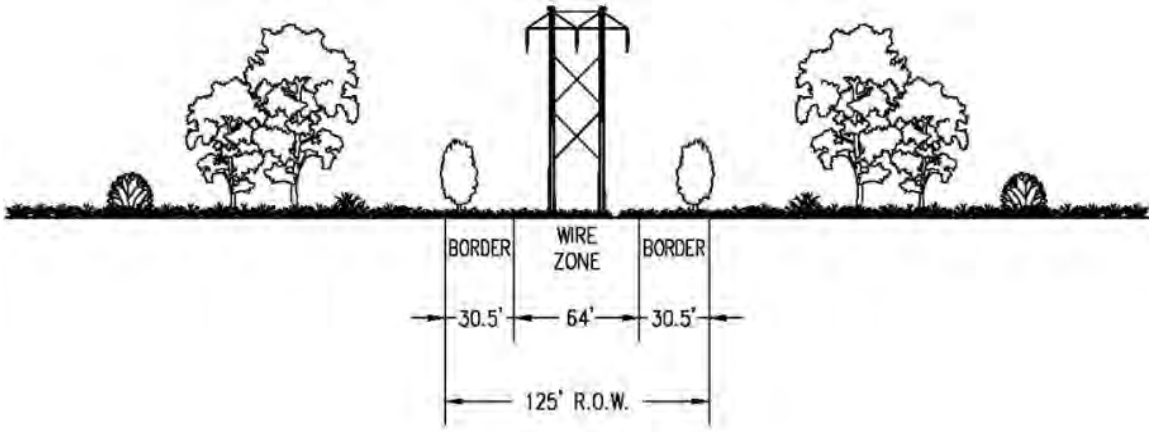
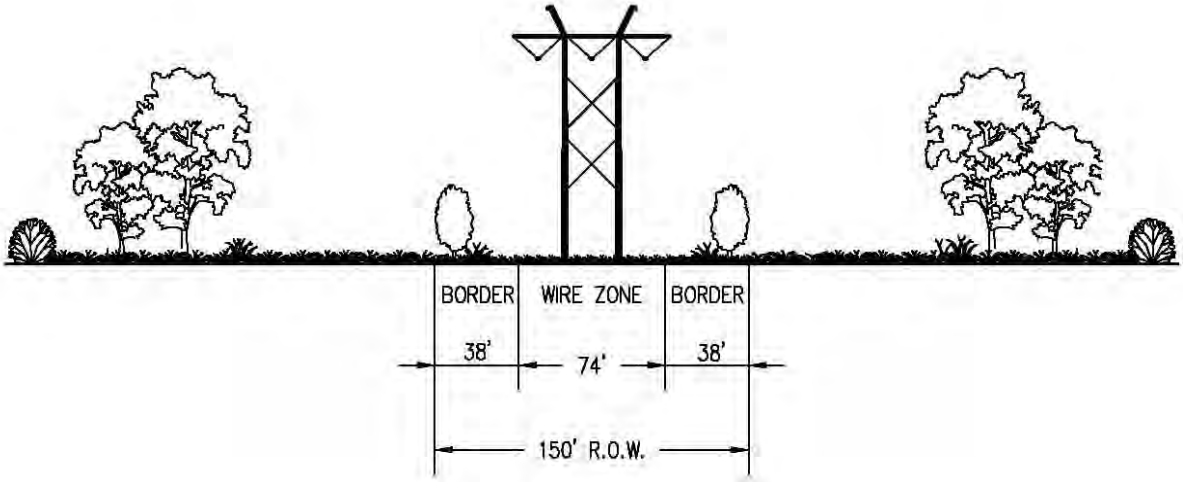


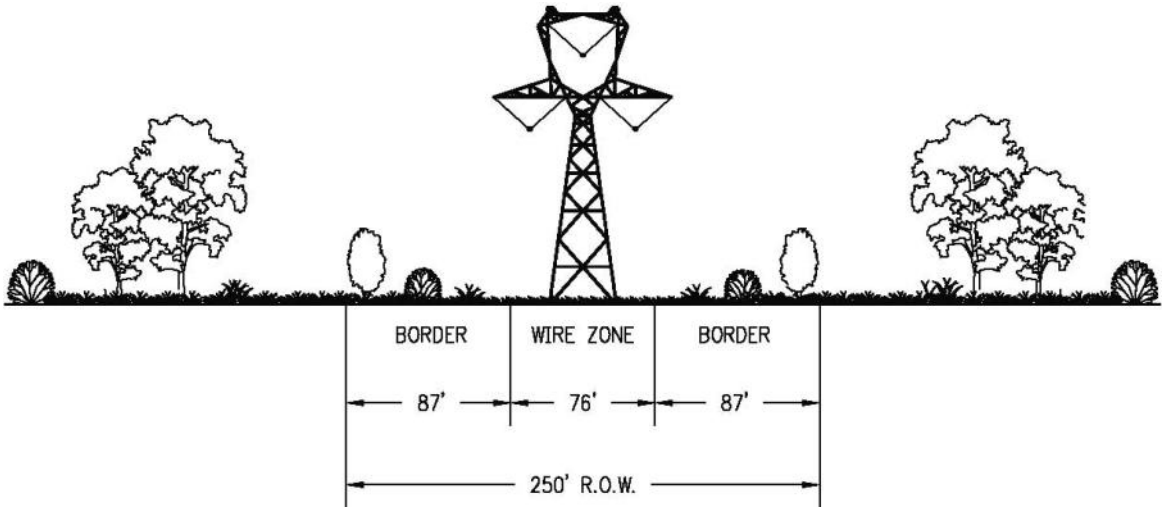
Figure B-18. Live-line Maintenance Space Requirements, Single-Circuit 500 kV



Single Circuit 230 kV

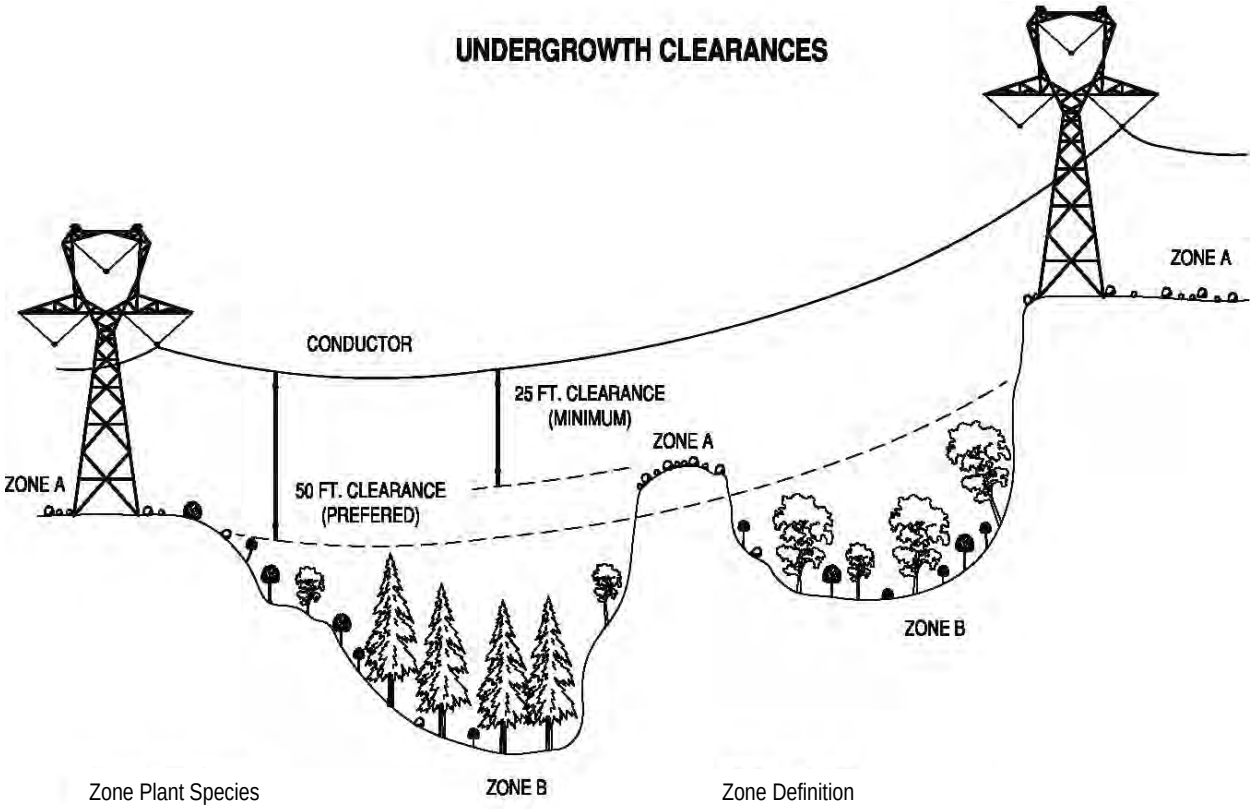


Single-Circuit 345 kV



Single-Circuit 500 kV

Figure B-19. Right-of-Way Vegetation Management



Zone Plant Species

Zone A: Grasses, legumes, herbs, ferns and low growing shrubs.

Zone B: all deciduous and conifer trees.

Zone Definition

Zone A: When the conductor to ground clearance is less than 50', all tree species should be removed.

Zone B: When the conductor to ground clearance is greater than 50', all tree species should be removed if they have less than 50' of clearance, 25' minimum.

Figure B-20. Right-of-Way Vegetation Management in Steep Terrain

maintain the wire-border zone objectives. Idaho Power's approach is to remove all tree species within the ROW where the conductor ground clearance is less than 50 feet, leaving grasses, legumes, herbs, ferns, and low-growing shrubs within the ROW. When conductor ground clearance is greater than 50 feet, for example a canyon or ravine, the Companies make provisions for allowing trees and shrubs to remain, provided they do not violate minimum clearance thresholds set forth by their respective companies.

Vegetation will be removed using mechanical equipment such as chain saws, weed trimmers, rakes, shovels, mowers, and brush hooks. Clearing efforts in heavy growth areas will use equipment such as a Hydro-Ax or similar. The duration of activities and the size of crew and equipment required depends on the amount and size of the vegetation to be trimmed or removed.

In selected areas, herbicides may be used to control noxious weeds and to meet vegetation management objectives. All herbicide applications will be performed in accordance with federal, state, and local regulations, and in compliance with managing land agency requirements.

4.1.6 Substation and Regeneration Station Maintenance

Substation and regeneration station monitoring and control functions are performed remotely from the Companies' central operations facilities located at PacifiCorp's operation center in Portland, Oregon, and by Idaho Power from their operation center in Boise, Idaho. Unauthorized entry into substations or regeneration stations is prevented with the provision of fencing and locked gates. Warning signs will be posted and entry to the operating facilities will be restricted to authorized personnel. Gateway West substations and regeneration stations will not be staffed; however, a remotely monitored security system will be installed. Several forms of security are planned for each of the locations, although the security arrangements at each of the substations or regeneration stations may differ somewhat. Security measures may include fire detection in the control building via the remote monitoring system; alarming for forced entry; and a perimeter security system coupled with remote sensing infrared camera equipment in the fenced area of the station to provide visual observation/confirmation to the system operator of disturbances at the fence line.

Maintenance activities include equipment testing, equipment monitoring and repair, and emergency and routine procedures for service continuity and preventive maintenance. It is anticipated that maintenance at each substation will require approximately six trips per year by a 2- to 4-person crew. Routine operations require one or two workers in a light utility truck to visit the substations monthly. Typically, once per year a major maintenance inspection takes place requiring up to 15 personnel for 1 to 3 weeks. Regeneration stations are visited every 2 to 3 months by one individual in a light truck to inspect the facilities. Annual maintenance is performed by a two man crew in a light truck over a 2- to 5-day period. If substation landscaping is required by the permitting agency, drought-tolerant plant materials will be used to minimize watering requirements after plant establishment.

Safety lighting at the substations will be provided inside the substation fence for the purpose of emergency repair work. Because night activities are not expected to occur more than once per year, the safety lighting inside the substation fence will normally be turned off. One floodlight, mounted near the entry gate to safely illuminate the substation entry gate, may be left on during nighttime hours.

4.2 Emergency Response

The operation of the system is remotely managed and monitored from control rooms at PacifiCorp's operation center in Portland, Oregon, and by Idaho Power from their operation center in Boise, Idaho. Electrical outages or variations from normal operating protocols are sensed and reported at these operation centers. As well, the substations are equipped with remote monitoring, proximity alarms, and in some cases video surveillance.

The implementation of routine operation and maintenance activities on powerlines minimizes the need for most emergency repairs. Emergency maintenance activities are often those activities necessary to repair natural hazard, fire, or human-caused damages to a line. Such work is required to eliminate a safety hazard, prevent imminent damage to the powerline, or restore service if there is an outage. In an emergency, the Companies must respond as quickly as possible to restore power.

The equipment necessary to carry out emergency repairs is similar to that necessary to conduct routine maintenance, in most cases. Emergency response to outages may require additional equipment to complete the repairs. For example, where the site of the outage is remote, helicopters may be used to respond quickly to emergencies.

In practice, as soon as an incident is detected, the control room dispatchers notifies the responsible operations staff in the area(s) affected and crews and equipment are organized and dispatched to respond to the incident.

4.2.1 Fire Protection

All federal, state, and county laws, ordinances, rules, and regulations pertaining to fire prevention and suppression will be strictly adhered to. All personnel will be advised of their responsibilities under the applicable fire laws and regulations.

When working on Public Lands, the Companies' employees and contractors will carry required suppression tools and equipment. The Companies or their construction contractor will notify local fire authorities and the BLM or Forest Service (as appropriate) if a Project-related fire occurs within or adjacent to a construction area.

If the Companies become aware of an emergency situation that is caused by a fire on or threatening BLM-managed or NFS lands and that could damage the transmission lines or their operation, they will notify the appropriate agency contact. Specific construction-related activities and safety measures will be implemented during construction of the transmission line to prevent fires and to ensure quick response and suppression if a fire occurs. Typical practices to prevent fires during construction and maintenance/repair activities include brush clearing prior to work, stationing a water truck at the job site to keep the ground and vegetation moist in extreme fire conditions, enforcing red flag warnings, providing "fire behavior" training to all pertinent personnel, keeping vehicles on or within designated roads or work areas, and providing fire suppression equipment and emergency notification numbers at each construction site.

5.0 DECOMMISSIONING

The proposed transmission line has a projected operational life of 50 years or longer. At the end of the useful life of the Project and if the facility were no longer required, the transmission line would be removed from service. At such time, conductors, insulators, and hardware would be dismantled and removed from the ROW. Structures would be removed and foundations removed to below ground surface.

Following abandonment and removal of the transmission line structures and equipment from the ROW, any areas disturbed during line dismantling would be restored and rehabilitated. In the same way, if a substation is no longer required, the substation structures and equipment would be dismantled and removed from the site. The station structures would be disassembled and either re-used at another station or sold for scrap. Major equipment such as breakers, transformers, and reactors would be removed, refurbished, and stored for use at another facility. Foundations would be either abandoned in-place or cut off below ground level and buried.

The Companies describe roads necessary for the operation and maintenance of transmission lines as either access roads or service 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. Access roads provide direct or indirect access to the transmission lines, but that access is not their primary purpose. The Companies are responsible for the reclamation of service roads following abandonment and in accordance with the landowner's direction, but are not responsible for reclamation of access roads unless mutually agreed upon by the Companies and the landowner or required by the land management agency. Service roads would be decommissioned following removal of the structures and lines and may be decommissioned while the lines are in-service if they are determined to no longer be necessary.

The Companies may decommission service roads by 1) entering into an agreement with the BLM or Forest Service under which the agencies restore the road located on federal lands and are reimbursed for costs by the Companies, or 2) the Companies or their contractor implement restoration measures as described below.

When a service road has been identified as no longer necessary, the road will be reclaimed and seeded as soon as possible during the optimal seeding season. In some cases, reseeding may not be necessary, given the existing amount of soil compaction and vegetation currently in place. Where required by the land management agency, compacted areas would be ripped and appropriate sediment control measures would be implemented.

The seed mix used for any restoration and revegetation project would be determined in consultation with the landowner or land management agency. All seed and plant material used on federal lands would be approved by the land management agency. All seed would meet all of the requirements of the Federal Seed Act and applicable Idaho and Wyoming laws regarding seeds and noxious weeds. Only seed certified as "noxious weed free" would be used. If requested, the Companies or their contractor would provide the landowner with evidence of seed certification. Any seed mixture would not contain aggressive, non-native species that might invade the site. Where necessary, the surface of the ground would be prepared prior to seeding. Where practical, the Companies would follow these guidelines for preparing the seedbed:

1. The road surface would be cleared of foreign materials, such as garbage, paper, and other materials, but all rocks, limbs, or minor woody debris would be left in place. The Companies or their contractor would prepare the seedbed immediately prior to seeding.
2. Under favorable soil-moisture conditions, a standard disk or spring bar harrow would be used (where ripping is not required) to roughen the topsoil layer to create the desired surface texture before the seed is applied. Dirt clods and chiseled voids resulting from the roughening process increase the surface area for water collection and provide microsites for seed establishment. The soil should be disked or harrowed to no more than 2 inches deep at a time when soil

moisture allows the surface to remain rough, with clods approximately 2 to 4 inches in diameter.

3. Ripping, disking, or harrowing would be performed parallel to surface contours. In this way, downslope alignment of furrows can be avoided. In areas that already have the desired soil characteristics; the seedbed does not need to be prepared.

After the seedbed has been prepared, the Companies or their contractor would broadcast the seed on the disturbed area, after which the seed would be lightly harrowed into the roadbed or raked into the ground. Mulch and fertilizers would be added if necessary. An area would not be seeded when wind velocities prohibit the seed mix from being applied evenly. If the seed does not germinate and establish to an agreed-upon level of vegetation cover (e.g., consistent with adjacent site conditions) after two growing seasons, the Companies or their contractor would reseed during a period acceptable to the landowner. On NFS lands, the Companies would be responsible for monitoring the effectiveness of soil protection and restoration measures and would take corrective measures as needed to ensure long-term soil protection.

Other seeding methods, such as drilling, hydroseeding, or aerial application, may be used depending on the area that requires reclamation and site conditions.

APPENDIX C
ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN

Appendix C

Framework Environmental Compliance Management Plan

Gateway West Transmission Line Project

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single- circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), and the states of Idaho and Wyoming.

The BLM and USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way grant and USFS's special use authorization on federal lands during the term of the grant/special-use authorization, respectively. As the lead federal agency, the BLM will engage a third-party Compliance Inspection Contractor (CIC) to act on behalf of the BLM and USFS to provide construction oversight and monitor compliance with the terms and conditions of the BLM's right-of-way grant and the USFS's special-use authorization.

On federal lands, the CIC will inspect and monitor preconstruction and construction activities, as well as enforce the terms and conditions of the BLM's right-of-way grant and the USFS's special-use authorization. On non-federal lands, the CIC will inspect and monitor preconstruction and construction activities, document disturbance of the entire Project on all lands analyzed in the Environmental Impact Statement (EIS) and enforce requirements related to BLM and Forest Service responsibilities under the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA).

In addition, the Project will require adherence to any federal, state, and local permits, as well as private landowner agreements (if applicable), that include conditions to construct. The responsibility of compliance monitoring and enforcement of non-federal conditions will be determined between the Companies and the landowner on a case-by-case basis.

Because of the Project's potential to impact sensitive environmental resources, environmental protection measures (EPMs) have been developed to minimize potential impacts on these resources (see Section 4 of the Plan of Development [POD]).

2.0 ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN ELEMENTS AND AUTHORITY

This Environmental Compliance and Monitoring Plan (ECMP) is the primary guidance document that states how the Project participants will uphold, document, and manage compliance with the right-of-way grant/special-use permit; the POD; landowner agreements, and all federal, state, and local permits. It is a centralized Project environmental compliance reference and is thereby intended to facilitate environmental compliance across the entire Project for all parties and describes the following essential elements:

- Roles and responsibilities of the participants
- Comprehensive inspection and monitoring program
- Corrective procedures in the event of noncompliance
- Standard protocol for variance requests, exceptions, and other deviations
- Communication plan
- Reporting process
- Comprehensive Project-specific environmental compliance training program

The Companies' commitment to environmental compliance will be demonstrated by activities prior to, during, and following construction. The ECMP is intended to be a controlled document and may be revised as needed throughout the construction process. Because the Project will cross federal and state lands as well as lands owned privately and/or under the jurisdiction of multiple agencies, the ECMP will be applicable for multiple jurisdictional permitting entities and landowners.

Authority for implementation of this ECMP originates from the terms, conditions, and stipulations of the BLM's right-of-way grant and the USFS's special-use permit, the POD, the Final EIS, the Record of Decision (ROD), the Notice to Proceed (NTP), and other conditions associated with nonfederal agency permits. As part of the Companies' environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods set forth in the POD (within the bounds of construction activities and associated disturbance analyzed in the Final EIS).

Project specific permitting documents, including but not limited to those identified above, must be reviewed prior to any construction activities to identify all Project-wide and site specific requirements. These documents will be distributed by the CIC to the appropriate parties for their review prior to the initial construction kickoff meeting. At that time, a document control system to manage distribution of all documents and revisions will be presented and demonstrated.

The Companies and BLM have agreed to use a third-party CIC to act on the BLM and USFS's behalf to ensure adequate oversight during construction. The CIC will be hired by the Companies prior to the BLM and USFS offering the right-of-way grant and special use authorization, respectively, to allow adequate time for the CIC to review

documents and develop on-the-ground familiarity with the Project. The CIC will be authorized to enforce the POD on BLM- and USFS-administered lands. The CIC will also ensure BLM and USFS responsibilities under the NHPA and ESA are met on non-federal lands and disturbance on non-federal lands is consistent with the analysis in the EIS.

Environmental Inspectors will be retained by the Construction Contractor(s) but will report to the Proponent who will then report to the BLM (as shown in the organizational chart in Figure 3-1 in Section 3.0 – Roles and Responsibilities). The Environmental Inspectors' primary focus will be to make certain that all construction activities in all Project segments and phases are performed in accordance with the environmental commitments set forth in the POD, permits, and individual agreements. The Environmental Inspectors will be of particular importance on non-federal lands, where the CIC will have authority limited to NEPA and ESA responsibilities and in some cases, may not be allowed to access the Project right-of-way. In such cases, in addition to monitoring for environmental compliance with the POD, permits, and individual agreements, the Environmental Inspectors must document all construction activities and Project disturbance that occurs at each work area, which will be included in the total Project disturbance tracking maintained by the CIC (Section.2.3).

The BLM, through the CIC and the Companies will provide direct oversight of the Construction Contractor's environmental compliance performance, with any specific work direction to the Construction Contractor(s) only coming from the Companies. Additional information about the Construction Contractor's role in this ECMP is explained in Section 3 below.

3.0 ROLES AND RESPONSIBILITIES

The following section describes the responsibilities of each ECMP entity and describes their reporting relationships and roles in executing the ECMP (Figure 3-1). If other parties become engaged in this ECMP as additional participants, they would be responsible to function and abide by the protocols, terms, and conditions outlined in this ECMP and their reporting relationships would be case-specific according to their jurisdiction, expertise, and/or nature of their input.

Section 3, Roles and Responsibilities, briefly discusses the variance process. However, a more detailed variance discussion is located in Section 4.2, Variances.

3.1 Companies

The Companies will act as holder of all rights-of-way easements, public and private, and will be the grant holder for the BLM right-of-way and USFS special-use authorization. As such, the Companies is ultimately accountable for adherence to the environmental permit requirements specified in the terms of its agreements and is responsible for ensuring that environmental impacts do not exceed those analyzed in the Final EIS and approved in the POD. To facilitate this goal, the Companies will maintain regular and consistent communication with the Construction Contractor(s) to track the success of mitigation and compliance efforts prior to, during, and following construction. As the permit holder, the Companies are responsible for assuring that all instances of noncompliance are corrected.

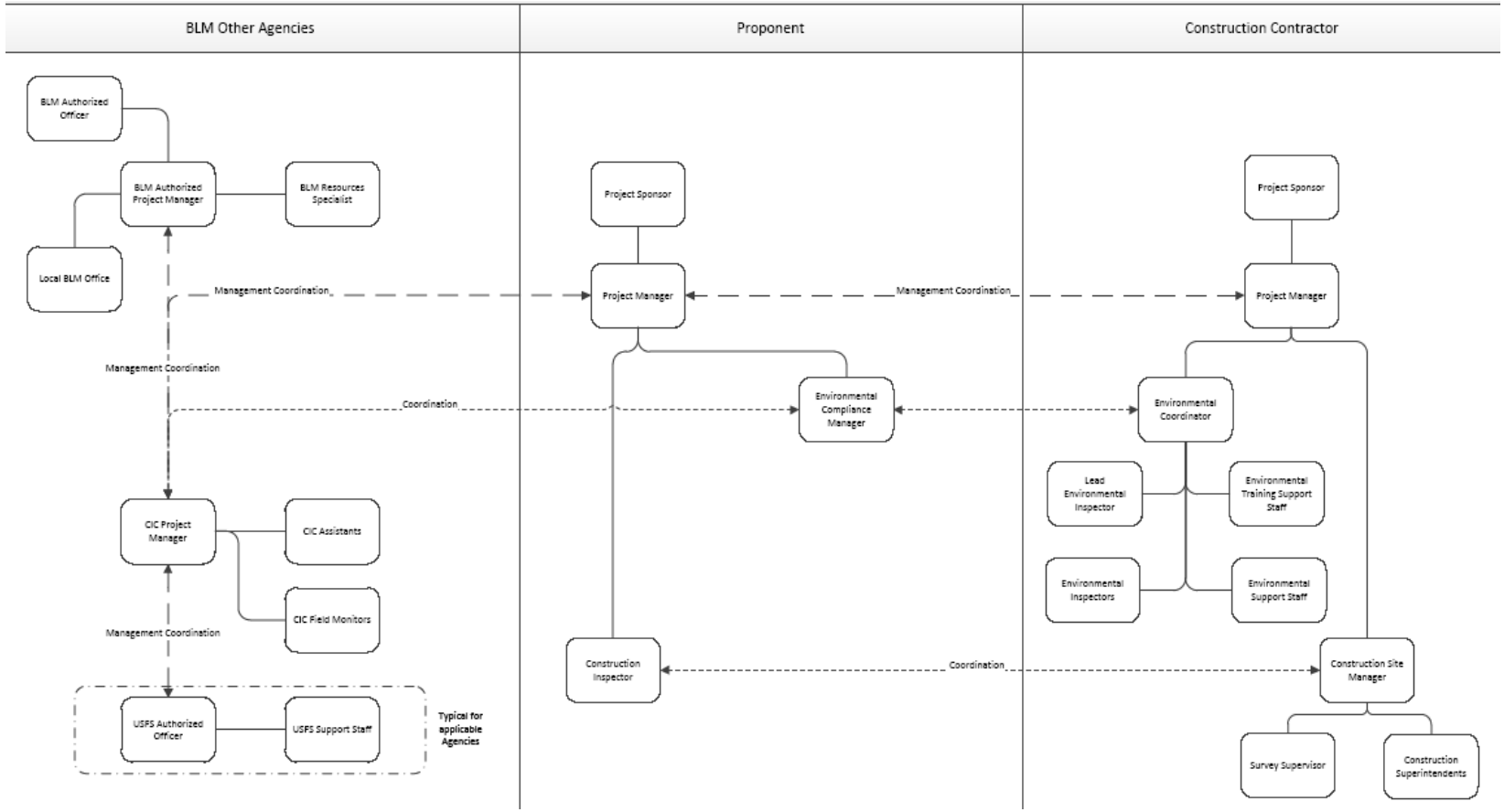

Figure 3-1. ECMP Organization Chart

3.1.1 Companies' Project Sponsor

- Responsible for Project delivery. Ensures effective coordination occurs between the Companies Project Manager and Environmental Compliance Manager with the BLM's Project Manager and CIC and the Construction Contractor's Project Manager to verify environmental compliance meets the requirements of all applicable laws, permits, and agreements.
- Informs the Construction Contractor(s) they are contractually bound to comply with all of the Project's environmental requirements including the implementation of the ECMP.

3.1.2 Companies' Project Manager

- Responsible for all aspects of Project execution and completion.
- Enforces Construction Contractor(s) compliance with all environmental laws and regulations, including the right-of-way grant, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Manages Companies' Construction Inspector and Environmental Compliance Manager.

Reporting

- Reviews and evaluates weekly reports.
- Reports environmental compliance violations to Companies' Project Sponsor as needed.

Variances

- Reviews and approves Construction Contractor's written variance requests for submittal to the CIC.
- Delegates authority to approve submittal of Construction Contractor's variance requests to the BLM as needed.

3.1.3 Environmental Compliance Manager

- Facilitates oversight and coordination of Construction Contractor's compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Coordinates with Companies' Project Manager and Construction Inspector (see Section 3.1.4 – Companies' Construction Inspector), the Construction Contractor's environmental inspection/compliance personnel (see Section 3.3.7- Construction Contractor's Environmental Reporting Coordinator, and the CIC (see Section 3.3.2- Compliance Inspection Contractor) on a regular basis to evaluate environmental compliance with the Project.
- Monitors completion of all preconstruction and post-construction commitments.
- Serves as the primary Companies' contact regarding environmental issues.
- Communicates environmental compliance issues to the CIC and tracks resolution of issues to completion.

- Coordinates field inspection visits with Construction Contractor(s).
- Maintains coordination with the Companies' environmental department throughout the life of the Project.
- Coordinates submittal of all Work Authorizations associated with the BLM NTP

Reporting

- Provides updates of environmental compliance, including corrective actions, to the Project Manager.
- Compiles and distributes environmental permit and plan updates to Companies' staff and the Construction Contractor's Environmental Coordinator.
- Reviews all Construction Contractor(s) derived environmental documentation including, but not limited to, site specific environmental plans, environmental plans, variance requests, daily reports, and weekly reports.

Variances

- Provides review and comments of written variance requests from the Construction Contractor(s).
- Submits completed variances to the Companies' Project Manager for review, approval, and submission to the CIC.

3.1.4 Companies' Construction Inspector

- Observes, witnesses, and monitors the construction activities of the Construction Contractor(s) for compliance to the engineering contract documents, plans, standards, and specifications, to ensure construction quality.
- Understands the Project's environmental requirements especially as they relate to specific construction activities.
- Coordinates with Companies' Environmental Compliance Manager regarding specific work activities scheduled to occur in sensitive resource areas that may require additional environmental oversight.
- Provides technical explanations of construction processes to Companies' Environmental Compliance Manager as needed.
- Attends environmental training class.

Reporting

- Reviews for accuracy and adequacy certain environmental compliance documents prepared by the Construction Contractor(s) that could include, but are not limited to, Spill Prevention, Control and Countermeasures Plan, Stormwater Pollution Prevention Plan(s), and emergency communications contact list.
- Provides any observations regarding environmental compliance to Construction Contractor's Environmental Reporting Coordinator.

3.2 BLM and USFS

The objective of the BLM and USFS is to ensure right-of-way grant and special-use permit compliance, respectively, during construction, operation, and maintenance

phases. The CIC shall represent the BLM and USFS during the construction and reclamation phases to help ensure right-of-way grant and special use authorization compliance and ensure environmental impacts do not exceed those analyzed in the Final EIS, and approved in the POD. The CIC assists the BLM and USFS by providing regular and consistent field observations, documenting his/her findings, processing and approving Level 1 Variance requests and/or other deviations for which authority has been delegated to the CIC, and working with the Companies and Construction Contractor(s) to identify compliance issues and maintain compliance during construction of the Project.

The CIC shall work under the direct supervision and control of the BLM. No direction with respect to times, places or manner of conducting monitoring shall be taken from the Companies or Construction Contractor(s); provided, however, that the CIC and the Companies work together to support the Project's timely and effective construction. If the CIC determines an action is in noncompliance, the CIC has the authority to issue an immediate temporary suspension or work stoppage order (WSO) for that specific work activity. However, all efforts shall be made to coordinate closely with the Companies and Construction Contractor(s) to report and document compliance concerns not otherwise identified by these parties, giving them the opportunity to resolve the concerns. Every effort shall be made to limit any work stoppage to situations involving immediate threats to sensitive resources, or emergency situations. The CIC is not, at any time or way, otherwise authorized to direct work undertaken by the Construction Contractor(s), with the exception of a WSO. If any additional environmental compliance oversight representative is required by agencies other than the BLM and USFS, their responsibilities would be consistent with those outlined for the BLM and USFS and the CIC as described in this ECMP, although their authority and enforcement would be solely applicable in their respective agency's area of jurisdiction.

It is not the role of the CIC to direct the work of either the Companies or the Construction Contractor(s). Rather, the CIC's primary role is to observe work activities, and bring noncompliant situations to the attention of the appropriate party and offer recommendations on how to prevent noncompliance.

3.2.1 BLM and USFS Authorized Officers

- Ultimate authority and decision maker for issues pertaining to BLM's right-of-way grant or USFS' special-use authorization.
- Supervises BLM Project Manager to verify environmental compliance meets the requirements of all applicable laws, permits, and agreements.
- Determines, in coordination with others, if any environmental noncompliance events, for which the Companies is accountable, qualify as violations to the terms and conditions of the right-of-way grant or special use authorization.
- In accordance with 43 Code of Federal Regulations (CFR) 2807 and CFR 36 CFR 251.60, suspends or terminates the right-of-way grant or special use authorization if the Companies and/or its Construction Contractor(s) do not comply with applicable laws and regulations or any terms, conditions, or stipulations (e.g., excessive or continuous noncompliance activities that

demonstrate a willful disregard for right-of-way grant or special use authorization terms and conditions).

- Issues BLM/USFS decisions unless otherwise delegated to the BLM Project Manager.

3.2.2 BLM and USFS Project Manager

- Enforces Companies' compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization,, POD, and federal permits during construction of the Project.
- Responsible for ensuring that right-of-way grant/special use authorization compliance during construction is done in a manner which facilitates timely and efficient construction while protecting the public interests and the environment.
- Responsible for ensuring that environmental impacts do not exceed those analyzed in the Final EIS and ROD.
- Manages third-party CIC
- Coordinates with BLM or USFS resource specialists for their technical expertise and input.
- Informs the Companies of any right-of-way or special use authorization violations due to environmental noncompliance and enforces their remedy.
- Reports major environmental compliance violations to BLM/USFS Authorized Officer.

Reporting

- Responsible to ensure that the Project Administrative Record is maintained accurately.

Variances

- If delegated by the Authorized Officer authorizes approval of Level 2 Variances or designates authority to others.

3.2.3 Compliance Inspection Contractor

- Represents the BLM/USFS in the field for compliance activities.
- Verifies and reports Construction Contractor's compliance with all environmental requirements and tracks all reported noncompliance events and their resolution.
- Tracks all Project construction disturbance for inclusion in an End of Construction Project Report (Section 8.2)
- Reports directly to the BLM Project Manager (or designees).
- Remains assigned to the Project through completion of reclamation and initial revegetation or termination of the Project unless otherwise directed by BLM.
- Reviews and understands the right-of-way grant/special-use authorization, Final EIS, Record of Decision, POD, and all other Project-specific environmental documents.

- Maintains copies of the right-of-way grant/special-use authorization and POD and possesses a copy while on the right-of-way.
- Verifies construction occurs as outlined in the POD, Final EIS, Record of Decision, and right-of-way grant/special-use authorization and within the limits of disturbances analyzed in the EIS.
- Performs compliance monitoring work in the field and from the CIC's office. At a minimum, CIC or designated monitors are required to be on the right-of-way when activities involving the use of construction equipment have the potential for significant surface disturbance or harm to sensitive resources. Exceptions can be made should the CIC, using professional judgment, determine that reductions in presence would not adversely impact compliance oversight (e.g., when Project phases have approached conclusion; when on-site activities are minimal).
- Responsible to gather the collective understanding of the intent and desired results of application of site specific mitigation measures and convey findings to all parties, if needed. If discrepancies are found between parties, CIC is responsible to collaborate with the Companies and Construction Contractor to work towards a resolution. In some cases, approval from the BLM Project manager may also be required.
- Coordinates regular compliance monitoring during construction.
- Discusses any potential compliance issues with the Construction Contractor's environmental inspection staff as soon as possible.
- Provides recommendations to the BLM/USFS Project Managers on ways to resolve or prevent noncompliance issues prior to the commencement of work.
- Manages and supports CIC Field Monitors and coordinates their daily activities.
- At a minimum, meets weekly with the BLM/USFS Project Managers (or designees), in person or by telephone, to review construction activities and the status of compliance.
- Communicates and coordinates regularly with Companies' Project Manager and Environmental Compliance Manager.
- Coordinates variance requests with the BLM/USFS Project Managers and Companies' Project Manager and Environmental Compliance Manager.
- Participates in meetings with the BLM/USFS Project Managers and Companies' Project Manager.
- Conducts the final route review and develops final report documenting the status of the right-of-way and the final amount of construction disturbance.
- Performs activities as instructed by BLM/USFS Project Managers.
- Responsible for tracking actual acres of disturbance through completion of construction and final reclamation.

- Performs post-construction reclamation monitoring as described in the Final Reclamation Plan in the POD (potentially conducted by a separate third-party contractor as determined by the BLM/USFS and the Proponent).

Reporting

- Documents all instances of noncompliance, or other problems that would reasonably be expected to result in environmental impacts. This may include, staking, flagging, or photographing problem areas, verifying locations with a global positioning system, and comparing them to the right-of-way grant/special-use authorization and POD maps as specified in the Compliance Plan.
- Provides weekly summary reports of compliance inspection to the BLM/USFS and the Companies via a secure, but mutually exclusive, website, with reporting due by Tuesday of the following week. In the event the CIC, BLM, or USFS temporarily cannot obtain reports through the secure website, reports will be transmitted by mail, e-mail, fax, or compact disk. Weekly reports shall summarize the prior week's activities and include a brief description of construction activities, compliance issues, any additional acreage disturbed resulting from variances and corrective actions taken and any foreseeable issues.
- Reviews CIC Field Monitor's daily reports for completeness and accuracy.
- Participates in all preconstruction meetings, safety meetings, safety training, environmental training, and other meetings called by the BLM or USFS, Companies, or Construction Contractor(s) which involve environmental compliance aspects of the Project. The CIC is responsible for preparing meeting notes that highlight all decisions made during these meetings.
- Provides post-construction reclamation monitoring reports to the BLM/USFS and Companies throughout the post-construction period (potentially conducted by a separate third-party contractor as determined by the BLM/USFS and the Proponent).

Variances

- Coordinates with BLM and USFS Project Managers to review and approve variance requests.
- Authorizes approval or denial of Level 1 variances involving minor field adjustments within approved right-of-way that conforms to the POD, or designates authority to others, as delegated and approved by BLM and USFS Project Managers.

3.2.4 Assistant Compliance Inspection Contractor

- Performs the same duties as the CIC in the event that the CIC is not available.
- Remains assigned to the Project through completion of construction or termination of the Project unless redirected by BLM or USFS.

3.2.4.1 Compliance Inspection Contractor Field Monitors

- Assists CIC in conducting monitoring of construction activities as needed for biological, cultural, paleontological, or other resources and according to scheduled construction activities within environmentally sensitive areas.
- Represents the BLM/USFS in the field for compliance activities.
- Verifies construction occurs as outlined in the POD, Final EIS, ROD, and/or right-of-way grant/special-use authorization.
- Verifies construction crews are provided with proper environmental and compliance training.
- Discusses any potential compliance issues with the Construction Contractor's environmental inspection staff (see Sections 3.3.5 - Construction Contractor's Lead Environmental Inspector and _3.3.6 - Construction Contractor's Environmental Inspector) as soon as possible.
- Coordinates with the Construction Contractor's Lead Environmental Inspector (LEI) and the Companies' Environmental Compliance Manager as their primary points of contact.
- Coordinates solutions for corrective action on noncompliance activities.
- Verifies corrective action is performed for noncompliance activities.
- May temporarily stop activities likely to damage protected or sensitive resources and/or where those resources were intended to be avoided or protected.
- May temporarily stop activities for noncompliance.
- Conducts daily compliance inspection activities and develops daily reports.
- Attends safety and environmental coordination meetings to understand planned construction activities and any safety or environmental concerns.
- Does not direct construction activities in any way.

Reporting

- Submit daily reports to the CIC to document compliance or noncompliance with the Project's environmental requirements.

3.3 Construction Contractor(s)

The Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods set forth in the right-of-way grant/special-use authorization, POD, Final EIS, and ROD throughout all phases of the Project. All construction personnel will participate in environmental trainings and work with the Construction Contractor's Environmental Inspectors and staff to build the Project safely and in compliance with all Project terms and conditions; federal, state, and local laws and regulations; and all landowner agreements. If a noncompliance occurs, the Construction Contractor(s) will cooperate and implement a solution as soon as possible to resolve the situation.

3.3.1 Construction Contractor's Project Sponsor

- Responsible for Project completion in accordance with all environmental laws and regulations, including the terms, conditions, stipulations, and/or work authorizations related to the right-of-way grant, special use authorization, POD, permits (federal, state, and local), and landowner agreements.
- Ensures its Project Manager promptly addresses any environmental compliance issues.
- Ensures effective coordination between his/her Project Manager and/or LEI with the Companies' Project Manager, and Environmental Compliance Manager, and the BLM and USFS Project Manager and/or CIC to verify environmental compliance meets the requirements of all applicable laws, permits, and agreements.
- Ensures the immediate and timely remedy to any environmental noncompliance events to the satisfaction of the Companies' Environmental Compliance Manager and the CIC.

3.3.2 Construction Contractor's Project Manager

- Responsible for all aspects of Project execution and completion.
- Requires all Construction Contractor's and subcontractor(s) staff adhere to compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization, POD, permits (federal, state, and local), and landowner agreements during the construction of the Project.
- Coordinates with his/her Superintendent(s), and optional LEI, as well as Companies' Project Manager and Environmental Compliance Manager on a regular basis to stay updated regarding the Project's compliance with environmental laws and regulations.
- Requires all Superintendents and Foremen follow directions of the Construction Contractor's environmental compliance staff regarding maintaining compliance with all environmental laws and regulations.
- Ensures Superintendents and Foremen implement measures identified to resolve noncompliance issues in a timely manner.
- Designates the Construction Contractor's Environmental Coordinator (if desired).
- Verifies construction personnel participate in the environmental training program.
- Responsible for removal of noncompliant personnel, as necessary.
- Manages Construction Contractor's Superintendent(s), Foremen, Environmental Crew Foreman, and LEI.
- Develops and distributes weekly schedules of construction activities.
- Immediately informs Companies' Environmental Compliance Manager and CIC of any noncompliance.
- Responsible for resolving noncompliance situations.
- Responsible for environmental compliance of all subcontractors.

- Determines the need for scope variances and works with staff and Construction Contractor's Environmental Inspectors to develop a formal request.
- Receives and review daily environmental compliance inspection reports from Construction Contractor's environmental staff.

Reporting

- Responsible for making sure Companies is provided with reports in a timely fashion.
- Reviews and approves compliance reports for submittal to Companies.

Variances

- Reviews and approves written variance requests for submittal to Companies, CIC, and BLM or USFS.
- Can delegate authority to submit written variance request to others.

3.3.3 Construction Contractor's Superintendent(s)

- Primarily situated in the field to manage construction activities.
- Responsible for a segment or portion of the overall Project.
- Requires all contractor personnel follow directions of the Construction Contractor's environmental compliance staff regarding maintaining compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization, POD, permits (federal, state, and local), and landowner agreements during the construction of the Project.
- Coordinates with the LEI, and the Construction Contractor's Environmental Training Coordinator and Environmental Inspectors to ensure all construction personnel for which they are responsible abide by all applicable laws, permits, and agreements.
- Attends environmental training programs produced by the Construction Contractor(s).
- Conducts regular meetings and training with construction personnel to review safety and environmental compliance practices.
- Ensures measures identified to resolve noncompliance issues are communicated to construction personnel and implemented in a timely manner.
- Immediately informs Construction Contractor's Project Manager of any noncompliance.
- Evaluates all compliance issues and ensures all supervisee's involved with any construction activities complete the environmental training program.

Reporting

- Prepares report regarding measures taken to resolve any noncompliance events and submits them to the Construction Contractor's Environmental Reporting Coordinator.

Variances

- Prepares written variance requests for submittal to Companies, CIC, and BLM or USFS.
- Can delegate authority to prepare written variance request to others.

3.3.4 Construction Contractor's Civil Survey Supervisor

- Sets initial and maintains right-of-way and easement boundary stakes and flagging with agreed on Project flagging scheme.
- Delegates survey crews when necessary to work with environmental inspectors to adjust work areas to comply with environmental constraints.
- Communicates with Companies' Construction Inspector and Environmental Compliance Manager regarding changes to right-of-way boundaries.
- Maintains a master set of alignment sheets for each spread in the appropriate spread office. The alignment sheets should reflect all restricted areas due to easement status, environmental restrictions, etc.
- Places signs for roads approved for use on the Project and those not approved for use on the Project.

Reports and Variances

- Provides data and/or supports development of maps and legal descriptions for Project reports, variance requests, and documentation in the Project Record.

3.3.5 Construction Contractor's Lead Environmental Inspector

- Regularly inspects or coordinates the inspection of all construction activities for compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction life of the Project.
- Has the authority to stop work when construction activities violate environmental conditions of right-of-way grant/special use authorization, permits or landowner conditions.
- Identifies sensitive resources and areas of concern prior to upcoming construction activities and coordinates appropriate measures with construction personnel accordingly.
- Acts as a resource and technical lead to Environmental Inspectors.
- Acts as a resource to construction personnel and explains environmental laws and regulations and how they are applied in the field.
- Serve as the primary point of contact for the third-party CIC Field Monitors.
- Coordinates appropriate corrective actions to resolve noncompliance issues.
- Coordinates daily with Environmental Inspectors to discuss upcoming construction activities, potential problem areas, and areas of concern.
- Assigns field inspection responsibilities to Environmental Inspectors.

- Coordinates with Environmental Inspectors and construction personnel to provide information and facilitate regular communication among all parties.
- Inspects areas of concern identified by Environmental Inspectors and makes appropriate recommendations to construction personnel.
- Inspects erosion control devices/measures to ensure functionality and communicates erosion control devices/measures maintenance needs to the Construction Contractor's Environmental Crew Foreman.
- Communicates with and Environmental Crew Foreman on issues needing resolution in the field.
- Performs post-construction reclamation monitoring as described in the Final Reclamation Plan in the POD, and as directed by the BLM/USFS and/or Proponent.

Reporting

- Reviews daily reports from field inspectors for completeness and accuracy and communicates action items or follow-up items to appropriate parties
- Forwards all daily and weekly reports to Construction Contractor's Environmental Reporting Coordinator for storage and potential agency distribution.
- Compiles daily reports into weekly summary report.
- Submits weekly summary documenting construction activities and compliance issues to the Construction Contractor's Environmental Reporting Coordinator.
- Provides post-construction reclamation monitoring reports to the Companies throughout the post-construction reclamation monitoring period, as described in the Final Reclamation Plan in the POD.

Variances

- Conducts primary reviews of written variance requests from the Construction Contractor(s).
- Communicates variance status to Environmental Inspectors and construction personnel.

3.3.6 Construction Contractor's Environmental Inspector

- Assists in inspection of construction activities for compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Conducts daily inspections of construction activities.
- Identifies sensitive resources and areas of concern prior to upcoming construction activities and coordinates with construction personnel to discuss.
- Acts as a resource to construction personnel to explain environmental regulations and how they are applied in the field.

- Verifies construction work areas, access roads, and features such as wetlands or sensitive habitat are properly marked and flagged before work is done in the area.
- Identifies erosion, sediment control, and soil stabilization needs to protect sensitive resources and communicates them to construction personnel.
- Ensures erosion control or other measures do not inadvertently cause impact to other sensitive resources.
- Acts as a point of contact for the third-party CIC Field Monitors.
- Informs Construction Contractor(s) of all potential and existing compliance issues and coordinates with LEI to determine appropriate corrective actions.
- Has stop-work authority when construction activities violate the environmental conditions of the right-of-way grant/special use authorization, permits, or landowner conditions.
- Identifies, documents, and oversees corrective actions to resolve noncompliance issues.
- Inspects erosion control devices/measures to ensure functionality and communicates erosion control devices/measures maintenance needs to the Environmental Crew Foreman.
- Follows up on the repair and maintenance of erosion control devices/measures.
- Inspect and document reclamation and revegetation activities.

Reporting

- Maintain and submit daily reports to the LEI that document construction activities and associated compliance status for that day.
- Document the resolution of any compliance issues in daily reports.

3.3.7 Construction Contractor's Environmental Reporting Coordinator

- Assists in tracking Project compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Coordinates with Companies' staff, the Construction Contractor(s), BLM, and other relevant agency contacts and field inspection personnel on a regular basis to manage and track Project activities and ensure consistent communications Project wide.
- Maintains consistent communication between the Companies and all federal, state, and local agencies.

Reporting

- Receives daily/weekly reports from Construction Contractor's environmental inspectors and documents them accordingly.

- Maintains centralized storage of daily/weekly Environmental Inspection reports and makes reports available at the request of the BLM Project Manager.
- Reviews field reports for consistency and accuracy.
- Responsible for tracking problem areas and noncompliance reports (including hazardous materials spill reports) and ensuring follow up and resolution reports are filed.

Variances

- Tracks variances and communicates variance status with Construction Contractor's Project Manager, Superintendent(s), and LEI.
- Coordinates processing and archiving of variances.
- Tracks progress and completion of any required field surveys (biology, archaeology, etc.) and technical reports to support variances.
- Ensures variance requests are complete and accurate prior to submitting to the BLM.

3.3.8 Construction Contractor's Environmental Training Coordinator

- Develops training program to facilitate compliance with all environmental laws and regulations, including the right-of-way grant/special use authorization, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Provides CIC and Companies' Environmental Compliance Manager with a course outline and all training material at least 30 days prior to any training for approval.
- Provides consistent roll-out of all training to all required personnel.
- Supports Environmental Inspectors and other environmental staff in providing routine trainings in the field.
- Maintains records of training for all construction personnel and submits to Companies on a weekly basis.
- Updates training curriculum as needed.
- Facilitates compliance with all environmental laws and regulations, including the right-of-way grant, POD, permits (federal, state, and local) and landowner agreements, during the construction of the Project.
- Conducts training session for Companies construction and contractor staff at least 30 days prior to construction.
- Conducts preconstruction, refresher, and remedial training for Project personnel.
- Provides environmental compliance training to new personnel as they join the Project.
- Provides field reference guides to Project personnel with photos and details of sensitive resources and methods for impact avoidance.

- Updates Project training modules using feedback from environmental inspection team, construction personnel, and Environmental Compliance Manager.
- Maintains records of training for all personnel.

3.3.9 Construction Contractor's Environmental Crew Foreman

- Supervise environmental crew in daily installation and maintenance of erosion control devices/measures and all other design features of the project for environmental protection.
- Follows up on the repair and maintenance of erosion control devices/measures.
- Ensure all areas of the right-of-way are in compliance with all environmental requirements/ permits held by the Construction Contractor(s).
- Work with the Construction Contractor's environmental inspection staff to remedy any problem areas and assure all areas are in compliance.

4.0 PROCEDURES

4.1 Compliance Levels

Each separate activity that is inspected and documented in a daily report will be assigned a compliance level as defined below. Environmental Inspectors will assess potential noncompliant activities based on the extent and nature of actual impacts on a resource, the potential for additional impacts on a resource, the intent behind the action, and the history of the occurrence.

4.1.1 Acceptable

All activities that are in compliance with the Project's environmental requirements will be documented as acceptable.

4.1.2 Problem Area

A problem area is a location or activity that does not meet the definition of acceptable but is not noncompliant (see Section 4.1.3 – Noncompliance). The problem area category can be used in a variety of situations, including the following:

- A minor incident that is accidental or unforeseeable and is repaired in a timely manner.
- A location where the Project is not in direct noncompliance but is one where the inspector or monitor determines damage to a resource could occur if corrective actions are not taken.
- An activity that is isolated and determined unintentional that causes no direct damage to a resource.

If a problem area is corrected in a timely manner it will not be considered a noncompliance. If a problem area is found to be a repeat situation or has happened in multiple locations or is not corrected within an agreed on timeframe, the Construction Contractor's Environmental Inspector or CIC Field Monitor may document the situation as a noncompliance. The Construction Contractor's Environmental Inspector will inform the Construction Contractor's Foreman onsite of the problem area before issuing a

problem area report and discuss and agree on an acceptable timeframe for its resolution. The Construction Contractor's Environmental Inspectors will document problem areas and their resolutions in daily reports. Problem areas documented by the CIC Field Monitors will be reported and discussed with the Environmental Inspectors. If the problem area is not corrected in the agreed on timeframe, resource damage occurs or similar activities occur repeatedly, a noncompliance report may be issued.

4.1.3 Noncompliance

A noncompliance report will be prepared and issued by the CIC when construction activities violate the Project's environmental requirements, result in damage to a resource, or place sensitive resources at unnecessary risk. Factors that will contribute to a noncompliance will be the extent of damage to the resource, the intent of the action and the determination of the action being a repeat occurrence. A noncompliance report may also be issued for direct disregard for Project requirements that do not directly cause harm to sensitive resources. Examples include using an unapproved access road or construction activities that cause ground disturbance outside of established Project boundaries.

If the CIC or CIC Field Monitor observes a noncompliant activity they will notify the Companies' Environmental Compliance Manager and the Construction Contractor's LEI and Superintendent immediately to discuss the situation prior to issuing a noncompliance report. If a noncompliance report is issued, it will include the name of the Construction Contractor's Superintendent contacted and the time of the notification. In addition, a follow up report will be filed documenting the resolution of the noncompliance. If the Construction Contractor's Superintendent is not immediately available or the severity of the situation requires immediate action, the monitor will inform the Construction Contractor's Project Manager and the Companies of the noncompliance.

If the Construction Contractor's Environmental Inspection staff observes a noncompliance, they will notify the superintendent or Foreman onsite immediately. The noncompliance will be resolved immediately or within an agreed on timeframe that has been established by the Environmental Inspector and the Superintendent or Foreman. The Construction Contractor's Environmental Inspector will also notify the CIC Field Monitor and document the noncompliance in a daily report that will be filed with the Construction Contractor's Environmental Reporting Coordinator and Companies' Environmental Compliance Manager. The CIC will submit all noncompliance reports and reports documenting their resolution to the BLM or USFS Project Managers, Companies and Construction Contractor(s). The Construction Contractor's Environmental Inspectors and the Companies' Environmental Compliance Manager and the CIC will work together to establish the appropriate corrective actions and timeframes for the resolution of a noncompliance. The Construction Contractor(s) Environmental Inspector will be responsible for communicating the corrective actions to the Foreman onsite. If necessary, the Companies' Environmental Compliance Manager and the Construction Contractor's LEI and Superintendent will determine the level of retraining for the crew involved. Following a serious or repeat noncompliance the CIC, the Construction Contractor's Project Manager, LEI, Environmental Inspector, and Superintendent(s),

and the Companies' Project Manager and Environmental Compliance Manager will discuss the situation and how best to implement measures to prevent it from reoccurring.

4.1.4 Response to Noncompliant Activities

If the resolution of a noncompliance is not achieved through the process described above the following may occur:

Temporary Suspension

For incidents of noncompliance by the Companies or the Construction Contractor(s), that remain unresolved after the notifications described under Section 4.1.3 - "Noncompliance", the CIC or Project Manager may issue a temporary suspension to halt specific activities or all activities in a localized work area. The temporary suspension shall be issued orally and in writing to the Companies' Project Manager or designee, and the Companies shall immediately provide notice of the temporary suspension to the Construction Contractor's Project Manager or designee.

Work Stoppage Order

If necessary, a WSO to temporarily suspend all construction activities may be issued orally or in writing by the CIC or Project Manager to the Companies' Project Manager. A WSO would be appropriate in the event of serious noncompliance that could reasonably be expected to result in a risk of death or harm to persons or repeated violations of environmental requirements that have a detrimental effect to sensitive resources.

A conference call will be held with the CIC and BLM or USFS Project Manager, the Companies' Project Manager and Environmental Compliance Manager and the Construction Contractor's Project Manager and LEI within 24 hours to discuss the noncompliance incident and to schedule a face-to-face meeting, if necessary. The face-to-face meeting will be held with all parties to discuss the noncompliance resolution within 24 hours of the initial conference call (excluding weekends and federal holidays). After conclusion of the conference call, or meeting, the Companies and Construction Contractor(s) will need to resolve the issue(s) identified by the BLM. Once they have resolved the issue and documented the resolution method, the Companies may file a written request with the BLM to resume activities. No construction activities shall be undertaken (except emergency or safety-related) until formal approval is provided by the BLM's CIC or Project Manager. The BLM shall review and respond to the Companies' written request to resume activities within 24 hours after receipt. The BLM's response shall either approve the request or provide additional criteria that must be met prior to resumption of activities. Any additional criteria must cite the applicable law(s), agreement (s), and/or permit requirements.

Grant Suspension or Termination

In accordance with 43 CFR 2807.17(a) and 36 CFR 251.60, BLM or USFS may suspend or terminate the right-of-way grant/special-use authorization if the Companies and/or its Construction Contractor(s) does not comply with applicable laws and regulations or any terms, conditions, or stipulations of the grant/special-use authorization (e.g., excessive or continuous noncompliance activities that demonstrate a

willful disregard for the terms and conditions of right-of-way grant/special-use authorization). Prior to suspension or termination, the Companies will be notified in writing and allowed a reasonable opportunity to correct any noncompliance pursuant to 43 CFR 2807.18(a), and, if applicable, provided a hearing pursuant to 43 CFR 2807.18(b) and _36 CFR 251.60.

4.2 Variance Procedures (Unforeseen Circumstances)

The intent of this section is to inform the Companies, BLM, USFS, Construction Contractor(s), and other Project personnel of the variance request process to minimize potential costly construction delays. It is understood by the BLM, USFS, and the Companies that unforeseen circumstances will occur during construction. The need for realignments to the proposed route, access roads, and/or work areas not within the permitted Project right-of-way grant/special use authorization and not analyzed in the EIS analysis may arise. In addition, the need to make changes to construction procedures, schedule, and/or approved mitigation measures and other specific stipulations and methods may be required. Under these or similar circumstances, a variance will need to be filed and approved by the BLM and/or USFS to stay in compliance.

Where Project changes occur on private lands, the BLM and/or USFS will review all variance requests to ensure compliance with the EIS analysis, NHPA, and ESA (see Table 4-1). In addition, written approval of the Project change must be obtained from the affected landowner and provided to the Companies who will provide it to the CIC for inclusion in the Project record and End of Construction Project Report (Section 8.2 – End of Construction Project Report).

Variance requests will be generated by the Construction Contractor(s) and provided in writing to the Companies who will then review the request. The Companies will evaluate the variance request and submit it to the CIC to be processed according to the process outlined herein.

The Companies will be required to submit the variance and supporting documentation to the CIC. The CIC is responsible for providing supporting documentation and an on-the-ground perspective of the requested variance to the BLM or USFS Project Manager or designee. The CIC is given authority by the BLM to approve a Level 1 variance (see Section 4.2.1) in the field. If a Level 1 variance request is approved in the field, follow up documentation will be provided by the Construction Contractor(s) to the CIC and the Companies. On a case by case basis the CIC may be given authority by the BLM or USFS Project Manager to approve a level 2 variance (see Section 4.2.2). Authority to approve or deny Level 3 variances requests (see Section 4.2.3) is provided to the appropriate BLM or USFS Project Manager or designee. The Variance Request Process is shown in Figure 4-1.

A variance request form will be developed by the Construction Contractor(s), reviewed and approved by the Companies, and the CIC and then reviewed and approved by the BLM or USFS prior to the start of construction. The variance request form will be

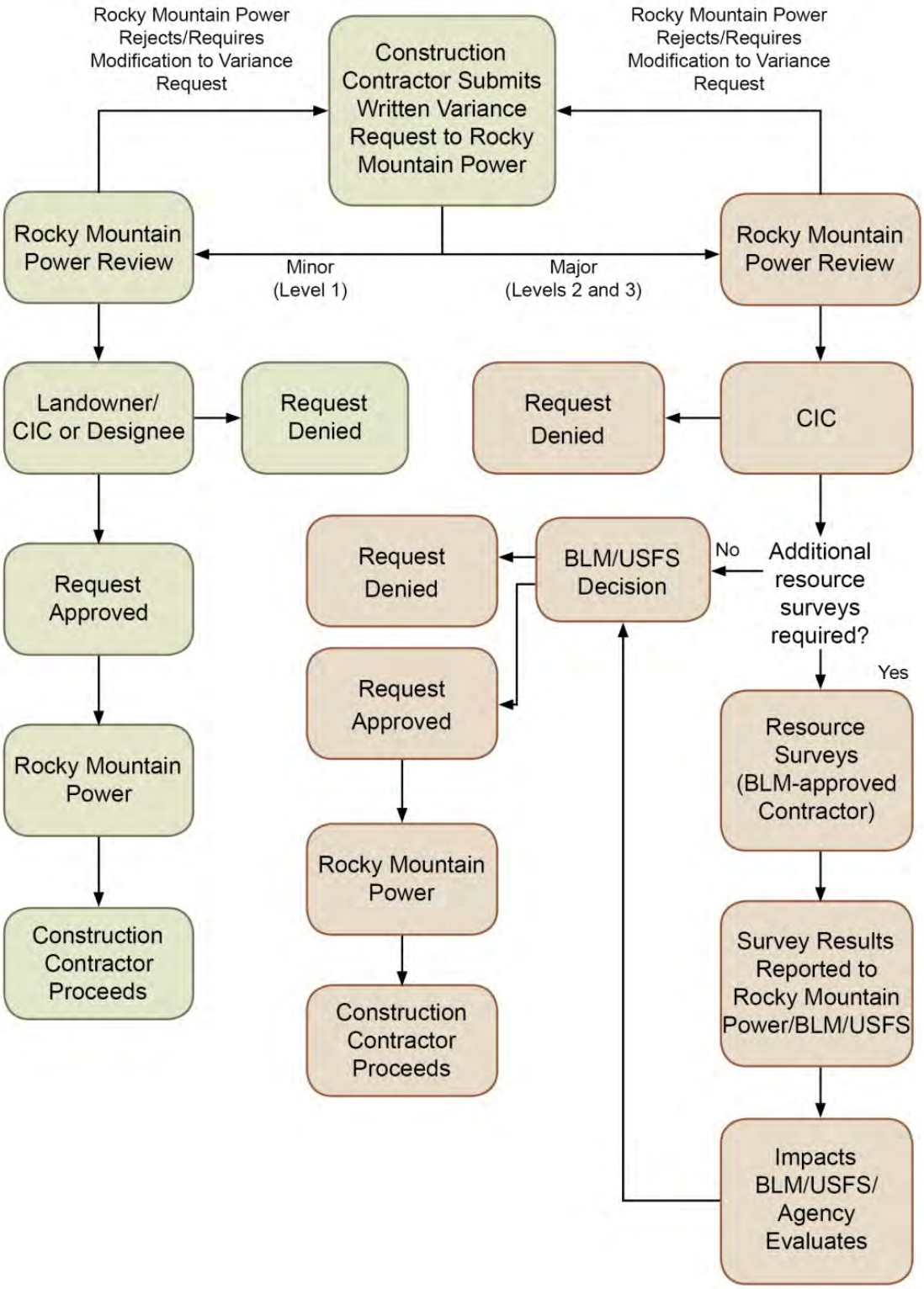

Figure 4-1. Draft Variance Request Process

incorporated into the preconstruction environmental training program. The variance request form will describe the variance request in detail, provide justification and documentation for the variance (including maps and photos), calculate the proposed permanent or temporary acreage affected, describe the original disturbance acreage analyzed in the EIS, and show the difference in acreage between the proposed variance and the original disturbance. It will also describe any potentially impacted resources and identify if additional resource surveys will be required. An example variance request form is included as Attachment A of this appendix.

The variance request may be implemented in the field as soon as the approved variance is received by the Construction Contractor(s). The CIC is responsible for communicating with the Companies regarding variance status and the Companies is responsible for communicating with the Construction Contractor(s) prior to modifications being made on the ground.

Tables 4-1 and 4-2 summarize the different variance levels, potential uses, and approvals required in order to obtain the Project variance.

Table 4-1. Summary Of Variance Procedures on Private Lands

Variance Level	Potential Use	Approval
Level 1	Minor field adjustments	CIC
Level 2	Modify POD[1]	CIC w/concurrence of BLM Project Manager (delegated authority by BLM/USFS Authorized Officer)[2]

NOTE: [1]To include maps, tables or text adequate to describe variance.
[2]Related to compliance with NHPA and ESA and consistent with analysis in the EIS

Table 4-2. Summary Of Variance Procedures on Non-Private Lands

Variance Level	Potential Use	Approval
Level 1	Minor field adjustments	CIC
Level 2	Modify POD	CIC w/concurrence of BLM Project Manager (delegated authority by BLM/USFS Authorized Officer)
Level 3	Amend right-of-way grant/special use authorization	BLM/USFS Authorized Officer

4.2.1 Level 1 Variance – Variances Accomplished through Field Resolution

A Level 1 variance is a minor field adjustment within the approved BLM right-of-way grant or USFS special-use authorization. A level 1 variance must meet the following criteria.

- The area of activity or change lies within the approved right-of-way area, including temporary use areas.
- The area of activity or change was previously identified and analyzed in the EIS.
- The area of activity or change does not result in an increase in disturbed acres than was estimated in the EIS.
- The variance creates equal to or less impact on resource values than the original location and activity (e.g., does not involve higher density wildlife habitat than the planned site or impacts on populations of sensitive plants or impacts on cultural sites, etc.)

A Level 1 variance request will be initiated by the Construction Contractor(s) and submitted to the Companies for review. The variance request form will include all attached supporting documentation. On the Companies review and approval, the Companies Environmental Compliance Manager will submit the variance request package to the CIC for their review. The CIC has been given authority by the BLM to approve these variances in the field in consultation with the Companies' Environmental Compliance Manager. However, the desired adjustments or deviations would be documented in a variance request form for inclusion in the Project record. The CIC would inform the Companies' Environmental Compliance Manager and the BLM Project Manager of these minor changes by including them in that week's progress report. Examples of minor field adjustments include, but are not limited, to the following:

- Relocation of erosion control devices (note this could also require a modification to the Stormwater Pollution Prevention Plan (SWPPP);
- Locating temporary fences inside authorized work areas;
- Permitting water bars to be extended, if applicable, off the area designated for the transmission line, and into native vegetation "one dozer length" (this includes providing permission for construction equipment to work outside designated work areas);
- Allowing rubber-tired vehicles to use additional designated access roads (in addition to those approved in BLM/USFS approval documents) where improvements to the road would not be necessary (Note: not intended for authorizing additional haul roads for equipment and materials); and
- Temporarily (for not more than seven days) placing parts or other assemblies outside areas designated in the POD but within the authorized Project area. This does not include any surface disturbance associated with temporary storage.

Level 1 Variance Approval or Denial

A CIC can approve or deny Level 1 variance requests in the field. In some cases the CIC may consult with the BLM Project Manager. Level 1 variance requests may be approved if the results of implementing the changes are not significant and will occur within the granted right-of-way. If a Level 1 request is approved in the field by the CIC, signatures on the variance request form (see Attachment A) also will be required from the Companies' Project Manager or delegate. A Level 1 variance request can be implemented in the field as soon as it is approved and signed by the CIC. In some cases a verbal approval can be given, and followed up with a written, signed variance document. The CIC will document the approved variance in the daily reports.

If a Level 1 variance is denied, the CIC will inform the Companies' Project Manager within 24 hours. The Companies' Project Manager may choose to resubmit the request as a Level 2 variance, or to discontinue pursuit of the request.

Level 1 Variance Distribution

The CIC will give/send the approved Level 1 variance request to the Companies' Project Manager, who will then distribute the approved variance on the construction side of the

Project. The CIC will provide the BLM and/or USFS Project Manager and the Companies with copies of approved Level 1 variances on a daily basis. The CIC will generate a report at the end of each week identifying all Level 1 variances approved during the previous week.

4.2.2 Level 2 Variance – Variances Beyond Field Resolution, Not Requiring an Amendment to the Right-of-way Grant or Special-use Authorization

Level 2 variances pertain to requests that exceed the field decision authority of the CIC. Level 2 variances require approval by the BLM or USFS Project Manager (delegated authority from the authorized officers) and may require agency resource staff review or field examinations. On a case by case basis the CIC may be given authority by the BLM or USFS Project Manager to approve a level 2 variance These alterations generally involve Project changes that would affect an area outside of the granted work area, but within the area previously surveyed and/or analyzed for cultural resources, Section 404 of the Clean Water Act, paleontological resources, and biological resources. Such variance requests typically require review of supplemental documents, correspondence, and records to be provided with the request. Examples include, but are not limited, to the following:

- Shifting extra workspace outside the approved construction corridor a short distance but within the area previously surveyed where overall disturbance type and acreage remains approximately the same, and no additional cultural, paleontological, biological resources, or invasive weed populations could be affected;
- Using of additional extra workspace outside of the previously approved work areas (within or outside the Project or off-Project right-of-way);
- Shifting temporary workspace to previously disturbed areas;
- Moving proposed culvert location(s) to better accommodate natural drainages (Note: may also require a modification to the SWPPP);
- Providing extra work space for topsoil and spoil material storage to prevent mixing of soils;
- Moving a range fence a specified distance laterally and permanently installing it to avoid proposed construction;
- Modifying seed mixes specified in the POD, typically due to unavailability (this may also require a modification to Appendix D – Framework Reclamation Plan; and
- Modifying of an access road due to safety hazards.

Variance requests may also be submitted for minor changes that would extend beyond the previously surveyed work area and corridor for sensitive resources. In these situations, additional cultural, biological, and invasive weed surveys would be required. Documentation of the surveys and other applicable correspondence would need to be submitted with the variance request. If sensitive biological resources are encountered during the additional surveys, documentation of consultation with applicable agencies must be provided with the variance request. All BLM- and USFS-approved stipulations,

and if applicable, the Terms and Conditions of the U.S. Fish and Wildlife Service's Biological Assessment/Opinion must be adhered to, for the variance to be approved.

Requests for exceptions from closure periods and areas will be submitted as Level 2 variances to the appropriate land management agency office in which the exception is requested. Established exception processes on BLM-managed lands will be followed. The agency, the CIC, or a contractor approved by Companies and approved by the agency will conduct the surveys and coordinate with any other agencies as necessary. Factors considered in granting the exception include animal conditions, climate and weather conditions, habitat conditions and availability, spatial considerations (e.g., travel routes and landscape connectivity), breeding activity levels, incubation or nestling stage, and timing, intensity, and duration of the proposed action. Variances will be submitted in writing no more than two weeks prior to the proposed commencement of the construction activity, to ensure that conditions during construction are consistent with those evaluated. The authorized officer, or designated representative, on a case-by-case basis, may grant exceptions to seasonal stipulations, and has the authority to cancel this exception at any time. A good faith effort will be made to act on exceptions within 5 business days of receiving a request to allow for orderly construction mobilization. The CIC will conduct any required site visit and report status to BLM for consideration of the decision to accept or deny the request. Appendix I of the EIS lists land management plan seasonal stipulations that are applicable to the extent such species are present. There is no exception process on USFS managed lands; all closure periods will be adhered to. Any proposed modifications to closure periods will be discussed on a case by case basis with the USFS.

A Level 2 variance request will be initiated by the Construction Contractor(s) and submitted to the Companies for review. The variance request form will include all attached supporting documentation.

To initiate a Level 2 variance request, the Construction Contractor will submit the variance to the Companies. The variance request form will include attached supporting documents. On the Companies review and approval, the Companies' Environmental Compliance Manager will submit the variance request package to the CIC for review. Following review, the CIC will submit the request form and attachments to the BLM and USFS Project Managers.

Level 2 Variance Approval or Denial

The BLM or USFS Project Manager, after consulting with the BLM and USFS Resource specialists, will provide the Companies' Project Manager through the CIC written approval or denial (including an explanation) of the request by using the spaces provide on the form. The BLM and USFS Project Manager or BLM/USFS representative may request additional information, or a modification of the request, before the variance can be approved. The BLM and USFS Project Managers will make a good faith effort to act on exceptions within 5 business days from receipt of a complete request and provide the Companies' Project Manager written approval of the request by using the space provided on the form.

If a Level 2 variance is denied, the BLM/USFS Project Manager will provide the Companies' Project Manager a written denial (including an explanation) of the request by using the spaces provided on the form within five business days from receipt of a complete request. The Companies' Project Manager may choose to resubmit the request as a Level 3 variance request, or to discontinue pursuit of the request.

Level 2 Variance Distribution

The CIC will give/send the approved Level 2 variance request to the Companies' Project Manager, who will then distribute the variance on the construction side of the Project. The CIC will provide the BLM/USFS Project Manager copies of approved Level 2 variances daily. The CIC will generate a report at the end of each week identifying all Level 2 variances approved during the previous week.

4.2.3 Level 3 Variance – Variances Requiring an Amendment to the Right-of-way Grant or Special-use Authorization

The BLM Project Manager will assist the CIC and Companies' Environmental Compliance Manager in determining whether a significant proposed change, outside the approved BLM/USFS right-of-way grant/special use authorization, will necessitate submittal of an amendment, or whether the change can be handled with a Variance Request Form.

Any proposed construction modification the BLM/USFS Project Manager and CIC have determined to involve substantial deviations from the right-of-way grant/special use authorization will require a grant amendment/special use authorization modification in accordance with 43 CFR 2807.20/36 CFR 251.61. A variance requiring an amendment to the right-of-way grant or modification to the special-use authorization requires completion of an application on a Standard Form 299 and a decision by the BLM/USFS Authorized Officer. The Companies' Project Manager will prepare the Standard Form 299 with supporting documentation, including but not be limited to, a POD and map of the variance area (1:24,000 scale), and will forward it to the appropriate BLM/USFS office. The BLM/USFS will process the amendment application pursuant to 43 CFR 2800/36 CFR 251.61. The BLM/USFS may request additional information, or a modification of the request, before the amendment can be approved.

Grant/special-use amendments and modifications will be reviewed by BLM/USFS staff who will consult with other federal, state, and local agencies as needed. Grant/special-use amendment or modification approvals or denials will come directly from the BLM or USFS. Approval of the grant/special-use authorization amendment also requires issuance of a NTP addressing the amendment, if a NTP is a requirement of the original right-of-way grant or special-use authorization. Examples of grant amendment or modification requests include:

- Route realignments or facility relocations onto BLM/USFS land not analyzed in the EIS and included in the right-of-way grant/special-use authorization.
- Certain project-wide changes to mitigation measures or reclamation procedures.
- Expansion of the Project area defined in the right-of-way grant/special-use authorization and POD.

- Requests affecting sites potentially eligible for the National Register of Historic Places or involving state or federally protected species or their habitat.
- Use of an existing access road that will need modification in order to be suitable for Project construction activities.

5.0 COMMUNICATIONS

Communication between all parties will be critical to maintain environmental compliance throughout the Project. Communication at the individual segment (spread) level and Project-wide will help maintain a consistent understanding of the Project's environmental requirements throughout construction. As specified in Appendix L – Framework Traffic and Transportation Monitoring Plan of the POD, the Construction Contractor(s), the CIC, and all Environmental Monitors will maintain a communications network that consists of one or both of the following devices: two-way radios or cellular phones. This will allow for immediate coordination between all parties, which will facilitate resolution of any questions and/or monitoring requirements prior to construction activities. Oral communication will not substitute for written approvals.

5.1 Primary Inter-Party Communication Channels

The following relationships are not intended to limit communication on the Project, but demonstrate the primary channels of routine communication between parties for compliance related issues.

- **BLM/USFS Project Manager** – Companies' Project Manager and Environmental Compliance Manager
- **CIC** – CIC Field Monitors, Companies' Project Manager, Environmental Compliance Manager and Construction Contractor's LEI
- **Companies' Project Manager** – Construction Contractor's Project Manager, CIC, and Companies' Environmental Compliance Manager
- **Companies' Environmental Compliance Manager** – Construction Contractor's LEI and the CIC
- **Construction Contractor's Environmental Reporting Coordinator** – CIC or designee and Construction Contractor's LEI
- **Construction Contractor's LEI** – CIC, Companies' Environmental Compliance Manager and Construction Contractor's Environmental Reporting Coordinator and Construction contractor's Environmental Inspectors
- **Construction Contractor's Project Manager** – Companies' Project Manager and Construction Contractor's Superintendents

5.2 Daily Communications

The Construction Contractor(s) will schedule and host daily morning meetings to review the location and extent of each day's construction activities. Discussion should highlight safety and environmental issues, including a summary of activities that require monitoring by Environmental Inspectors and coordination with the CIC. Evidence of

proper approvals must be furnished for any activities scheduled to occur outside designated areas. Attendees should include the CIC (or designee); the Construction Contractor's LEI, Construction Inspector, and Environmental Compliance Manager (or designee); and the Construction Contractor's Superintendent(s) and Foreman(s). Meeting topics should include:

- Safety review
- Planned work activities and locations for the day
- Right-of-way and landowner restrictions
- Available access roads
- Reminders of environmental requirements specific to the day's construction activities
- A discussion of procedures required for work in proximity to sensitive resources
- Upcoming, potential environmental issues.

In addition to the morning meeting, Superintendents, Foremen and Environmental Inspector's should evaluate the need for and conduct "tailgate" meetings in the field to address issues that come up during the day.

6.0 TRAINING

6.1 Preconstruction

All contractor construction personnel will receive environmental training prior to commencing work on the Project. Training will emphasize compliance with all environmental laws including the stipulations in the right-of-way grant/special-use authorization and POD. Project-specific requirements and local issues pertaining to variations on different spreads will be addressed as necessary. Roles of Environmental Inspectors and third-party CIC Field Monitors, civil survey flagging methodology, specific landowner issues, biological and cultural mitigation plans, and approved areas of disturbance will be some of the major topics covered in the training. The Construction Contractor's Environmental Training Coordinator will maintain a master list of all Project personnel that have completed the training and provide it immediately to the Companies or CIC upon request. Hard hat stickers demonstrating attendance of the training will be issued to attendees.

6.2 During Construction

All contractor personnel that arrive after construction has begun will attend new hire environmental awareness and compliance training. The Construction Contractor's Environmental Training Coordinator will be responsible for documenting all employees that have attended the training by maintaining a master list and provide it immediately to the Companies or CIC on request.

Trainings will be held in the field as needed to address specific and immediate issues that come up during the work day. These meetings will include Superintendents,

Foremen, operators and laborers, Construction Inspectors, and Environmental Inspectors.

Remedial training will be given to individuals and crews who are involved in noncompliant activities. These trainings will focus on the requirements pertaining to the noncompliance as well as measures to follow to prevent further noncompliance situations. These may be performed in the field or in a more formal setting to be determined by the Construction Contractor's Environmental Training Coordinator and the Construction Contractor's personnel.

Training for visitors will be held as the need arises and as appropriate for the type of visit scheduled.

7.0 REPORTING AND DOCUMENTATION

There will be multiple forms and reports completed on a regular basis during the course of construction. The reports and forms will include:

- **Daily Inspection Reports.** Environmental Inspectors and CIC Monitors will fill out daily reports to record site visits. The reports will document construction activities observed with respect to environmental compliance. Environmental Inspector reports will be submitted to the Companies and the CIC and will be available to the BLM or USFS on request. CIC Monitor reports will be submitted to the Lead CIC.
- **Weekly Compliance Reports.** The Construction Contractor's LEI will produce a weekly report documenting the week's activities and compliance issues to be submitted to the Companies and the CIC and will be available to the BLM or USFS upon request. The CIC will submit a weekly compliance report to the BLM/USFS and the Companies to be delivered to a secure but mutually exclusive websites.
- **Variance Request Forms.** Variance requests will be produced by the Construction Contractor(s), reviewed by the Companies, and submitted to the CIC for review before submittal to BLM and USFS for approval. It is critical that these forms include the proper accompanying documentation (photos, maps, alignment sheet exerts, drawings, etc.). The Construction Contractor's Environmental Reporting Coordinator will track, distribute and archive all approved and denied variances.
- **Problem Area Report Forms.** This section of the daily report will capture all information pertaining to a problem area that was documented that day. Photo documentation is required. A separate resolved problem area report may be required if the problem area is not resolved on the same day.
- **Noncompliance Report Form.** This section of the daily report will capture all information pertaining to a noncompliance that was documented that day. Photo documentation is required. A separate resolved noncompliance report may be required if the noncompliance is not resolved on the same day.
- **Weekly Training Log.** The Environmental Trainer will submit a weekly training log to the Construction Contractor's Environmental Training Coordinator and Environmental Reporting Coordinator with the names and signatures of all employees that went through environmental training that week.

Forms and reports should be submitted with digital photographs and additional supporting documentation as necessary.

8.0 PROJECT CLOSEOUT

8.1 Reclamation and Post Construction

On notification of completion of work by the Companies and the Construction Contractor(s), the CIC will coordinate with the BLM and USFS Project Managers and resource staff to conduct final on-the-ground inspections. Inspections will take place within 30 days to assure work was completed in accordance with the right-of-way grant/special-use authorization and the right-of-way reclamation activities as described in the Final Reclamation Plan. The CIC will be retained until reclamation and initial revegetation efforts are complete.

After construction reclamation activities are complete, the BLM and USFS will meet with the CIC to determine if there is any further work required. If no further work is required, the post-construction reclamation monitoring period will begin, as described in the Final Reclamation Plan. The Companies will retain the third-party CIC for post-construction reclamation monitoring activities described in Final Reclamation Plan.

8.2 End of Construction Project Report

Within 60 days of construction completion, the CIC will submit a final summary report (electronically in pdf format on two CDs; as well as two hardcopies for each BLM Field Office and national forest) to document the number of special status animals or plants taken, including the capture, displacement, mortality, injury and/or harassment by other means, during Project activities. This report will include the amount of actual temporary and permanent acreage disturbed compared with the original temporary and permanent disturbance acreage (Final EIS/POD), an electronic and hard copy compilation of all daily compliance reports (including digital pictures), variance requests (including approval/denial), temporary suspensions, and WSOs (including documentation of resolution). The Construction Contractor(s) will coordinate with the CIC to provide all applicable documentation for inclusion in the End of Construction Project Report. Completeness of the End of Construction Project Report will be verified by the CIC.

8.3 Construction Closeout Meeting

As required by the BLM and USFS, the CIC will coordinate a construction closeout meeting with the BLM, USFS, Companies, Construction Contractor(s), other field monitors and affected agencies to document all agency requirements have been met, determine areas of improvement, and ensure all issues have been satisfactorily resolved. This may include any noncompliance items that are in process.

ATTACHMENT A
DAILY INSPECTION REPORT FORM

(To be Included in Final POD)

ATTACHMENT B
VARIANCE REQUEST FORM

(To be Included in Final POD)

ATTACHMENT C
NONCOMPLIANCE FORM

(To be included in Final POD)

APPENDIX D
FRAMEWORK RECLAMATION PLAN

Appendix D

Framework Reclamation Plan

Gateway West Transmission Line Project

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

It is the responsibility of the Companies and/or the Construction Contractor(s), working with the Compliance Inspection Contractor (CIC) and BLM Project Manager, to ensure appropriate reclamation activities are implemented during the construction of project facilities and all federal, state, county, and other local requirements are satisfied. This document provides a template for the detailed Final Reclamation Plan to be developed by the Construction Contractor.

1.1 Purpose

This preliminary reclamation plan describes the framework for the development of the final Reclamation Plan. The focus of this framework and the final Reclamation Plan is to restore areas that have been impacted by construction activities. The framework and final Reclamation Plan are applicable Project-wide and will be modified as per agreements with federal land-managing agencies, states, counties, or individual landowners. The final Reclamation Plan will be based on the final selected location of all Project facilities and will be submitted to the BLM and Forest Service prior to the issuance of the construction Notice-to-Proceed. The final plan will be developed by the Construction Contractor."

This framework and the final Reclamation Plan incorporate the Stormwater Pollution Prevention Plan (SWPPP) that will be developed to comply with Clean Water Act of 1972 (CWA) requirements. The SWPPP includes measures to address erosion and sedimentation that could result from ground-disturbing activities. The SWPPP is standalone document and is incorporated by reference into this document and the final Reclamation Plan. Environmental protection measures (EPMs) contained in Appendix Z of the Plan of Development (POD) are currently being discussed with the Agencies. When these discussions are completed, finalized measures will be listed herein and in the SWPPP. Measures to control noxious and invasive weeds are described in Appendix E – Framework Noxious Weed Plan.

1.1.1 Reclamation Goals and Objectives

The primary goal of conducting reclamation activities is to restore temporarily disturbed areas to pre-construction conditions to the extent practical. BLM reclamation goals emphasize the stabilization and protection of existing vegetation; minimal disturbance of the environment; soil stabilization; and the establishment of vegetation consistent and compatible with adjacent land uses. The goal of this framework is to provide a structure for developing and implementing the reclamation process, which is designed to restore temporary impacts to vegetation and resident soils and meet the following goals and objectives:

- Noxious- and invasive-weed control,
- Topsoil segregation and stockpiling,
- ROW restoration,
- Seedbed preparation and re-seeding, and
- Road reclamation.

Reclamation goals can be achieved through short- and long-term objectives. The short-term objectives for reclamation are to stabilize disturbed areas to minimize potential erosion and sedimentation, establish temporary vegetation cover, prevent or minimize the introduction and spread of noxious- and invasive-weed species, and conserve suitable topsoil for long-term reclamation activities. The long-term objective of reclamation is to establish permanent vegetation cover that is similar to pre-disturbance conditions, self-sustaining, and, where applicable, resistant to the introduction or spread of noxious- and invasive-weed species.

Measures to achieve reclamation goals include the following:

- Use proper soil-management techniques, including stripping, stockpiling, and re-applying topsoil material at temporarily disturbed areas to restore soil horizons, use the existing seedbank(s), and establish surface conditions that would allow for the rapid re-establishment of vegetative cover.
- Establish stable soil surface and drainage conditions and use applicable best-management practices (BMP) that would minimize surface erosion and sedimentation and facilitate plant establishment.
- Conduct pre-construction weed surveys.
- Perform pre-construction weed-control treatments at locations identified by pre-construction weed surveys (areas with large weed infestations within or adjacent to the Project ROW).
- Conduct post-construction weed monitoring for 3 years.
- Perform post-construction weed treatment (e.g., re-seeding and/or site restoration) to pre-disturbance conditions as documented by pre-construction surveys.
- Re-establishing topography to pre-construction conditions to the extent practicable.

2.0 TOPSOIL AND SPOIL TREATMENT

The Companies and/or their Construction Contractor will minimize ground disturbance where practical; however, there will still be extensive areas of soil disturbance due to the nature of the work and existing topography. The final Reclamation Plan will identify locations where the management of topsoil is warranted, such as areas where topsoil supports native plant species or is important to a private landowner (e.g., agricultural soils). Generally, topsoil is considered the upper 6 to 12 inches, but this can vary by soil type. EPMs developed for topsoil removal and replacement are contained in Appendix Z of the POD.

3.0 RIGHT-OF-WAY RECLAMATION

Reclamation of temporarily disturbed areas will involve replacing stockpiled subsoil and topsoil (where applicable), restoring pre-existing contours, installing permanent erosion-control structures (i.e., water bars), and re-establishing vegetation.

Some areas may not have extensive vegetation before Project construction, such as areas of shallow bedrock, shallow topsoil, steep slopes, or dry desert soils. These areas will be identified during pre-construction surveys and will not be re-seeded. Where appropriate, other reclamation activities (e.g., restoring pre-construction contours) will be conducted.

3.1 Seedbed Preparation

As part of the reclamation process, the Companies will prepare the seedbed to facilitate the restoration of vegetation to pre-construction conditions. General measures are discussed as follows, and habitat-specific seedbed measures will be provided in the final Reclamation Plan.

Soil amendments are intended to minimize soil erosion and subsequent sedimentation, conserve soil moisture, provide cover, and moderate temperatures to facilitate the germination of seeds. Measures regarding seedbed preparation are contained in Appendix Z of the POD.

3.1.1 Seeding Methods

Unless otherwise directed, following seedbed preparation, seed will be applied using a broadcast spreader, drill, and/or hydroseeder depending on site conditions and seed mix. Seeding will be done after ground-disturbing activities are complete and at the appropriate time of year (preferably in the fall or, if fall is not an option, the spring). If there is a lag time between the end of ground-disturbing activities and seeding, BMPs from the SWPPP will be implemented. Measures regarding seeding methods are contained in Appendix Z of the POD.

3.1.2 Seed Mixes

The choice of seed mixtures will be dependent on the existing vegetation types, the availability of commercial, weed-free live seed at the time of seeding, and landowner approval. The final Reclamation Plan will identify proposed seed mixes based on specific vegetation communities (e.g., sagebrush, grassland, etc.) and will include the species, cultivar (if applicable), percent seed mix, pure live seeds per acre, and the application rate. Proposed mixes will not be applied prior to landowner notification.

The Companies will re-seed some permanently disturbed areas as well. Roads created for the Project that are necessary for the long-term operation and maintenance of the transmission line are considered a permanent impact; however, the Companies will re-seed these areas as an EPM. The intent of this re-seeding differs from the long-term objective of establishing plant communities and habitat. Therefore, the final Reclamation Plan will also include one or more seed mixes that will be used as a BMP for permanently disturbed areas.

4.0 POST-CONSTRUCTION MONITORING AND REPORTING

The Companies will conduct post-construction surveys for a 2-year period following the conclusion of ground-disturbing activities.

4.1 Monitoring Activities

Successful revegetation will be determined by monitoring reclaimed areas against existing conditions. Species and relative density will be assessed annually and compared to baseline data collected prior to the start of ground-disturbing activities. Reclamation will be determined successful if the seeded areas have germinated and are demonstrating that they will, over time, achieve a distribution and diversity similar to pre-construction conditions. If after a second growing season problem areas have been identified (e.g., seed germination is lower than expected; prevalence of noxious-weed species), the area will be treated and re-seeded. Treatment may include additional seedbed preparation, control of noxious weeds, use of soil amendments, and/or use of another appropriate seed mix. Monitoring reclamation activities and remedial measures on private lands will be up to the landowner and agreements they negotiate with the Companies.

4.2 Reporting

The Companies will document pre-construction observations, construction reclamation activities, and post-construction monitoring on federally and state-managed lands in an annual report. Annual reports will be prepared for submittal to federal or state entities that administer public lands in the Project area. The reports will provide a summary of Project reclamation activities and observations and include recommendations for additional corrective actions if necessary.

5.0 PLAN UPDATES

The final Reclamation Plan will be prepared. prior to the start of construction. As the Companies better define the construction order and schedule, the final Reclamation Plan will be updated to include the schedule for baseline vegetation and weed surveys and identification of any areas for pre-construction noxious-weed treatment, and a more detailed reclamation schedule and plan.

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ATTACHMENT A
SPECIES ABUNDANCE RATINGS

ABUNDANCE RATINGS

Rare:

Difficult to find; limited to 1 or very few individuals or colonies; < 1 percent of the total sample unit area; found in more than 1 place along the sample unit.

Locally Rare:

Difficult to find; limited to 1 or very few individuals or colonies; < 1 percent of the total sample unit area; found at only 1 site within the sample unit.

Occasional:

Widely scattered individuals or colonies but not difficult to find; 1–5 percent of the total sample unit area; found in more than 2 sites within the sample unit.

Locally Occasional:

Scattered individuals or colonies but not difficult to find; 1–5 percent of the total sample unit area; found in only 1 or 2 sites within the sample unit.

Frequent:

Easily found but not dominant in any one place; 5–25 percent of the total sample unit area; a moderate number of occurrences over a good portion of the sample unit.

Locally Frequent:

Easily found but not dominant in any one place; 5–25 percent of the total sample unit area; a moderate number of occurrences over a small portion of the sample unit.

Abundant:

Easily found; dominant or co-dominant in 1 or more areas; > 25 percent of the total sample unit; a high number of occurrences over most of the sample unit.

Locally Abundant:

Easily found; dominant or co-dominant in 1 or more areas; > 25 percent of the total sample unit; a high number of occurrences over a small portion of the sample unit.

APPENDIX E
FRAMEWORK NOXIOUS WEED PLAN

Appendix E

Framework Noxious Weed Plan

Gateway West Transmission Line Project

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January 2013

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LIST OF ATTACHMENTS

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1.0 INTRODUCTION

1.1 Background

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

The format and content of this framework Noxious Weed Plan based on the principles and procedures outlined in the BLM Integrated Weed Management Manual 9015 (1992). This Plan includes a discussion on 1) the plan purpose and goals and objectives, 2) the noxious weed inventory, 3) management practices, 4) monitoring, and 5) the use of pesticides/herbicides. This document provides a template for the detailed Final Noxious Weed Plan to be developed by the Construction Contractor.

1.2 Purpose

The Wyoming Weed and Pest Council and the Idaho State Department of Agriculture (ISDA) have identified noxious weeds that occur within the states of Wyoming and Idaho. Some of these noxious weeds have the potential to occur on the Project right-of-way. This framework Noxious Weed Plan provides methods to control the potential occurrence/infestation of noxious weeds during and following construction of the Project. It is the responsibility of the Companies and/or the Construction Contractor(s), working with the Compliance Inspection Contractor (CIC) and BLM Project Manager, to ensure noxious weeds are identified and controlled during the construction of project facilities and all federal, state, county, and other local requirements are satisfied. The control of invasive species is addressed in Appendix D – Framework Reclamation Plan.

1.3 Goals and Objectives

The goal of this framework Noxious Weed Plan is to implement early detection, containment, and control of noxious weeds during Project construction. Information gathered during pre-construction surveys and provided by the BLM will be used to monitor and control the spread of noxious weeds that may pose a potential infestation threat during the construction and operation of the transmission line in areas on or adjacent to the Project. General preventive and treatment measures are described in Section 3.0 of this plan. Weed management environmental protection measures (EPMs)

are contained in Appendix Z of the Plan of Development (POD), currently being discussed with the Agencies. When these discussions are completed, finalized measures will be listed herein. An evaluation of the effectiveness of the prescribed control measures (Section 4.0) also will be implemented during the operational phase of the transmission line.

Noxious weed is a legal term meaning any plant officially designated by a federal, state, or local agency as injurious to public health, agriculture, recreation, wildlife, or property (Sheley and Petroff 1999). The more general term *invasive species* refers to species that are non-native to the ecosystem under consideration and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health (National Invasive Species Information Center 2011). Invasive plant species include those legally designated as noxious, as well as additional species that may be considered noxious in some areas but not others, and other species that are already widespread.

Soil disturbances, such as those caused by the construction of the Project, could result in the establishment of new populations and spread of existing populations of noxious and invasive weeds. This section of the framework describes the known status of noxious-weed species within the Project area, the regulatory agencies responsible for the control of noxious and invasive weeds, and steps the Companies will take in preventing the establishment and spread of noxious- and invasive-weed species that are the result of Project construction activities. In addition to providing updated information contained within this framework, the final Noxious Weed Plan will include information on locations of significant weed populations within the Project footprint and proposed treatment methods as applicable.

The focus of the Companies' noxious-weed control efforts will be to prevent the spread of new infestations resulting from the Companies' activities. The Companies are only responsible for the control of noxious weeds and invasive species that are a result of their construction-related, surface-disturbing activities. The Companies are not responsible for noxious weeds and invasive species that occur adjacent to Project areas or for controlling or eradicating a species that was present prior to the Project. For example, cheatgrass *(Bromus tectorum)* is widespread across large portions of the Project area. Eradication of these infestations is not the responsibility of the Companies and would not be attempted.

2.0 NOXIOUS WEED INVENTORY

The noxious weed inventory for the Project will include 1) the identification of weed species designated noxious by the States of Wyoming and Idaho and having the potential to occur within the area affected by the Project, and 2) the gathering of information to identify specific noxious weed populations in the Project area, including pre-construction surveys along the Project right-of-way.

2.1 State Listed Noxious Weeds

Table E-1 contains a list of the noxious-weed species known or expected to occur within the Project area based on their recorded presence in the counties where the Project is located. The BLM and Forest Service use the most current Idaho and Wyoming state noxious-weed lists for managing weeds on federal lands. The final Noxious Weed Plan

will include the most current noxious-weed species lists produced by the two states just prior to construction.

The State of Wyoming has designated 25 plant species as noxious (Wyoming Weed and Pest Council 2012) and the ISDA has designated 64 plant species as noxious. Idaho's noxious weeds are divided into three categories (ISDA 2011):

- Statewide Early Detection and Rapid Response (EDRR) List: If weeds on this list are identified, they will be reported to ISDA within 10 days, and eradicated in the same growing season as identified.
- Statewide Control List: This list contains species that are known to exist throughout the state. When identified, a control plan will be developed by the county, with active control methods to be employed in no more than 5 years.
- Statewide Containment List: Weed list: This list contains species that are known to exist throughout the state. Weed control efforts may be directed at reducing or eliminating new or expanding populations, while known populations may be managed by any approved weed control methodology, as determined by the county.

Table E- 1. Invasive and Noxious Plant Species Potentially Present in the Gateway West Project Analysis Area

Common Name	Scientific Name	Invasive Exotic Species?[1]	Listed as Noxious[2]			Segments in Which Known or Likely to Occur[2,3]	
			State of Wyoming (Designated)	Wyoming Counties (Declared)	State of Idaho[4]	Wyoming	Idaho
Species on Wyoming or Idaho Noxious Weed List							
Black henbane	*Hyoscyamus niger*	Yes	--	Albany, Converse, Lincoln, Natrona, Sweetwater	Control	All	All
Buffalobur	*Solanum rostratum*	Yes	--	Converse, Natrona	Control	All	8, 9
Canada thistle	*Cirsium arvense*	Yes	X		Containment	All	All
Common burdock	*Arctium minus*	Yes	X	--	--	, 1W, 2, 4	All
Common St. Johnswort	*Hypericum perforatum*	Yes	X	--	--	4	8
Common Tansy	*Tanacetum vulgare*	Yes	X	--	--	All	5, 7
Dalmatian toadflax	*Linaria dalmatica*	Yes	X	--	Containment	All	All
Diffuse knapweed	*Centaurea diffusa*	Yes	X	--	Containment	All	All
Dyer's woad	*Isatis tinctoria*	Yes	X	--	Control	All	All
Eurasian watermilfoil	*Myriophyllum spicatum*	Yes	--	--	Control	--	8
Field bindweed	*Convolvulus arvensis*	Yes	X	--	Containment	All	All
Hairy whitetop, Hoary cress	*Cardaria pubescens*	Yes	X	--	--	All	All
Houndstongue	*Cynoglossum officinale*	Yes	X	--	Containment	, 1W, 2, 4	4, 5, 7
Johnsongrass	*Sorghum halepense*	Yes	--	--	Control	--	5. 7, 8
Jointed goatgrass	*Aegilops cylindrica*	Yes	--	Converse	Containment	, 1W	All
Leafy spurge	*Euphorbia esula*	Yes	X	--	Containment	All	All
Matgrass	*Nardus stricta*	Yes	--	--	Control	--	5
Musk thistle	*Carduus nutans*	Yes	X	--	Control	All	All
Orange hawkweed	*Hieracium aurantiacum*	Yes	--	Converse	Control	--	5, 7, 8
Oxeye daisy	*Chrysanthemum leucanthemum*	Yes	X	--	Containment	, 1W, 2, 4	4, 7
Perennial pepperweed	*Lepidium lapathifolium*	Yes	X	--	Containment	All	All
Perennial sowthistle	*Sonchus arvensis*	Yes	X	--	Control	All	All

Table E-1: Invasive and Noxious Plant Species Potentially Present in the Gateway West Project Analysis Area (continued)

Common Name	Scientific Name	Invasive exotic species?[1]	Listed as Noxious[2]			Segments in Which Known or Likely to Occur[2,3]	
			State of Wyoming (Designated)	Wyoming Counties (Declared)	State of Idaho[4]	Wyoming	Idaho
Meadow hawkweed, yellow hawkweed	*Hieracium pretense, H. caespitosum*	Yes	--	--	Control	--	7
Plumeless thistle	*Carduus acanthoides*	Yes	X	--	Control	, 1W	--
Poison hemlock	*Conium maculatum*	Yes	--	--	Containment	, 1W, 2, 3	All
Puncture vine	*Tribulus terrestris*	Yes	--	Natrona	Containment	, 1W, 2	All
Purple loosestrife	*Lythrum salicaria*	Yes	X	--	Containment	--	All
Quackgrass	*Agropyron repens*	Yes	X	--	--	All	All
Rush skeletonweed	*Chondrilla juncea*	Yes	--	Converse	Containment	--	5, 7, 8, 9, 10
Russian knapweed	*Acroptilon repens*	Yes	X	--	Control	All	All
Russian olive	*Elaeagnus angustifolia*	Yes	X	--	--	, 1W	All
Salt cedar, tamarisk	*Tamarix spp.*	Yes	X	--	Containment	All	All
Scotch broom	*Cytisus scoparius*	Yes	--	Converse	Control	--	5, 9
Scotch thistle	*Onopordum acanthium*	Yes	X	--	Containment	, 1W, 4	All
Skeletonleaf bursage	*Artemisia tomentosa*	Yes	X	--	Control	All	5, 7, 8, 10
Spotted knapweed	*Centaurea maculosa*	Yes	X	--	Containment	All	All
Silverleaf nightshade	*Solanum Elaeagnifolium*	Yes	--	--	Control	--	8, 10
Syrian beancaper	*Zygophyllum zabago*	Yes	--	Converse	EDRR	--	5
Tansy ragwort	*Senecio jacobaea*	Yes	--	Converse	Containment	--	5
Vipers blugloss	*Echium vulgare*	Yes	--	--	Control	--	8
Whitetop, hoary cress	*Cardaria draba*	Yes	X	--	Containment	, 1W, 2, 4	All
Yellow starthistle	*Centaurea solstitialis*	Yes	--	--	Containment	--	All
Yellow toadflax	*Linaria vulgaris*	Yes	X	--	Containment	, 1W, 2, 4	All
Absinth wormwood	*Artemisia absinthium*	Yes	--	Converse	--	, 1W	8
Baby's breath	*Gypsophila paniculata*	Yes	--	Converse	--	--	--
Bull thistle	*Cirsium vulgare*	Yes	--	Converse, Lincoln	--	All	All
Bur buttercup	*Ranunculus testiculatus*	Yes	--	Converse	--	All	All

Table E-1: Invasive and Noxious Plant Species Potentially Present in the Gateway West Project Analysis Area (continued)

Common Name	Scientific Name	Invasive exotic species?[1]	Listed as Noxious[2]			Segments in Which Known or Likely to Occur[2,3]	
			State of Wyoming (Designated)	Wyoming Counties (Declared)	State of Idaho[4]	Wyoming	Idaho
Other Species							
Cheatgrass/downy brome	*Bromus tectorum*	Yes	--	Albany, Natrona	--	All	All
Chicory	*Cichorium intybus*	Yes	--	Converse	--	, 1W	All
Common cocklebur	*Xanthium strumarium*	Yes	--	Converse	--	All	All
Common crupina	*Crupina vulgaris*	Yes	--	Converse	--	--	--
Common mullein	*Verbascum thapsus*	Yes	--	Converse	--	All	All
Common sunflower	*Helianthus annuus*	Native	--	Converse	--	, 1W	--
Curlycup gumweed	*Grindelia squarrosa*	Native	--	Natrona	--	1W	--
Curly dock	*Rumex crispus*	Yes	--	Converse	--	All	All
Dames rocket	*Hersperis matronalis*	Yes		Converse	--	, 1W, 2, 4	4, 5, 7, 9
Foxtail barley	*Hordium jubatum*	Native	--	Sweetwater	--	3, 4	--
Geyer larkspur	*Delphinium geyeri*	Native	--	Albany, Carbon	--	, 1W, 2, 3	--
Goatsrue	*Galega officinalis*	Yes	--	Converse	--	--	--
Gorse	*Ulex europaeus*	Yes	--	Converse	--	--	--
Halogeton	*Halogeton glomeratus*	Yes	--	Carbon, Converse, Natrona,	--	All	5, 7, 8, 9
Iberian starthistle	*Centaurea iberica*	Yes	--	Converse	--	, 1W	--
Italian thistle	*Carduus pycnocephalus*	Yes	--	Converse	--	--	--
Japanese brome	*Bromus japonicus*	Yes	--	--	--	All	All
Lady's bedstraw	*Galium verum*	Yes	--	Converse	--	2, 3, 4	7
Meadow knapweed	*Centaurea nigrescens*	Yes	--	Converse	--	--	--
Medusahead	*Taeniatherum caput-medusae*	Yes	--	Converse	--	--	8
Mountain thermopsis	*Thermopsis montana*	Native	--	Sweetwater	--	3, 4	--
Musk mustard, blue mustard	*Chorispora tenella*	Yes	--	Converse	--	All	All
Plains pricklypear	*Opuntia polyacantha*	Native	--	Carbon	--	, 1W, 2, 3	--
Redstem filaree	*Erodium cicutarium*	Yes	--	--	--		All
Russian thistle	*Salsola iberica*	Yes	--	--	--	All	All

Table E-1: Invasive and Noxious Plant Species Potentially Present in the Gateway West Project Analysis Area (continued)

Common Name	Scientific Name	Invasive exotic species?[1]	Listed as Noxious[2]			Segments in Which Known or Likely to Occur[2,3]	
			State of Wyoming (Designated)	Wyoming Counties (Declared)	State of Idaho[4]	Wyoming	Idaho
Sandbur	*Cenchrus incertus*	Native	--	Converse	--	--	--
Scentless chamomile	*Tripleurospermum inodorum*	Yes	--	Converse	--	All	8, 9
Showy milkweed	*Asclepias speciosa*	Native	--	Converse	--	, 1W	--
Squarrose knapweed	*Centaurea virgata*	Yes	--	Converse	--	--	--
Sulfur cinquefoil	*Potentilla recta*	Yes	--	Converse	--	--	5, 7
Teasel	*Dipsacus fullonum*	Yes	--	Converse		--	All
Wild licorice	*Glycyrrhiza lepidota*	Native	--	Converse, Natrona	--	, 1W	--
Wild oats	*Avena fatua*	Yes	--	Lincoln	--	All	All
Wyeth's lupine	*Lupinus wyethii*	Native	--	Converse	--	, 1W	--

[1] Included in INVADERS database (University of Montana-Missoula 2009).
[2] Source for status: ISDA 2012; Wyoming Weed and Pest 2008. "—"= not listed.
[3] Distribution based on INVADERS database (University of Montana-Missoula 2009), PLANTS database (NRCS 2009), and ISDA (2008). Distribution of native species is only shown for Wyoming counties where listed as noxious.
[4] Idaho listing categories are explained in text.

3.0 NOXIOUS WEED MANAGEMENT

Regulatory agencies along the proposed transmission alignment, and specifically the BLM, have varying requirements for weed management. A pre-construction survey for noxious weeds will be conducted using the protocol established by the BLM's Integrated Weed Management Manual 9015 (BLM 1992) and as required by the US Forest Service (USFS),

The management of noxious weeds will be considered throughout all stages of the Project including:

- Educating all construction personnel regarding the identified problem areas and the importance of preventive measures and treatment methods.
- Specific preventive measures to prevent the spread of noxious weeds.
- Pre- and post-construction treatment methods to be applied to areas of noxious weed infestation.

Following is a description of the measures that may be required for noxious weed management as directed by the BLM or State Quarantine Officer. Applicable measures will be agreed upon prior to the onset of any ground-disturbing activities, and this Noxious Weed Plan will be modified accordingly.

3.1 Identification of Problem Areas and Education

Prior to the initiation of construction activities, all construction personnel will be instructed on the importance of controlling noxious weeds. As part of start-up activities, the Construction Contractor will provide information and training regarding noxious weed management. The importance of preventing the spread of noxious weeds in areas not infested and controlling the proliferation of weeds already present will be emphasized. Prior to construction, areas of concern previously identified during the Weed Survey will be flagged by the Construction Contractor and reviewed by the CIC. This flagging will alert construction personnel and prevent area access until noxious weed management control measures, as described below, have been implemented.

3.1.1 Weed Management Personnel Requirements

Weed management actions shall be carried out by a weed management specialist with the following qualifications:

- Training and experience in native plant taxonomy/identification;
- Training and experience in field ecology and plant community mapping;
- Training in weed management or Integrated Pest Management with an emphasis in weeds;
- Experience in coordination with agency and private landowners; and,
- Recent attendance at a BLM-approved noxious weed training course

3.2 Other Specific Stipulations and Methods

3.2.1 Preventive Measures

Preventive measures will be implemented to prevent the spread of noxious weeds during the construction activities, as well as during reclamation and rehabilitation efforts. Detailed information regarding reclamation, along with the control of noxious plant species, is contained in Appendix Z of the POD. Prevention and control methods may include mechanical, cultural, biological, or chemical measures to prevent and control noxious weeds associated with Project activities. The weed specialist working in conjunction with the BLM and CIC will identify areas where noxious weed control measures will be implemented.

3.2.2 Reclamation Actions

As specified in Appendix D of the POD, areas where weed control measures have been implemented and require post-construction reclamation actions (i.e., seeding) will follow the specific stipulations and methods presented as EPMs contained in Appendix Z of the POD.

3.3 Agency Requirements

Noxious weeds will be monitored and controlled during both construction and operation of the Project. Noxious weeds identified within the Project area will be reported to the applicable land-managing agency in whose jurisdiction the weeds occur. The appropriate weed control procedures, including target species, timing of control, and method of control, will be determined in consultation with the applicable land-managing agency. If herbicides are considered for use to control noxious weeds, the type of herbicide and methods of use would be approved by the applicable land-managing agency prior to their use. Monitoring surveys will be conducted following treatment of infected areas. These monitoring surveys are expected to occur in the fall (August–September) and would be conducted following the same methods as the pre-construction survey. Annual herbicide spraying would be planned and coordinated with the applicable agencies (based on the results of the prior years' survey data) to ensure spraying is conducted only where necessary, in areas approved for herbicide use, at the proper growing period, during favorable environmental conditions, and using only the appropriate and agency approved chemicals to control targeted species.

The Companies may be able to take advantage of any existing cooperative agreements between the land-managing agencies and the counties by providing the funds required for county personnel to implement the necessary weed control procedures. If not, the Companies will be responsible for providing the necessary personnel or hiring a Contractor to implement the weed control procedures with the qualifications as described in Section 3.1.

4.0 MONITORING

A weed management specialist, contracted by the Companies, will monitor the Project and any other areas of disturbance associated with the Project for a period not to exceed 5 years. Monitoring will be conducted annually in the fall, more specifically during the life cycle of the species identified during pre-construction inventories. This

monitoring may coincide with the reclamation monitoring identified and outlined in Appendix D of the POD. Growing seasons will vary from year to year, and consequently the length of monitoring will vary as well.

4.1 Reclamation Monitoring

During reclamation monitoring, the Companies, or the representative contractor(s) for the Companies, will initiate monitoring of previously identified affected/disturbed areas during the first spring following construction and proceed with monitoring during subsequent intervals.

Noxious weed monitoring will occur annually for up to 3 years following completion of each segment of the Project. In addition, noxious weed conditions will be included in the evaluations of revegetation success as described in Appendix D of the POD. The Companies will document their observations following the above noted field inspections and make these monitoring reports available to the local, state and federal agencies, as required.

Areas where the spread of a noxious weed infestation is noted, particularly in previously unaffected locations, will be further evaluated to determine if these areas require remedial action and additional treatment. The Companies will identify such areas to the agencies by state, county, and milepost (or nearest transmission structure number) and will record any additional noxious weed control treatments. A report summarizing right-of-way stability, revegetation progress, percent of cover, and weed infestation will be provided to the BLM as described in Appendix D of the POD.

4.2 Ongoing Monitoring

The Companies will consult with the agencies and counties should they have a concern pertaining to noxious weeds within their jurisdiction. The agencies may also contact the Companies to report on the presence of noxious weeds. The Companies will control weeds on a case-by-case basis, per previous agreements or contracts, the Companies will implement suitable and timely measures within the right-of-way to address the weed threat, as well as to suppress and help control new infestations that occur solely within the right-of-way, insofar as possible.

5.0 PESTICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP

5.1 Pesticide Application and Handling

The list of pesticides to be used (see Attachment A) will be reviewed and approved by the BLM and USFS, and pesticide application will be based on information gathered from the Weed Districts and agencies. Before application, all required permits from the local authorities will be obtained. Permits may contain additional terms and conditions that go beyond the scope of this management plan. Application of pesticides will follow the EPMs contained in Appendix Z of the POD.

5.2 Pesticide Spills and Cleanup

All reasonable precautions will be taken to avoid pesticide spills. EPMs describing pesticide spills and cleanup, worker safety, and spill reporting are presented in Appendix Z of the POD.

Additional information regarding the handling of hazardous materials may be found in Appendix P – Framework Hazardous Material Management Plan and Appendix G - Framework Spill Prevention, Containment and Countermeasures Plan.

6.0 LITERATURE CITED

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ATTACHMENT A
BLM-APPROVED PESTICIDES

BLM-APPROVED PESTICIDES

- 2,4-D
- Bromacil
- Chlorsulfuron
- Clopyralid
- Dicamba
- Diuron
- Glyphosate
- Hexazinone
- Imazapyr
- Metsulfuron methyl
- Picloram
- Sulfometuron methyl
- Tebuthiuron
- Triclopyr

APPENDIX F
FRAMEWORK STORMWATER POLLUTION PREVENTION PLAN

Appendix F

Framework Stormwater Pollution Prevention Plan

Gateway West Transmission Line Project

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project) consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

In compliance with criteria in the U.S. Environmental Protection Agency's (USEPA's) Clean Water Act, all construction site operators engaged in clearing, grading, and excavating activities that disturb one acre or more must obtain a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges (Code of Federal Regulations, Title 40, Parts 122 and 123). NPDES permits (also called Construction General Permits) are issued by EPA or similar authorized state entity following submittal of a Notice of Intent (NOI) for construction activities, and preparation of a Stormwater Pollution Prevention Plan (SWPPP) that describes how erosion and sediment transport will be minimized to adjacent waterbodies. Measures to ensure that construction activities comply with state and EPA requirements for stormwater management to be incorporated into the SWPPP are outlined in this plan. This document provides a template for the detailed Final SWPPP Plan to be developed by the Construction Contractor.

2.0 PURPOSE

The purpose of a SWPPP is to identify and implement stormwater pollution prevention measures to reduce the quantity of impacted runoff, and to deal with runoff in a manner minimizing environmental impacts during construction, operation, and maintenance of the Project.

A SWPPP is needed to minimize the volume of contaminated runoff, including sediment runoff, and to implement mitigation measures in a manner minimizing environmental impacts. Temporary stabilization methods (silt-fences, straw bales, etc.) are not guaranteed or fail-safe measures without regular maintenance and field inspection throughout construction activities. In addition to conventional methods of erosion control there are numerous new and improved products and the Construction Contractor is encouraged to review these progressive or improved materials in the development and implementation of a SWPPP.

The proper implementation of mitigation measures associated with a SWPPP is imperative during all construction activities. These activities will be conducted in an environmentally sensitive and responsible manner so no discharge of sediment or contaminants may be conveyed as either direct or indirect discharge to wetlands, waters of the United States, or the States of Wyoming and Idaho Waters.

Development, implementation, and maintenance of the SWPPP will provide the Construction Contractor with the framework for reducing soil erosion and minimizing pollutants in stormwater during construction. The SWPPP will:

- Define the characteristics of the site and the type of construction that will be occurring.
- Describe the practices that will be implemented to control erosion and the release of pollutants in stormwater.
- Create an implementation schedule to ensure the practices described in the SWPPP are in fact implemented, and to evaluate the plan's effectiveness in reducing erosion, sediment, and pollutant levels in stormwater discharge from the site.
- Describe the final stabilization/termination design to minimize erosion and prevent stormwater impacts after construction is complete.

3.0 NOTIFICATION REQUIREMENTS AND IMPLEMENTATION

Before construction begins, the Construction Contractor will be responsible for developing a SWPPP, and obtaining coverage under the NPDES General Permit by filing an NOI and appropriate fee with the USEPA Region 10 for Idaho and the Wyoming Department of Environmental Quality (WDEQ) in accordance with NOI instructions. The Construction Contractor will be responsible for implementing a site-specific SWPPP and is required to perform routine inspections throughout the duration of construction activities.

The primary intent of the erosion and sediment control measures is to control and minimize erosion at the source. For the Project, the main source of potential stormwater contamination will be erosion of soils from construction activities. It will be the responsibility of the Construction Contractor to implement erosion control measures where necessary, in order to minimize pollutants in stormwater, and to keep the Project in compliance with USEPA, WDEQ, and Idaho Department of Environmental Quality regulations.

A copy of the SWPPP shall remain with the Construction Manager on the construction site or at a staging area(s), and be readily available while the transmission line and substations are under construction, from the start of construction activities until completion of reclamation for the Project.

The Construction Contractor must retain a set of construction site maps for the duration of the Project, and for 3 years after the Notice of Termination, that delineate the following items:

- Areas of soil disturbance that have been stabilized,

- Areas to be graded along with a time schedule,
- Areas of potential soil erosion where control practices will be implemented,
- Types of control practices and time schedule for implementation,
- Locations of any post-construction projects, and
- Copies of all inspections performed over the duration of the Project.

4.0 PROJECT MODIFICATIONS

The Construction Contractor is responsible for maintaining an up-to-date SWPPP and shall amend the SWPPP whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters or groundwater. The SWPPP shall also be amended if it is in violation of the General Permit or has not achieved the general objective of eliminating pollutants in stormwater discharges. The SWPPP shall be amended and implemented in a timely manner, but in no case more than 14 days after it has been determined that the SWPPP is inadequate. All amendments should be dated and directly attached to the SWPPP. The USEPA or WDEQ may require the discharger to amend the SWPPP.

5.0 OTHER SPECIFIC STIPULATIONS AND METHODS

Environmental protection measures to ensure construction activities comply with state and USEPA requirements for stormwater management to be incorporated into the SWPPP are described in Appendix Z of the Plan of Development.

6.0 MITIGATION MAINTENANCE, INSPECTION, REPAIR, AND MONITORING

The Construction Contractor shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances). Proper operation and maintenance also include appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems if construction takes place in an above average precipitation year.

The Construction Contractor will be required to conduct routine maintenance and emergency repair on any structural controls, including the maintenance of erosion and sediment control measures and any required subsequent reporting. As part of the SWPPP, the Construction Contractor will be required to develop an inspection schedule and conduct routine inspections to identify conditions that could lead to discharges of chemicals or contact of stormwater with storm drainages or surface waters. Schedules will be established for regular inspections of equipment and areas. Inspections of the construction site shall occur In accordance with the General permit applicable to each state to identify areas contributing to a stormwater discharge and to evaluate whether industry standards are in place and functioning properly. For storm events with extended durations, observations shall be performed every 24 hours. During inspections, the Construction Contractor will also determine if the industry standards

identified in the SWPPP are adequate and whether additional control practices are needed. All monitoring and inspection records which have been produced in association with this SWPPP will be retained for a period of at least 3 years.

To monitor the mitigation's effectiveness and to evaluate whether additional mitigation measures are required, a monitoring program and reporting system will be followed. As part of this program, weather conditions should be monitored to prepare for precipitation events. It is recommended that weather forecasts be checked at least every week.

7.0 TRAINING

The Construction Contractor will be responsible for the SWPPP implementation, amendments, and revisions. On-site construction personnel will be responsible for installation and maintenance of on-site mitigation measures.

Properly trained personnel are more capable of preventing spills, responding safely and effectively to accidents, and recognizing situations that could lead to stormwater contamination. The Construction Contractor will be responsible for familiarizing their personnel with the information contained within the SWPPP. Training meetings will need to be held for new personnel who join the Project after the initial training has been provided. The purpose of these meetings will be to review the proper installation methods and maintenance of all erosion control measures to be used for the Project. The monitoring/inspection program and all required maintenance and repair will be conducted by trained personnel.

8.0 POST-CONSTRUCTION STORMWATER MANAGEMENT

Mitigation measures used to reduce pollutants in stormwater discharges after all construction phases have been completed at the sites should take into account local post-construction storm water management requirements, policies, and guidelines, as well as site-specific and seasonal conditions. Post-construction mitigation measures will be assessed during future line maintenance. During line maintenance, any areas disturbed by the line installation that are observed to be eroding sediment into drainages will be assessed for the appropriate permanent mitigation measure to control sediment movement off the disturbed area. Disturbed areas will also be reclaimed per Appendix D – Framework Reclamation Plan.

APPENDIX G
FRAMEWORK CONSTRUCTION SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURES PLAN

Appendix G

Framework Construction Spill Prevention, Containment, and Countermeasures Plan

Gateway West Transmission Line Project

Prepared by:

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

2.0 PURPOSE

The Companies have developed this Framework Spill Prevention, Containment, and Countermeasures (SPCC) Plan for the Project to provide preventive procedural actions, standard mitigation measures, and other specific stipulations and methods to minimize the environmental impact associated with spills or releases of fuel, lubricant, or hazardous materials, during construction and refueling activities and during special refueling activities within 100 feet of waterbodies, wetland boundaries, or within municipal watersheds.

This document will provide a template for the development of a detailed SPCC Plan to be developed by the Construction Contractor which differs from the SPCC plans designed and developed for substations or areas where large volumes of materials (e.g. oils, fuels, etc.) are stored.

3.0 RESPONSIBILITY OF IMPLEMENTATION

The Companies, through their Construction Contractor(s) and inspectors, shall be responsible for the implementation of the procedural actions, mitigation measures, and other specific stipulations and methods. The Construction Contractor will comply with applicable federal, state, and local regulations applicable to the location of refueling, storage, waste removal, and other activities involving fuels and hazardous materials.

4.0 PREVENTIVE PROCEDURAL ACTIONS

The following preventive actions and procedures shall be accomplished prior to construction.

4.1 Storage, Refueling, and Lubrication Areas

Prior to the start of construction in an area, the Construction Contractor shall designate locations for storage, refueling, and lubrication of equipment and materials, minimizing the environmental and safety impacts associated with releases of fuel, lubricants, or hazardous substances. These areas will be designated using the following actions.

- Storing of fuel, lubricant, or hazardous materials within 100 feet of a waterbody, wetland boundary, or within a designated municipal watershed shall be prohibited, unless the

location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas.

- No potentially hazardous materials, other than essential equipment fuels (e.g., gasoline, diesel, etc.) or standard lubricants (e.g., engine oils, grease, etc.) shall be transported onto the right-of-way or construction area without coordination and approval.
- Heavy equipment used in the Project area will be inspected daily for leaks.
- To prevent introduction of petrochemicals into the waters of Wyoming and Idaho, fuel, oil, hydraulic fluid, lubricants, and other petrochemicals stored within a floodplain must have an appropriately sized impervious secondary containment system to prevent spills. The permittee shall contain and remove any petrochemical spills, including contaminated soil, and dispose of these materials at an approved disposal site.

4.2 General Petroleum Products, Quantities, and Storage

Typical fuels used in the Project area include diesel and gasoline. Typical lubricants used include engine oil, transmission/drive train oil, hydraulic oil, gear oil, and general lubricating grease. Typical coolants used are glycols (anti-freeze).

Quantity of fuel storage varies, but is usually approximately 6,000 to 12,000 gallons, stored in tanks or tankers at contractor yards. Smaller quantities are sometimes stored temporarily in the construction area along the right-of-way. Fuel transport is typically accomplished by the use of fuel trucks for larger quantities, and by pickup trucks transporting smaller quantities from 5 to 100 gallons. Lubricants and coolants are generally stored in bulk or retail packaging at contractor yards in quantities typically less than 500 gallons and transported in trucks to the construction area as needed.

Fuel and lubricant containers of all volumes will be stored within secondary containment. Secondary containment will be able to hold the volume of the largest container stored within the containment structure.

4.2.1 Special Refueling Activities

When unique conditions require refueling within 100 feet of a waterbody, wetland boundary, or within any designated municipal watersheds, a determination of necessary emergency response actions shall be conducted prior to refueling activities. In addition, absorbent materials or other spill containment materials shall be available for immediate application prior to commencing refueling activities. Fuel trucks transporting fuel to on-site equipment will travel only on approved access roads.

Each construction crew shall have on hand sufficient supplies of absorbent, barrier materials, and U.S. Department of Transportation–approved containers to allow for rapid containment and recovery of any spill of hazardous material.

4.2.2 Waste Removal

Procedures and individual responsibilities regarding excavation, transportation, and off-site disposal of any soil-contaminated material from a spill of a hazardous material shall be established prior to construction.

Whenever any spill of a hazardous or potentially hazardous substance occurs, the Companies shall be notified. The Companies will help direct further response actions in accordance with U.S. Environmental Protection Agency and other regulatory requirements and assist throughout the cleanup and disposal of wastes.

4.3 Spill and Emergency Response for Hazardous Substances

Prior to construction, the contractor shall submit a hazardous material management and emergency preparedness and response plans (see Appendices P and Q) to the Companies for approval. The plans shall comply with all applicable federal, state, and local regulations and shall reference the applicable regulations.

The plan shall include measures and procedures for characterizing, storing, handling, and disposing of hazardous substances and for emergency response operations.

The plan shall include, but not be limited to, spill control, cleanup, notification, characterization, and disposal procedures. All contractor supervisors and personnel handling hazardous substances shall be familiar with these procedures.

- Spill Control: Following a spill, efforts shall be made to immediately control the source of the discharge and contain the spill. Absorbent materials shall be deployed with efforts directed to limiting the area of contamination. Every effort shall be made to prevent any spill from reaching wetlands or waterbodies. If a spill should reach surface waters, straw bales, booms, and absorbent materials shall be immediately deployed to contain and reduce downstream migration of the spilled material.
- Cleanup: Once a spill is contained, cleanup activities shall begin immediately. All spilled material, contaminated soil, and absorbent material shall be picked up and contained for disposal. In the event of a large spill or a spill that migrates into surface waters, waste cleanup specialists shall be called to assist in cleanup efforts. Prior to beginning construction the contractor shall be required to submit prior to beginning construction a list of cleanup contractors for approval.
- Spill Report Form: Following any spill, the contractor shall submit a spill report form for distribution to the Companies' Environmental Coordinator.
- Disposal: The Companies will provide a list of commercial disposal facilities for contractor's reference. The contractor is responsible for arranging disposal with these facilities or other approved facilities as appropriate.
- Waste Identification: All waste identification/characterization, handling, labeling, storage, manifesting, transportation, record-keeping, and disposal shall be in accordance with all applicable federal, state, and local regulations and ordinances and shall be the responsibility of the contractor.
- Documentation: The contractor will be required to provide the Companies with copies of sample results, shipping manifests, chain-of-custodies, and bill-of-lading for wastes transported for disposal upon request. The documentation will also describe the type and quantity of waste material disposed of.
- Material Safety Data Sheet: The contractor shall maintain Material Safety Data Sheets for diesel fuel, gasoline, lubrication oil, and other hazardous materials used on the Project at each location where these materials are stored.
- Field Notification: As soon as possible after beginning spill control and cleanup activities, contractor shall notify the Companies, who will determine if the spill is reportable. Notification of appropriate agencies will be the responsibility of the Project Construction Contractor.
- Any amount of any material in such quantity as may, with reasonable probability, injure or be detrimental to human health, animal, plant life, property, or may unreasonably interfere with the public welfare or the use of property must be reported. This includes chemical, biohazardous, petroleum-product, and sewage spills and incidents. In addition

to recent spills, the discovery of evidence of previous unauthorized discharges, such as contaminated soil or groundwater, also must be reported.

- Agency Notification: Agency notification will be made of reportable spills. Written reports of the spills into state waters of oil or hazardous substances and materials will be provided as directed.

5.0 ENVIRONMENTAL PROTECTION

Environmental protection measures will be applied Project-wide and will address many of the concerns associated with spills. These measures are contained in Appendix Z of the Plan of Development currently being discussed with the Agencies. When these discussions are completed finalized measures will be listed herein.

6.0 EMERGENCY CONTACTS

Table G-1 contains a list of federal and state contacts in the event of a hazardous chemical emergency.

Table G-1. Federal and State Emergency Contacts

Agency to be Contacted	Contact Name	Phone/Address
Federal		
U.S. EPA Region 10 Emergency Response Center	–*	–*
U.S. EPA Region 8 Emergency Response Center	–*	–*
BLM, Casper Field Office	–*	–*
BLM, Rawlins Field Office	–*	–*
BLM, Rock Springs Field Office	–*	–*
BLM, Kemmerer Field Office	–*	–*
BLM, Pocatello Field Office	–*	–*
BLM, Burley Field Office	–*	–*
BLM, Shoshone Field Office	–*	–*
BLM, Jarbidge Field Office	–*	–*
BLM, Bruneau Field Office	–*	–*
BLM, Four Rivers Field Office	–*	–*
BLM, Owyhee Field Office	–*	–*
USFS, Caribou Targee National Forest	-*	-*
USFS, Medicine Bow National Forest	-*	-*
USFS, Sawtooth National Forest	-*	-*
State		
Wyoming Department of Environmental Quality	–*	–*
Idaho Department of Environmental Quality	–*	–*

* To be provided in final plan.

APPENDIX H
FRAMEWORK PLANT AND WILDLIFE CONSERVATION MEASURES PLAN

Appendix H

Framework Plant and Wildlife Conservation Measures Plan

Gateway West Transmission Line Project

Prepared by:

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current (AC) electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single- circuit transmission lines involving towers, access roads, staging areas, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), and the states of Idaho and Wyoming.

This document presents the plan proposed by the Companies for the avoidance and minimization of impacts to special-status plant (SSP) and wildlife species as related to construction activities for the Gateway West Transmission Line Project (Project). This plan summarizes the avoidance and minimization conducted during siting and routing of the Project components and outlines specific environmental protection measures (EPMs) to be implemented if state- or federally-listed species, Bureau of Land Management (BLM) sensitive species, or U.S. Forest Service (USFS) special-status species or their habitats are identified within, or adjacent to, the Project right-of-way (ROW). The Companies have prepared and submitted a separate plan that addresses avoidance and minimization measures related to operations, maintenance, and emergency activities.

1.1 Purpose

The objectives of this plan are to recognize the substantial effort already invested by the Companies in avoiding and minimizing impacts on SSP and wildlife species and to present a comprehensive, Project-specific plant and wildlife conservation plan that does the following:

- Provides consistency across jurisdictions
- Meets the intent of the current BLM and USFS management guidance for federal lands
- Balances cost, practicality, and feasibility of Project implementation with avoiding or minimizing environmental impacts

1.2 Contents

The components of this plan include the following:

- **Section 2**: Brief background on the proposed transmission line and substation construction, operations, maintenance, and emergency response procedures (a complete description can be found in the Date Plan of Development [POD], of which this plan is a part).
- **Section 3**: A list of the special-status species that the Companies and the agencies (BLM, USFS, U.S. Fish and Wildlife Service [FWS], Idaho Department of Fish and Game [IDFG], and Wyoming Game and Fish Department [WGFD]) have identified as occurring

or potentially occurring within the Project area, and explanations of how the proposed measures are appropriate and will meet the intent of the BLM and USFS land-management plan (LMP) restrictions.

- **Section 4**: A summary of the avoidance and minimization measures used by the Companies in conjunction with the agencies during corridor and ROW routing and substation siting, and the assumptions made during that process
- **Section 5**: Temporal and spatial restrictions the Companies propose to implement to avoid or minimize direct impacts to special-status species, together with the conditions under which the Companies propose that restrictions could be limited or lifted, including the methods to be used to determine where and when the measures will apply across the Project.

2.0 PROJECT CONSTRUCTION

Appendix B of the POD provides detailed information regarding the components of the transmission system including the transmission structures, communications system, and the substations. It also provides detailed information on construction methods, construction schedule, operation and maintenance, and proposed decommissioning.

3.0 SPECIES CONSIDERED FOR THE PLAN

The following steps were taken by the Companies to determine which species and habitats to consider for avoidance, minimization, and conservation measures:

- Identified potential habitats and special-status species that may occur along the proposed corridor using available data from federal and state wildlife agencies, the BLM, and the USFS
- Discussed habitat types and special-status species at kickoff meetings with agency resource specialists to identify which species are of greatest concern in the Project area
- Refined the list of species and habitats to be addressed in Project plans through several subsequent meetings with state and federal agency resource specialists

Table 3-1 presents the special-status species discussed in this Plan. Conservation measures for construction activities for fish species are addressed Appendix Z of the POD. Several additional species were analyzed, and some had protocol-level surveys conducted; however, these are not addressed further in this conservation plan because they are not expected to be adversely affected by the Project due to a lack of occurrence in the Project area, lack of direct impact to the species or its habitats from the Project, or a low level of anticipated impact at the population level. Other species not listed in this table will be analyzed in other Project documents but are not addressed further in this conservation plan because they were not identified as primary concerns for the Project.

Table 3-1. Species Protected in the Plant and Wildlife Conservation Plan

Species	Regulatory Status within Project Area	Analysis	Included in Conservation Plan?
Big Game			
Bighorn sheep (*Ovis canadensis*)	USFS WY Sensitive, BLM ID Sensitive	BE	Yes
Elk (*Cervus elaphus*)	None	EIS	Yes
Moose (*Alces alces*)	None	EIS	Yes
Mule deer (*Odocoileus hemionus*)	None	EIS	Yes
Pronghorn (*Antilocapra americana*)	None	EIS	Yes
Selkirk Mountains woodland caribou (*Rangifer tarandus caribou*)	USFWS ID Endangered	BA	
Other Mammals			
American marten (*Martes americana*)	USFS WY Sensitive and MIS	BE and EIS	
Black-footed ferret (*Mustela nigripes*)	USFWS WY Endangered; USFWS Shirley Basin experimental population WY	BA and EIS	Yes
Black-tailed prairie dog (*Cynomys ludovicianus*)	USFWS removed as Candidate, USFS WY Sensitive. BLM WY Sensitive	BE and EIS	No
Canada lynx (*Lynx canadensis*)	USFWS WY and ID Threatened	BA and EIS	No
Fringed myotis (*Myotis thysanodes*)	USFS WY Sensitive, BLM ID and WY Sensitive	BE and EIS	
Gray wolf (*Canis lupus*)	USFWS WY Nonessential experimental population, USFWS ID De-listed; USFS ID sensitive	BE and EIS	No
Grizzly bear (*Ursus arctos*)	USFWS WY and ID Threatened, USFS WY Sensitive	BA and EIS	
Kit fox (*Vulpes macrotis*)	USFS WY Sensitive, BLM ID Sensitive	BE and EIS	
Northern Idaho ground squirrel (*Spermophilus brunneus*)	BLM WY Sensitive	EIS	No
Preble's meadow jumping mouse (*Zapus hudsonius preblei*)	USFWS WY Threatened, USFS WY Sensitive, BLM WY Sensitive	BA and EIS	No
Pygmy rabbit (*Brachylagus idahoensis*)	BLM WY and ID Sensitive; USFS ID Sensitive	EIS	Yes
Southern Idaho ground squirrel (*Spermophilus brunneus*)	USFWS ID Candidate	EIS	No
Spotted bat (*Euderma maculatum*)	USFS WY and ID Sensitive, BLM ID and WY Sensitive	BE and EIS	
Swift fox (*Vulpes velox*)	USFS WY Sensitive, BLM WY Sensitive	BE and EIS	
Townsend's big-eared bat (*Corynorhinus townsendii*)	USFS WY and ID Sensitive, BLM WY Sensitive	BE and EIS	
White-tailed prairie dog (*Cynomys leucurus*)	BLM WY Sensitive	EIS	Yes
Wolverine (*Gulo gulo*)	USFWS Candidate, USFS WY and ID Sensitive; BLM ID Sensitive	BE and EIS	No
Wyoming pocket gopher (*Thomomys clusius*)	BLM WY Sensitive	EIS	No
Raptors			

Species	Regulatory Status within Project Area	Analysis	Included in Conservation Plan?
Bald eagle (*Haliaeetus leucocephalus*)	USFWS De-listed WY and ID 2007; USFS WY and ID Sensitive BLM WY Sensitive, MBTA; BGEPA	BE and EIS	Yes
Boreal owl (*Aegolius funereus*)	USFS ID Sensitive, MBTA	BE and EIS	
Burrowing owl (*Athene cunicularia*)	BLM WY Sensitive; MBTA	BE and EIS	Yes
Ferruginous hawk (*Buteo regalis*)	BLM WY and ID Sensitive; USFS WY Sensitive; MBTA	BE and EIS	Yes
Flammulated owl (*Otus flammeolus*)	USFS WY and ID Sensitive; BLM ID Sensitive; MBTA	BE and EIS	Yes
Golden eagle (*Aquila chrysaetos*)	MBTA; BGEPA	EIS	Yes
Great gray owl (*Strix nebulosa*)	USFS ID Sensitive	BE and EIS	
Northern goshawk (*Accipiter gentilis*)	BLM WY and ID Sensitive; USFS WY and ID Sensitive; WY and ID USFS MIS; MBTA	BE and EIS	Yes
Northern harrier (*Circus cyaneus*)	USFS WY Sensitive, MBTA	BE and EIS	
Peregrine falcon (*Falco peregrinus*)	USFS WY and ID Sensitive, BLM ID and WY Sensitive, MBTA	BE and EIS	
Short-eared owl (*Asio flammeus*)	USFS WY Sensitive, MBTA	BE and EIS	
All other raptors	MBTA	EIS	Yes
Other Avian			
Brewer's sparrow (*Spizella breweri*)	USFS WY Sensitive, BLM ID and WY Sensitve, MBTA	BE and EIS	
Chestnut-collared longspur (*Calcarius ornatus*)	USFS WY Sensitive, MBTA	BE and EIS	
Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*)	BLM WY and ID Sensitive; USFS WY and ID Sensitive; ID USFS MIS	BE and EIS	No
Grasshopper sparrow (*Ammodramus savannarum*)	USFS WY Sensitive, MBTA	BE and EIS	
Greater sage grouse (*Centrocercus urophasianus*)	USFWS WY and ID Candidate; BLM WY and ID Sensitive; USFS WY and ID Sensitive; ID USFS MIS	BE and EIS	Yes
Greater sandhill crane (*Grus canadensis*)	MBTA	EIS	Yes
Interior least tern (*Sterna antillarum athalassos*)	USFWS Endangered, MBTA	BA and EIS	
Lewis's woodpecker (*Melanerpes lewis*)	USFS WY Sensitive, BLM ID Sensitive, MBTA	BE and EIS	
Loggerhead shrike (*Lanius ludovicianus*)	USFS WY Sensitive, BLM ID and WY Sensitive, MBTA	BE and EIS	
Long-billed curlew *(Numenius americanus)*	USFS WY Sensitive, BLM WY Sensitive, MBTA	BE and EIS	Yes
McCown's longspur (*Calcarius mccownii)*	USFS WY Sensitive, MBTA	BE and EIS	
Mountain plover (*Charadrius montanus*)	BLM WY Sensitive; MBTA	BE and EIS	Yes
Mountain quail (*Oreortyx pictus*)	BLM ID Sensitive	BE and EIS	No
Olive-sided flycatcher (*Contopus cooperi*)	USFS WY Sensitive, BLM ID Sensitive, MBTA	BE and EIS	
Piping plover (*Charadrius melodus*)	USFWS Threatened, MBTA	BA and EIS	
Sage sparrow (*Amphispiza belli*)	USFS WY Sensitive, BLM ID and WY Sensitive, MBTA	BE and EIS	
Three-toed woodpecker (*Picoides dorsalis*)	WY USFS Sensitive, ID USFS Sensitive; MBTA	BE and EIS	Yes

Species	Regulatory Status within Project Area	Analysis	Included in Conservation Plan?
Trumpeter swan (*Cygnus buccinator*)	USFS ID Sensitive, BLM ID and WY Sensitive, MBTA	EIS	
Western yellow-billed cuckoo (*Coccyzus americanus*)	USFWS WY and ID Candidate; BLM WY Sensitive; MBTA	EIS	No
Whooping crane (*Grus americana*)	USFWS Endangered	BA and EIS	
Amphibians			
Boreal toad (*Bufo boreas boreas*)	USFS WY Sensitive, BLM WY and ID Sensitive; USFS ID Sensitive	EIS	No
Columbia spotted frog (*Rana luteiventris*)	USFWS WY and ID Candidate, USFS ID Sensitive, BLM WY Sensitive	EIS	No
Great Basin spadefoot toad (*Spea intermontana*)	BLM WY Sensitive	BE and EIS	No
Northern leopard frog (*Rana pipiens*)	BLM WY Sensitive; USFS WY and ID Sensitive; BLM ID Sensitive	BE and EIS	No
Wyoming toad (*Bufo hemiophrys baxteri*)	USFWS WY Endangered	BA and EIS	No
Fish			
Bonneville cutthroat trout (*Oncorhynchus clarki utah*)	USFS ID Sensitive, BLM ID and WY Sensitive	BE and EIS	No
Bonytail (*Gila elegans*)	USFWS Endangered	BA and EIS	No
Bull trout (*Salvelinus confluentus*)	USFWS ID Threatened	BA and EIS	No
Chinook salmon (*Oncorhynchus tschawytscha*)	USFWS ID Threatened	BA	
Colorado pikeminnow (*Ptychocheilus lucius*)	USFWS Endangered	BA and EIS	No
Humpback chub (*Gila cypha*)	USFWS Endangered	BA and EIS	No
Kendall warm springs dace (*Rhinichthys osculus thermalis*)	USFWS WY Endangered	BA and EIS	
Pallid sturgeon (*Scaphirhynchus albus*)	USFWS Endangered	BA and EIS	No
Razorback sucker (*Xyrauchen texanus*)	USFWS Endangered	BA and EIS	No
Sockeye salmon (*Oncorhynchus nerka*)	USFWS ID Endangered	BA	
Steelhead (*Oncorhynchus mykiss*)	USFWS ID Threatened	BA	
White sturgeon (*Acipenser transmontanus*)	USFWS ID Endangered, BLM ID Sensitive	BA	
Invertebrates			
Banbury Springs limpet (*Lanx* sp.)	USFWS ID Endangered	BA and EIS	
Bliss Rapids snail (*Taylorconcha serpenticola*)	USFWS ID Threatened	BA and EIS	
Bruneau Hot springsnail *(Pyrgulopsis bruneauensis)*	USFWS ID Endangered; BLM ID Sensitive	BA and EIS	No
Snake River physa snail (*Physa natricina*)	USFWS ID Endangered	BA	
Plants			
Blowout penstemon (*Penstemon haydenii*)	USFWS WY Endangered	BA and EIS	Yes
Colorado butterfly plant (*Gaura neomexicana coloradensis*)	USFWS WY Threatened	BA and EIS	Yes
Desert yellowhead (*Yermo xanthocephalus*)	USFWS WY Threatened	BA and EIS	No
Dwarf raspberry (*Rubus arcticus* ssp. *acaulis)*	USFS WY Sensitive	BE	

Species	Regulatory Status within Project Area	Analysis	Included in Conservation Plan?
Goose Creek milkvetch (*Astragalus anserinus*)	USFWS ID Candidate, BLM ID Sensitive	EIS	No
Laramie columbine (*Aquilegia laramiensis*)	USFS WY Sensitive, BLM WY Sensitive	BE and EIS	
Largeflower triteleia (*Triteleia grandiflora*)	USFS WY Sensitive	BE	
MacFarlane's four-o'clock (*Mirabilis macfarlanei*)	USFWS ID Threatened	BA	
Narrowleaf moonwort (*Botrychium lineare*)	USFS WY Sensitive, BLM WY Sensitive	BE	
Slickspot peppergrass (*Lepidium pappileferum*)	USFWS ID Threatened	BA and EIS	Yes
Spalding's catchfly (*Silene spaldingii*)	USFWS ID Threatened	BA	
Ute ladies'-tresses orchid (*Spiranthes diluvialis*)	USFWS Threatened WY	BA and EIS	Yes
Water howellia (*Howellia aquatilis*)	USFWS ID Threatened	BA	
Western prairie fringed orchid (*Platanthera praeclara*)	USFWS Threatened	BA and EIS	

Notes:
BA = Biological Assessment
BE = Biological Evaluation
BGEPA = Bald and Golden Eagle Protection Act
EIS = Environmental Impact Statement
ID = Idaho
MBTA = Migratory Bird Treaty Act
WY = Wyoming
USFS = U. S. Forest Service
MIS = Management Indicator Species

4.0 DEVELOPMENT OF CONSERVATION PLAN

This section explains how the Companies approached avoidance and minimization of impacts through data collection and careful routing and siting of the proposed facilities.

4.1 Avoidance and Minimization Development and Implementation

This section presents the avoidance of sensitive plant and wildlife resources and minimization of the Project footprint that have been and will be employed, data collection and analysis, and field surveys for the various stages of Project development. The stages of Project development addressed include the proposed route and substation siting process and construction scheduling.

4.1.1 Proposed Route and Substation Siting

Corridor evaluation was conducted in two phases. In the initial phase, the Companies reviewed maps of the area to identify significant constraints and opportunities for selecting corridors between the proposed, planned and existing substations between the planned Windstar Substation near Casper, Wyoming and the proposed Hemingway Substation in Owyhee County, Idaho. Constraints included a wide array of natural resources and man-made features such as the Oregon Trail, sage grouse leks, airports, urban areas, rural residences, agricultural features (center pivot irrigation, feedlots, dairies), visual resource management areas (VRMs), areas of critical environmental concern (ACECs), National Monuments and National Wildlife Refuges (NWR). Opportunities include existing transmission corridors, West-wide Energy (WWE) corridors, pipelines, a USFS utility corridor, and railroads. Using these factors, the Companies selected a proposed general corridor and then conducted a detailed evaluation of constraints to

identify a proposed and alternate corridor between the above-referenced points of interconnection.

Corridors were identified with the goals of maximizing the use of opportunities and minimizing crossings of areas with higher-level constraints. This step took into account corridors defined by existing transmission lines and other linear facilities as well as any additional corridors identified to date by the BLM, the Companies, and the WWE Corridor study. The Companies evaluated each corridor for a variety of environmental and engineering factors to identify the proposed and alternate corridors. This approach included development and use of an attribute matrix, which established the relative importance of each attribute and, as appropriate, analysis tools. Analysis tools included GIS-based routing and weighting, aerial photography, topographic maps, and limited field reconnaissance. The proposed and alternative corridors were then presented at BLM sponsored scoping meetings. Following scoping, BLM Field Offices reviewed proposed and alternative routes to determine which should be carried forward for detailed analysis in the EIS.

Specifically, the Companies acquired geographic information system (GIS) data and qualitative input from the USFWS, BLM, Forest Service, IDFG, and WGFD regarding known and potential locations of special status species and their habitats in the Project area. These data were used to develop the list of special status species of concern in the Project area.

At the request of these agencies, the Companies conducted additional data collection in 2008 to fill certain data gaps in the Project area, including a sage grouse lek survey, a raptor nesting survey, and detailed habitat mapping.

The datasets described above were used during routing of the proposed corridor and substation siting. Certain plant and wildlife resources were identified as constraints to be avoided, including:

- A 0.25-mile “no surface occupancy” buffer of all greater sage-grouse leks, regardless of recent occupancy, was entirely avoided during routing;
- A 0.65-mile buffer of greater sage-grouse leks was avoided unless there was a compelling reason not to (e.g., a non-wildlife resource such as a home to be avoided);
- A 0.50-mile buffer of raptor nests was avoided unless there was a compelling reason not to (e.g., a non-wildlife resource to be avoided); and
- Special management areas established for the protection of plant or wildlife species were avoided, where possible.

Other plant and wildlife resources (such as big game winter range and calving and fawning areas) were not necessarily avoided during routing and siting but were considered a constraint and were taken into consideration during design of the proposed Project. Additionally, proximity of the corridor to urban areas, agricultural areas and rural residences were taken into consideration during the routing and siting.

The proposed and alternative routes are presented in the September 2008 Gateway West Transmission Line Project Siting Study (Idaho Power and Rocky Mountain Power, 2008), and Supplement Siting memo dated October 23, 2008. As site-specific environmental and engineering analyses are conducted along these routes, the proposed transmission line ROW will be refined to further avoid resources or minimize impacts upon them.

4.1.2 Planned ROW Refinement

The Companies conducted a comprehensive Project-wide habitat mapping effort that identified habitats in the Project area and assessed the quality of those habitats for selected special status species. The habitat mapping comprised two field components: aerial photography acquisition and field verification. Based on the results of the habitat mapping, the Companies identified areas within the corridor where species-specific surveys may be necessary to either inform ROW refinement or specify where and when conservation measures apply.

In addition to the avoidance and minimization accomplished through routing, the Companies have developed additional conservation measures, which are presented in Appendix Z of this POD. Some involve seasonal restrictions on construction, discussed in general in Section 4.1.3 and detailed by species in Section 5. Many of the measures require preconstruction surveys to determine if and when they apply.

4.1.3 Construction Scheduling and Monitoring

Avoidance can be spatial and/or temporal. Where disturbance during construction is of concern, construction is proposed to be limited to periods of species' absence or reduced presence. In addition to limited operating seasons, which categorically restrict construction, environmental monitoring is also proposed where construction may be permitted, but its conformance with minimization measures would be monitored and enforced.

The details of the Companies' environmental compliance program, including roles and responsibilities, pre-construction surveys, monitoring, and reporting, are detailed in Appendix C– Framework Environmental Compliance Management Plan.

4.2 Development of Conservation Measures

After taking into consideration wildlife and plant resources, as well as other important resources during siting and routing, the Companies recognized the need for additional measures to minimize the impact from construction of the Project. The Companies used the following steps to develop the measures found in Section 5:

- Identified and reviewed the BLM and USFS LMPs applicable to the Project area (Table 4-1)
- For each LMP, recorded the surface-use stipulations specific to each species of concern
- Identified inconsistencies in requirements among jurisdictions
- Determined exception or waiver criteria if applicable
- Used FWS avoidance recommendations when applicable
- Incorporated IDFG and WGFD species-specific management recommendations
- Evaluated the stipulations on a resource-by-resource basis and developed the proposed Project-wide temporal and spatial restrictions and exception criteria

4.2.1 Land-Management Plans

Wyoming land management plans within the Project area are recent, and overall, the specific temporal and spatial restrictions for a given species are consistent across these jurisdictions (Table 4-1). Most of the relevant Idaho plans within the Project area are outdated, and additional information provided by the agencies in Idaho is very limited. In addition, these plans tend to have information gaps, contain restrictions that are not consistent across jurisdictions, and

contain stipulation language that is not specific and require interpretation. RMPs from both states have phrases such as “avoidance where possible”, “request”, “recommend” “review on a case by case basis”, and “exceptions may be made” indicating many of the stipulations and restrictions need to be reviewed on a species by species basis within each field office.

Table 4-1. Land-Management Plans for the Project

Segment/Alternative	Administrative Unit	Applicable Plan Name	Plan Year
Wyoming			
1W(a), 1W(c)	Casper BLM Field Office	Casper RMP	2007
1W(a), 1W(c)	Medicine Bow-Routt National Forests	Medicine Bow National Forest Revised Forest Plan	2003
1W(a), 1W(c), 2,	Rawlins BLM Field Office	Rawlins RMP	2009
3, 4	Rock Springs BLM Field Office	Green River RMP	1997
4,	Kemmerer BLM Field Office	Kemmerer RMP	2010
Idaho			
4, 5, 7,	Pocatello Field Office	Pocatello RMP	2012
5, 7	Pocatello Field Office	Malad MFP	1981
4	Caribou-Targhee National Forest	Revised Forest Plan for the Caribou National Forest	2003
6, 8, 10	Shoshone Field Office	Monument RMP	1986
8	Shoshone Field Office	Bennett Hills/Timmerman Hills MFP	1980
5	Burley Field Office	Monument RMP	1985
5, 6, 7, 9, 10	Burley Field Office	Cassia RMP	1985
9, 10	Burley Field Office	Twin Falls MFP	1982
9	Jarbidge Field Office	Jarbidge RMP	1987
8	Four Rivers Field Office	Jarbidge RMP	1987
8	Four Rivers Field Office	Kuna MFP	1983
8	Four Rivers Field Office	Morley Nelson Snake River Birds of Prey National Conservation Area RMP	2008
9	Bruneau Field Office	Bruneau MFP	1983
8	Owyhee Field Office	Owyhee RMP	1999

4.2.2 EPM Selection

Many of the EPMs are designed to assume species presence and, in the case of seasonal restrictions, to broadly bracket the interval of time in which there could be adverse impacts. The Companies have proposed a process (Appendix C) to allow for flexibility on a case-by-case basis based on species’ occupancy and other local conditions.

Finally, the Companies did not include all measures found in all LMPs. Measures not included are those which are not specific enough to define a measurable stipulation, measures that describe general goals for the federal lands but do not address new projects specifically, measures that address habitat management and treatment versus discrete temporal and spatial restrictions on project activities, cases in which the expectations of one LMP extend well beyond that of the other plans, and measures not practical from a project design and development perspective.

4.2.3 Applicability

The Companies plan to apply the plant and wildlife conservation EPMs as follows:

- The Wyoming segments of the proposed Project cross a relatively large percentage of Federal land, and private lands tend to be unsigned and isolated sections of land in a checkerboard pattern. In Idaho, the proposed Project for Segments 6, 8, and 9 is largely on Federal land, with private and state land interspersed. Therefore, in Wyoming and Idaho Segments 6, 8, and 9, the EPMs will be applied to the entire segment (i.e., including the private and state land) except as follows:
    - Proposed substation and regeneration sites located on private land unless they are standard EPMs of the Companies;
    - EPMs that are only applicable to a specific BLM Field Office;
    - EPMs that are only applicable to National Forest System lands; and
    - Different practices will be followed on private property that are at the request of the property owner and don't violate the law.
- In Idaho, Segments 4, 5, 7, and 10 are predominantly private ownership in agriculture and other development, and for the most part, the Federal land in these segments is clustered. In these segments, plant and wildlife EPMs will be applied based on ownership as identified in the Table Z-1 of Appendix Z except as follows:
    - Proposed substation and regeneration sites located on private land unless they are standard EPMs of the Companies; and
    - Different practices will be followed on private property that are at the request of the property owner and don't violate the law.

5.0 PROPOSED PLANT AND WILDLIFE CONSERVATION PLAN

The conservation measures that the Companies will implement to avoid or minimize impacts to special status species in the Project area are presented in Appendix Z of the POD. These measures will only be applied where applicable and where special status species have been identified by the Companies and the Agencies as occurring in the Project area

Pre-construction surveys would be conducted for TES wildlife species within suitable habitats during the appropriate seasonal timeframe, in order to determine activity levels prior to construction, as well as facilitate micro-siting of the Project outside of occupied areas when applicable and to the extent practical. The following survey protocols have been identified for use, as and where applicable, during these pre-construction surveys:

- Black-footed ferret non-block-cleared areas would be surveyed using the protocols found in the "Black-Footed Ferret Survey Guidelines for Compliance with the Endangered Species Act" (USFWS 1989).
- Burrowing owl pre-construction surveys would be conducted using the protocols found in the "Recommended Survey Protocol and Recommended Actions to Protect Burrowing Owls when Conducting Prairie Dog Control" (CDOW 2007).

- Mountain Plover pre-construction surveys would be conducted using the protocols found in the "Birds of Conservation Concern 2002. Division of Migratory Bird Management" (USFWS 2002).
- Pygmy rabbit pre-construction surveys would be conducted within 300 feet of and including the Project's ROW using the protocols found in the "Surveying for Pygmy Rabbits (Brachylagus idahoensis)" (Ulmshneider, 2004). The 300-foot distance beyond where most other pre-construction surveys would be conducted was chosen because burrow systems have been found to extend approximately 300 feet (Bradfield 1974).
- Wyoming pocket gopher pre-construction surveys would be conducted using the protocols found in the "Wyoming Pocket Gopher (Thomomys clusius): A Technical Conservation Assessment" (Keinath and Beauvias 2006).
- Flammulated owl and northern goshawk pre-construction surveys would be conducted using the protocols found in the "Rocky Mountain Region, Species Conservation Program: Species Conservation Assessments" (USFS 2008), and using the Payette National Forest Region 4 Sensitive Species Broadcast Vocalization Compact Disk (USFS 1993).

IPC and Rocky Mountain Power will work with the BLM and USFWS to identify any additional protocols that would need to be used during pre-construction surveys for TES species.

6.0 LITERATURE CITED

IPC (Idaho Power Company) and Rocky Mountain Power. 2009. Revised Siting Study. Gateway West Transmission Line Project. December. Available online at: http://www.wy.blm.gov/nepa/cfodocs/gateway_west/documents/siting/2009_1230_Revised_Siting_Study.pdf

APPENDIX I
FRAMEWORK STREAM, WETLAND, WELL, AND SPRING PROTECTION PLAN

Appendix I

Framework Stream, Wetland, Well, and Spring Protection Plan

Gateway West Transmission Line Project

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 990 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving structures, access roads, multi-purpose yards, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), other federal agencies, and the states of Idaho and Wyoming.

2.0 PURPOSE

The purpose of this Stream, Wetland, Well, and Spring Protection Plan is to provide measures to protect these resources from potential impacts during construction, operation, and maintenance activities. This plan references and incorporates by reference those mitigation measures made part of the project description by the Companies and found in Appendix Z of this POD. The final plan will incorporate all mitigation measures, including those imposed by permitting agencies in addition to the project description.

This plan is intended for use as a guide to determine the appropriate site-specific measures to be implemented during construction activities. The goals of this plan are to:

- Control Project-related erosion and sedimentation into streams and wetlands and minimize disturbance and erosion of streambeds and banks.
- Protect springs and wells in the Project area from impacts due to blasting and hazardous materials contamination.

This document provides a template for the detailed Final Stream, Wetland, Well, and Spring Protection Plan to be developed by the Construction Contractor and approved by the BLM and other permitting agencies prior to construction.

3.0 REGULATORY OVERVIEW

Construction, operation, and maintenance of the Project include ground disturbing activities that could impact aquatic resources. The following regulations and associated permits and authorizations would be required for the Project.

The CWA (33 USC Section 1251 et seq., formerly the Federal Water Pollution Control Act of 1972), was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. The CWA also requires the USACE to administer permits for dredge or fill in waters of the U.S. Specific sections of the CWA that apply to the Project are described below, followed by a brief description of other aquatic resource permits required for the Project.

3.1 CWA - Section 303(d) List of Impaired Waters

Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that do not meet water quality standards through current technology-based regulations and controls. A water quality standard defines the designated beneficial uses of a water segment and the water quality criteria necessary to support those uses. Currently, both Idaho Department of Environmental Quality (IDEQ) and Wyoming Department of Environmental Quality (WDEQ) are required to conduct a comprehensive analysis of their respective state's water bodies every two years to determine if they meet water quality standards and develop a list of impaired or threatened waters that require Total Maximum Daily Load (TMDLs). The Project would need to implement measures to avoid and / or reduce the potential that it would contribute to the listing of a water body as impaired or be inconsistent with an adopted TMDL.

3.2 CWA - Section 130.7 Total Maximum Daily Load

Section 130.7 of the CWA requires states to establish TMDL programs, which are approved by the USEPA for streams and lakes that do not meet adopted water quality standards. A TMDL includes a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect water bodies. A TMDL budget takes into account loads from point, nonpoint, and natural background sources. National Pollutant Discharge Elimination System (NPDES) permits address point-source pollution to surface waters. Non-point source pollution is addressed by the application of Best Management Practices (BMPs) and mitigation measures found in Appendix Z of this POD.

In compliance with the federal CWA, the IDEQ and the WDEQ have identified Section 303(d) water quality limited streams and lakes for development of TMDL criteria. TMDLs have been established for surface waters in Idaho. WDEQ has developed few TMDLS at this time as they are just beginning to implement the TMDL program; they are currently working on eight TMDLs. WDEQ projects that from the time of listing a waterbody as impaired, a TMDL for that waterbody would be developed within 1-5 years.

Stream segments within the Project Area that have been identified on 303(d) lists as impaired due to either sedimentation (sediment-impaired streams) or high temperatures (temperature-impaired streams), were listed in Table D.16-13 of the Draft Environmental Impact Statement (Draft EIS) for the Project (BLM 2011) and will be found in a similar table for the Final EIS when published.

3.3 CWA - Section 401 Water Quality Certification

Pursuant to Section 401 of the federal CWA, any permit or license issued by a federal agency for an activity that may result in a discharge into waters of the U.S. requires certification from the state in which the discharge originates. This requirement allows each state to have input into federally approved projects that may affect its waters (rivers, streams, lakes, and wetlands) and to ensure the projects would comply with state water quality standards and any other water quality requirements of state law. State certification ensures that the project would not adversely impact impaired waters (waters that do not meet water quality standards) and that the project complies with applicable water quality improvement plans (TMDLs). The States must grant, deny, or waive Section 401 certification for a project before a federal permit or license can be issued.

The Departments of Environmental Quality for both Idaho and Wyoming must provide Section 401 Water Quality Certifications for the federally issued permits, including the 404 permits in both states and 402 permits issued in Wyoming. The USEPA has 402 jurisdiction in Idaho.

3.4 CWA - Section 402 NPDES Permits

The NPDES program requires facilities discharging from a point source into waters of the U.S. to obtain discharge permits. A point source is a conveyance such as a pipe, storm drain or other point. USEPA is responsible for permitting and enforcing all NPDES permits in Idaho. NPDES permits are administered by the WDEQ in Wyoming. Most storm water discharges are considered point sources and require coverage by a NPDES permit. The Project will need to obtain coverage under existing construction storm water programs in Idaho and Wyoming.

The NPDES Stormwater Program requires operators of construction sites that disturb one acre or more to obtain authorization to discharge stormwater under an NPDES construction stormwater permit. In Idaho and Wyoming, the EPA and WDEQ, respectively, have issued Construction General Permits (CGP). In order to be covered under the CGP, a site-specific Storm Water Pollution Prevention Plan (SWPPP) must be developed. The operator files a Notice of Intent which indicates the operator would comply with the CGP. The site operator must document the erosion, sediment, and pollution controls that would be used during construction and operation, inspect the controls periodically, and maintain the controls throughout the life of the project. If a TMDL has been established for the water body where a project would discharge, and the TMDL indicates that it applies to construction or stormwater discharges, then the SWPPP must be consistent with the requirements of that TMDL.

If hazardous materials, including fuels and lubricants, are used or stored in quantities exceeding certain quantities, a Spill Prevention, Control and Countermeasure (SPCC) Plan is required. Section 311(j)(1)(c) of the CWA contains the regulations preventing discharge of oil to surface water. The SWPPP also contains measures regarding the handling and storage of such materials. The Framework SWPPP and SPCC Plans are found in Appendix G of this POD.

3.5 CWA - Section 404 Waters of the U.S. Permits

Section 404 of the CWA authorizes the USACE to regulate the discharge of dredged or fill material to the waters of the United States. Discharges are authorized through issuance of nationwide permits or individual permits for specific activities.

The USACE jurisdiction over non-tidal waters of the United States extends to the "ordinary high water mark provided the jurisdiction is not extended by the presence of wetlands" (33 CFR § 328.4); and under Title 40 CFR § 230.3 (s)(1). Waters of the United States are defined as:

> *"All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide, all interstate waters including interstate wetlands, all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which would affect interstate or foreign commerce, including such waters which are or could be used by interstate or foreign travelers for recreational or other purposes, or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce, or which are used or could be used for industrial purposes by industries in interstate commerce; all impoundment of waters otherwise defined as waters of the United States interstate commerce, tributaries of waters identified in paragraphs 1-4 of this section, the territorial seas; and wetlands adjacent to waters."*

Many wetlands are protected under the CWA as waters of the U.S. and special aquatic sites. Wetlands are defined by the USACE based on the presence of wetland vegetation, wetland hydrology, and hydric soils. In addition, Executive Order 11990, Protection of Wetlands (42 Federal Register 26961), directs all federal agencies to minimize the destruction, loss, or degradation of wetlands, and to enhance the natural and beneficial values of wetlands. Federal regulation and management of wetlands follows a "no net loss" policy. Under Section 404, the USACE issues a number of nationwide permits for different types of activities that result in minimal individual and cumulative adverse effects on the aquatic environment and individual permits for larger and more complex impacts.

Nationwide permits. A nationwide permit is a general permit that authorizes a category of activities throughout the nation by streamlining the approval process for certain types of activities that have minimal impacts to aquatic resources. These permits are valid only if the conditions applicable to the permit are met. If the conditions cannot be met, a regional or individual permit would be required. Section 404 Nationwide Permit 12 (77 *Federal Register* 10271-10272 February 2012) covers construction, maintenance, and repair of utility lines in all waters of the U.S. provided that there is no change in pre-construction contours. This nationwide permit also covers related facilities including substations, structure foundations, and roads; provided that these activities do not result in the loss of greater than 0.5 acre of waters of the U.S. Nationwide Permit 12 also authorizes temporary structures, fill, and work necessary to conduct utility line activities as long as (1) appropriate measures are taken to maintain normal downstream flows and minimize flooding, (2) structures and fill consist of materials that would not be eroded by high flows, and (3) structures and fill are removed

in their entirety and the affected areas are returned to pre-construction elevations and re-vegetated as appropriate upon project completion. Impact limitations for Nationwide Permit 12 cover all disturbances at a single crossing of a wetland or stream, or multiple crossings of the same wetland or stream.

Any permanent impacts over 0.1 acres to waters of the U.S. require full mitigation, regardless of permit type. Permanent loss of more than 0.5 acres of a water of the U.S. requires an individual (General) permit rather than coverage under a Nationwide Permit.

Nationwide Permits contain general conditions that address potential impacts to the environment that could result from dredge or fill of waters of the U.S., such as adverse effects to soils, migration and spawning habitats, endangered species, or historic properties. Supplemental documentation may be required as part of a pre-construction notification package (e.g. plant and wildlife survey reports, cultural resource survey reports) to support compliance with the general conditions of the Nationwide Permit. Compliance with the National Historic Preservation Act and the Endangered Species Act is being addressed in the Environmental Impact Statement currently being prepared for this Project.

Individual Permits. Individual Permits are issued following a full public notice interest review of an individual application for a Department of Army permit. A public notice is distributed to all known interested persons. After evaluating all comments and information received, a final decision on the application is made. The final decision is made on a case-by-case evaluation and is generally based on the outcome of the public notice process and a determination of project benefits versus detriments (losses).

3.6 Rivers and Harbors Act of 1899, Sections 9 and 10

Section 9 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403; Chapter 425, March 3, 1899; 30 Stat. 1151) (Act) prohibits the construction of any bridge, dam, dike or causeway over or in navigable waterways of the U.S. without Congressional approval. Administration of section 9 has been delegated to the Coast Guard. Structures authorized by State legislatures may be built if the affected navigable waters are totally within one State, provided that the plan is approved by the Chief of Engineers and the Secretary of Army (33 U.S.C. 401).

Under section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable waters requires the approval of the Chief of Engineers. Authority of the USACE to issue permits for the discharge of refuse matter into or affecting navigable waters under section 13 of the 1899 Act (33 U.S.C. 407; 30 Stat. 1152) was modified by title IV of P.L. 92-500, October 18, 1972, the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1341-1345; 86 Stat. 877), as amended, which established the National Pollutant Discharge Elimination System Permits.

The Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; 48 Stat. 401), as amended, provides authority for the U.S. Fish and Wildlife Service (USFWS) to review and comment on the effects on fish and wildlife of activities proposed to be undertaken or permitted by the USACE. USFWS concerns include contaminated sediments associated with dredge or fill projects in navigable waters.

3.7 Other Federal Permits and Programs

Executive Order 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities."

3.8 Idaho Permit

An Idaho State Stream Alteration Permit must be obtained prior to altering any stream as defined by Idaho Administrative Code (37.03.07) which includes "… to obstruct, diminish, destroy, alter, modify, or change the natural existing shape of the channel or to change the direction of flow of water of any stream channel within or below the mean high water mark."

4.0 OVERVIEW OF STREAMS, WETLANDS, WELLS, AND SPRINGS

4.1 Streams and Drainages

A review of the National Wetland Inventory and field surveys conducted in 2009 through 2013 identified and will identify perennial, intermittent, and ephemeral streams and drainages that are either crossed by the Project centerline or by access roads or ancillary facilities. In addition, ephemeral streams, drainages, and irrigation ditches are crossed by the Project right-of-way, access roads, substations, and temporary work areas. Jurisdictional waters of the United States crossed by the Project are being delineated during pre-construction stream and wetland surveys and will be presented to the USACE for a jurisdictional determination.

4.2 Wetlands

Wetlands are defined for regulatory purposes as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Part 328.3, 40 CFR Part 230.3). Wetlands are important ecological resources that perform many functions including groundwater recharge, flood flow attenuation and conveyance, erosion control, and water quality improvement. They also provide habitat for many plants and animals, including threatened or endangered species.

The initial wetland assessment was conducted during the development of the Draft Environmental Impact Statement (EIS). Wetland delineations that follow the USACE Wetland Delineation Manual (1987) and Arid West Regional Supplement (2008) will be conducted prior to construction. The USACE Wetland Delineation Manual provides technical guidelines and methods for a three-parameter approach to determine the location and boundaries of potentially jurisdictional wetlands. This approach requires

that an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a wetland. Surveyors gathered wetland determination information on data forms in the field and mapped wetland boundaries using GPS technology. Wetlands that meet all three parameters will be presented to the USACE for a jurisdictional determination.

4.3 Wells and Springs

Wells and springs in known blasting zones will be identified prior to construction by the Construction Contractor.

5.0 MITIGATION MEASURES DURING CONSTRUCTION AND OPERATION

The Companies and the Construction Contractor will adhere to the mitigation measures and other specific stipulations and methods discussed in the following sections and Appendix Z of the POD to minimize project impacts to jurisdictional waters of the United States, including wetlands, and wells and springs where they occur along the Project ROW, access roads, substations, and temporary work areas. Other specific stipulations and methods presented in Appendix D – Framework Reclamation Plan are designed to minimize the potential impacts to other non-jurisdictional drainages and dry swales found along the Project route.

However, it is expected the Construction Contractor will work cooperatively with the Compliance Inspection Contractor (CIC) and, as appropriate, USACE staff throughout construction to determine the most appropriate site-specific measures to be implemented based on a number of factors, including site characteristics, construction techniques to be used, anticipated weather conditions, mandatory permit requirements, and other variables.

5.1 Specific Stipulations and Methods for Streams and Wetlands

Specific measures will be followed as standard practices to protect and minimize impacts to streams and wetlands in the Project area. These measures are listed in Appendix Z of the POD.

5.2 Stream Crossing Methods

The transmission line centerline crosses streams and wetlands that will not be permanently impacted by the project because only the conductors will cross these water features. The process of stringing the conductors may bring the wires briefly into contact with the vegetation but there will be no damage to the vegetation. Where the line must cross forested riparian or wetland areas where the vegetation is now of a height to touch the conductors once strung and tensioned, or could grow into the conductors and create a safety hazard, the taller vegetation will be cut prior to construction.

Operations and maintenance efforts will maintain the vegetation under the conductors at or below a height that prevents interaction with the conductors. See Appendix B of this POD, section 4.1.5, for a full description of vegetation management under conductors

throughout the Project. This ROW preparation and maintenance was taken into consideration when estimating total impact to wetland and riparian areas in the Final EIS (see Sections 3.9, Wetlands, and 3.16, Water Resources, of the Draft EIS (BLM 2011)).

With only a few exceptions, permanent, above-grade roads are needed to each structure and to each substation and regeneration station as part of the Project design. Where feasible, roads have been selected (if existing) or designed (if proposed) to avoid water and wetland crossings. Where such a crossing is not avoidable, several water or wetland crossing methods have been selected to minimize impact to waterbodies while allowing for safe and permanent access to each structure. Those methods, including avoidance of permanent roads in the important wetland area of the Bear River Plain near Cokeville, WY and Montpelier, ID, are detailed in Section 2.5 of Appendix B of this POD.

Streams that the Project will impact will be identified in the Construction POD and Construction Operation and Maintenance Plan, submitted to the BLM, Forest Service, and other agencies as part of a request for a Notice to Proceed for a particular segment or work element. If a stream or wetland cannot be avoided during construction, the CIC and Construction Contractor will work together to identify the appropriate crossing strategy for vehicular access. The various types of crossing methods are discussed in detail in Appendix B of this POD, Section 2.5.

When implemented, these crossing methods will help protect water quality by minimizing stream channel disturbance, erosion, and sedimentation due to Project activities. If the chosen crossing method is not adequately preventing and/or minimizing sedimentation and erosion, the CIC may require additional sediment controls when circumstances warrant. Streams crossed by the Project will be monitored by the CIC throughout construction for signs of bed and/or bank degradation. If disturbance resulting from installation of erosion control devices across shallow swales outweighs the benefits of having the devices in place, then the CIC, in consultation with the Construction Contractor, will have the option of not prescribing any temporary stream crossing or erosion control method. See Appendix C of this POD (Framework Environmental Compliance Management Plan).

Flow of sediment into the stream will be prevented by installing waterbars on the travel route at or near the top of bank (or other slope break) to redirect road runoff away from the stream. If necessary, downslope protection will be increased by extending silt fence from the down-gradient end of the waterbar.

In cases where it is impractical and highly disruptive to the environment to construct temporary crossings, such as over very large watercourses or deep canyons, vehicles will not attempt to cross the watercourse. The conductor will be strung across these resources by hand or other method and construction equipment will be routed around.

5.3 Wetland Crossing Methods

See Appendix B of this POD, Section 2.5.4, for a description of wetland crossing methods to be used for this project. Appendix B also specifies where permanent roads

will not be constructed in wetlands (Bear River Plain). See Section 6 for further details, below.

If a wetland will be avoided, but a travel route will be bladed within 20 feet of the wetland edge, silt fence will be installed along the travel route on the wetland side unless the wetland is upgradient.

If removed during construction, wetland soil will be temporarily stored either within the wetland or in upland areas close to the wetland boundaries and will be used to restore the site to pre-construction contours. Silt fence will be installed around tower sites where necessary to minimize the potential for sediment discharge from excavated spoil into adjacent, undisturbed wetlands.

5.4 Spill Prevention

To prevent potential spills or discharges from entering and impacting streams and wetlands, the measures listed in Appendix Z of the POD will be implemented:

5.5 Erosion and Sedimentation

To limit erosion and sedimentation from affecting streams and wetlands, the measures listed in Appendix Z of the POD will be implemented. In addition, please see Appendix G for framework SWPPP and SPCC Plans.

5.6 Soil Storage near Streams

Any soil or other organic debris piled by bulldozers and grading equipment near the stream banks during construction will be stored a minimum of 100 feet from the banks and appropriately re-spread and stabilized to prevent sedimentation during rainfall events. The Construction Contractor will also adhere to any additional soil storage measures as required by applicable Project permits.

5.7 Stream Obstruction and Flash Flood Hazard

The placement of transmission towers within the channel of a stream, drainage, or flash flood area will be avoided to the extent possible. If placement within these areas is unavoidable, the towers will be engineered to withstand the force of flood flows and will be constructed according to all applicable permits. Where placement of a transmission tower or road is unavoidable within a stream channel, permanent diversion structures, or culverts sufficient to carry the stream's normal conveyance capacity at the site, or armoring for the pole foundations will be constructed.

5.8 Protection of Wells and Springs

All applicable laws and regulations will be followed in respect to the protection for drinking water sources. Wells and springs in known blasting zones will be identified prior to construction by the Construction Contractor.

Refer to Appendix G – Framework Spill Prevention, Containment, and Countermeasure Plan; Appendix M – Framework Blasting Plan; and Appendix P – Framework Hazardous Materials Management Plan for additional measures pertaining to the protection of wells and springs.

6.0 LITERATURE CITED

BLM (Bureau of Land Management). 2011. Draft Environmental Impact Statement for the Gateway West Transmission Line Project.

USACE (U.S. Army Corps of Engineers). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Version 2.0.

_____. 1987. Corps of Engineers Wetland Delineation Manual On-line Edition: Wetlands Research Program Technical Report Y-87-1. Vicksburg, MS: U.S. Army Corps of Engineer Waterways Experiment Station.

APPENDIX J
FRAMEWORK PALEONTOLOGICAL RESOURCES PROTECTION PLAN

Appendix J

Framework Paleontological Resources Protection Plan

Gateway West Transmission Line Project

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

Paleontological resources (i.e., fossils) are the remains or traces of ancient life (DOI 2000). Fossil remains may include bones, teeth, shells, leaves, and wood found in geological deposits within which they were originally buried (DOI 2000). Paleontological resources include not only the actual fossils, but also the collecting localities and the geological deposits that contain the fossils (DOI 2000).

The purpose of the framework Paleontological Resources Protection Plan (PRPP) is to assist the BLM in planning and design efforts for the proposed Project as it relates to paleontological resource issues. The framework PRPP identifies the mitigation measures needed to avoid or reduce project-related impacts to paleontological resources, wherever feasible. This plan provides important background and contextual information useful for the paleontological resources mitigation program. The logistics, procedures, and methods outlined in this framework PRPP ensure compliance with federal and state regulations (BLM 1998, 2008, 2009).

The framework PRPP is a work plan for all of the paleontological-related activities that may ensue during the course of development of the Project. It is not the intent of the PRPP to present a comprehensive list of sites with discussions of all significant taxa found from the vicinity of the Project area. The PRPP offers a research-oriented framework and accompanying logistical guidelines to ensure significant non-renewable paleontological resources unearthed by development of the Project will be managed appropriately and in a timely manner, thereby effectively mitigating adverse impacts to these fossil resources.

As part of the environmental impact statement (EIS) process, a review was conducted of relevant published geological and paleontological reports, unpublished geological and paleontological reports, and museum paleontological site records. This approach was followed in recognition of the direct relationship that exists between paleontological resources and the geological units within which fossils are entombed. By knowing the

geology of a particular area and the fossil productivity of geological units that occur in the area, it is possible to predict where fossils will likely be found.

The proposed Project crosses bedrock units of varying fossil potential. Environmental protection measures (EPMs) to protect fossil resources are presented in Appendix Z of the Plan of Development (POD).

2.0 REGULATORY FRAMEWORK

The following provides a brief overview of federal and state legislation, regulatory compliance, and professional standards applicable to paleontological resources in the Project area considered in the development of this Plan.

2.1 National Environmental Policy Act of 1969 (P.L. 91-190, 83 Stat. 852, 42 USC 4321-4327)

The National Environmental Policy Act of 1969 (NEPA) mandates policies to “preserve important historic, cultural, and natural aspects of our national heritage.” NEPA further provides for reports regarding the environmental impacts of federal actions on public lands.

2.2 Federal Land Policy and Management Act of 1976 (P.L. 94-579)

The Federal Land Policy and Management Act of 1976 (FLPMA) was enacted “to establish public land policy; to establish guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes,” and requires that important historic, cultural, and natural aspects of our natural history be preserved. As such, paleontological resources on federal lands have been determined to be property of the United States and must be protected under FLPMA.

2.3 Paleontological Resources Preservation, Omnibus Public Lands Act, Public Law 111-011, Title VI, Subtitle D 16 USC (OPLA-PRP 2009)

The purpose of the Paleontological Resources Preservation Act of 2009 is to “manage and protect paleontological resources on federal land using scientific principles and expertise.” It directs the DOI and the Forest Service to “develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies.”

3.0 PALEONTOLOGICAL POTENTIAL

3.1 Determination of Paleontological Potential

The Potential Fossil Yield Classification (PFYC) system is a measure of the likelihood of impacting fossil resources in a given area based on the occurrence of fossil-bearing geological units. This system predicts the probability of finding paleontological resources in a given area using geological maps of sufficient scale and detail. The numerical nature of the PFYC system also allows for ease of importation into a

geographic information system, further facilitating the planning and management decision-making process. The five-part PFYC system, as defined by the BLM (2008), is explained below:

Class 1 – Very low potential: Geological units not likely to contain recognizable fossil remains such as:

- Units that are igneous or metamorphic, excluding reworked volcanic-ash units
- Units that are Precambrian in age

The probability for impacting any fossils is negligible. Assessment or mitigation of paleontological resources is usually unnecessary. The occurrence of significant fossils is nonexistent or extremely rare.

Class 2 – Low potential: Sedimentary geological units not likely to contain vertebrate fossils or scientifically significant non-vertebrate fossils such as:

- Vertebrate or significant invertebrate or plant fossils not present or very rare
- Units that are generally younger than 10,000 years before present
- Recent eolian deposits
- Sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration)

The probability for the project toimpact vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Assessment or mitigation of paleontological resources is not likely to be necessary. Localities containing important resources may exist, but would be rare and would not influence the classification. These important localities will be managed on a case-by-case basis and assessment or mitigation may be unnecessary except in rare or isolated circumstances.

Class 3 – Moderate or unknown potential: Fossiliferous sedimentary geological units where fossil content varies in significance, abundance, and predictable occurrence, or sedimentary units of unknown fossil potential such as:

- Often marine in origin with sporadic known occurrences of vertebrate fossils
- Vertebrate fossils and scientifically significant invertebrate and plant fossils known to occur intermittently and are predictably known to be low
- Poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance

Class 3, 4, and 5 units are divided into subclasses, as described below.

<u>Class 3a – Moderate potential</u>: Units are known to contain vertebrate fossils or scientifically significant invertebrate or plant fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low, but the potential is somewhat higher for common fossils.

Class 3b – Unknown potential: Units exhibit geological features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant fossils. The units in this class may eventually be placed in another class when sufficient surveying and research is performed. The unknown potential of the units in this class should be carefully considered when developing any mitigation or management plans.

This classification includes a broad range of paleontological potential. It includes geological units of unknown potential, as well as units of moderate or infrequent occurrence of fossil resources. Management considerations cover a broad range of options as well and could include pre-disturbance surveys, monitoring, or avoidance. Ground-disturbing activities will require sufficient assessment to determine where significant paleontological resources occur in the area of the proposed action and whether the action could affect the paleontological resources. These units may contain areas that would be appropriate to designate as hobby-collecting areas due to the higher occurrence of common fossils and lower concern about affecting significant paleontological resources.

Class 4 – High potential: Geological units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Ground-disturbing activities may adversely affect paleontological resources in many cases.

Class 4a – High potential: Units exposed with little or no soil or vegetative cover. Outcrop areas are extensive, with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from ground-disturbing actions. Illegal collecting activities may impact some areas.

Class 4b – High potential: These are areas underlain by geological units with high potential, but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity There include areas such as:

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted
- Exposed outcrop are smaller than two contiguous acres
- Outcrops form cliffs of sufficient height and slope so impacts are minimized by topographic conditions
- Where other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources

The probability for impacting significant paleontological resources is moderate to high, and is dependent on the proposed action. Mitigation considerations must include assessment of the disturbance, which may include removal or penetration of the protective surface alluvium or soils, potential for future accelerated erosion, or increased

ease of access resulting in greater looting potential. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the ground-disturbing action usually will be necessary. On-site monitoring or spot-checking may be necessary during construction activities. Management prescriptions for resource preservation and conservation through controlled access or special management designation should be considered. Class 4 and 5 units may be combined as Class 5 for broad applications, such as planning efforts or preliminary assessments, when geological mapping at the appropriate scale is not available. Resource assessment, mitigation, and other management considerations are similar at this level of analysis, and impacts and alternatives can be addressed at a level appropriate to the application.

Class 5 – Very high potential: Highly fossiliferous geological units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils and are at risk of human-caused adverse impacts or natural degradation.

Class 5a – Very high potential: Units are exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two contiguous acres. Paleontological resources are highly susceptible to adverse impacts from ground-disturbing activities. Unit is frequently the focus of illegal collecting activities.

Class 5b – Very high potential: These are areas underlain by geological units with very high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has very high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from ground-disturbing activity. These include areas such as:

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so impacts are minimized by topographic conditions.
- Where characteristics are present that lower the vulnerability of both known and unidentified paleontological resources

The probability of impacting significant fossils is high to very high. Vertebrate fossils or scientifically significant invertebrate fossils are known or can be reasonably expected to occur in the impact area. On-the-ground surveys prior to authorizing any ground-disturbing activities or land-use adjustments will usually be necessary. On-site monitoring may be necessary during construction activities. Mitigation will often be necessary before and/or during these actions. Official designation of areas of avoidance, special interest, and concern may be appropriate.

3.2 Potential Fossil Yield Classification and Condition Classification

The PFYC system replaces the Condition Classification system previously used by the BLM and defined in the *Handbook for Paleontological Resource Management* (BLM

1998). The three levels of the Condition Classification system correspond to the five levels of the PFYC as such:

- **Class 1** – PFYC 4 or 5
- **Class 2** – PFYC 3, 4, or 5 (based upon the geological unit)
- **Class 3** – PFYC 1 or 2

The shift from the Condition Classification system to the PFYC is the result of an effort to increase interagency cooperation and consistency by bringing the methodologies of the BLM and Forest Service in line with one another. The five-part PFYC system is an excellent tool during the planning stages of a given project, whereas a three-part system, similar to the Condition Classification system, may be used both in the field and the office for the purpose of assigning placement of paleontology monitors along the project corridor. This system consists of high, moderate/unknown, and low sensitivities that determine areas that will require on-site paleontological monitors during construction activities. Construction activities impacting high and moderate/unknown potential geological units are generally assigned paleontology monitors; whereas low potential units will not be monitored, unless fossil resources are discovered during the course of construction activity.

The Companies will use the PFYC in assigning fossil potential to Project bedrock units. Attachment A presents a summary of bedrock units and estimates of PFYC for the Proposed Route.

4.0 PALEONTOLOGICAL STIPULATIONS AND METHODS

The following stipulations and methods to be employed if paleontological resources are discovered during construction and development of the Project. The specifics of the efforts are described in greater detail in Appendix Z of the POD.

4.1 Stipulations and Methods

Before Construction: An orientation workshop shall be prepared, reviewed by the BLM, and presented by a professional paleontologist to explain paleontological mitigation guidelines and procedures to the contractor and construction workers. This workshop can be presented in conjunction with any pre-construction meetings conducted prior to excavation. The workshop will review the PRTP and will endeavor to explain the nature, appearance, and importance of fossil vertebrates, invertebrates, and plants. The responsibilities of construction personnel in a paleontological mitigation context will also be explained. Construction workers shall not collect any fossils found during construction before their significance can be assessed by a qualified paleontologist.

During Construction: If paleontological resources (fossils) are found at any time during construction, work shall be redirected to another area nearby and the authorized BLM officer contacted so the scientific significance of the discovery may be assessed. If warranted, a qualified professional paleontologist with regional experience appointed by the BLM may then assess the significance of the discovery and recommend additional mitigation measures, as necessary. The paleontologist may be retained to perform inspection of the excavation and to salvage exposed fossils. A standard sample of

fossiliferous sediment may be collected for the collection and identification of terrestrial microvertebrates (e.g., rodents, birds, rabbits). The paleontologist may also determine whether the fossil is part of an archaeological deposit. If so, it shall then be considered a cultural resource discovery and treated according to the procedures specified in the Historic Properties Treatment Plan prepared prior to construction.

After Construction: For any fossils (vertebrate, invertebrate, and/or plant) collected during construction, a data collection program shall be undertaken that includes preparation of collected specimens to a point of identification and permanent preservation (including screen washing of fossiliferous sediment samples to collect small to microscopic vertebrate fossils); preparation of large vertebrate fossils collected in plaster jackets; long-term stabilization of all collected significant fossils; and analysis. The paleontological salvage team shall include an expert in vertebrate paleontology. A final report, including an itemized and accessioned inventory of collected specimens, shall be prepared by a professional vertebrate paleontologist and distributed to the BLM, Oregon Department of Geology and Mineral Industries, and Idaho Geological Survey. All fossils collected during construction shall be curated at a qualified research facility, such as the paleontology museum at College of Idaho (Idaho) or Eastern Oregon College (Oregon). A repository agreement for curation would be reviewed and approved by the third-party contractor on behalf of the Companies, BLM, and the repository, which would provide guaranteed future research access to the fossils. Fossils discovered on private land would be considered property of the landowner. The landowner would have the option to keep the fossils or donate them to a federally approved, professional repository, preferably the same repository receiving fossils discovered on federal and state lands

4.2 Construction Personnel Procedures

Crews and supervisors should be on the lookout at all times for fossils, bones, animal trackways, charcoal, ash, or other paleontological resources exposed during excavation or ground-disturbing activities. Upon encountering an exposed fossil or other paleontological resource, the construction crew will stake-off and flag an area of approximately 2 meters on all sides of the discovery to alert equipment operators to the presence of the potential resource. Construction crews must avoid these staked-off/flagged areas by a minimum of 6 meters until the authorized BLM officer has been contacted and has authorized continued excavation.

4.3 Collection/Replication of Fossil Trackways

Unique fossil trackways may occur within the area of potential effect of the Project, or adjacent to the Project area. Trackways are highly visible and are subject to removal by unauthorized collection. In the event that trackways cannot be avoided, overburden will be removed to expose the trackways, which will then either be removed (preferred) or replicated for curation. Collected specimens will be curated at an approved repository in accordance with appropriate federal, state, and county permits.

4.4 Curation Plan

Curation of fossil specimens collected during the paleontological mitigation program includes the preparation of collected specimens to a point of identification and

permanent preservation, including the screen washing of fossiliferous sediment samples to collect small to microscopic vertebrate fossils. Large specimens encased in plaster jackets taken from the site will be prepared in the paleontology laboratory.

The curation plan calls for laboratory preparation of collected fossil remains to a point of identification and permanent preservation (*not* exhibition). This preparation generally requires exposure of the collected resource(s) by removal of the surrounding sedimentary matrix from the jacket. This matrix may be saved for later microfossil processing. Once the matrix has been removed and the specimen has been cleaned, the fossil is hardened with Vinac, a modified polyvinyl acetate homopolymer, which has been thinned with acetone to enable the hardener to more fully penetrate the fossil. Vinac may be applied several times before the fossil is deemed to be sufficiently sturdy for permanent storage. Excess plaster from the jacket is then trimmed to reduce the amount of storage space required by the specimen.

The curation plan also includes the processing of standard samples of fossiliferous matrix. The sedimentary matrix will be washed with water through stacked sets of 20- and 30-mesh screens and sun dried. Where appropriate, some sediment samples may be washed through more finely meshed screens to enable the collection of microscopic ostracodes or fossil pollen. To accelerate the breakdown of the fossiliferous matrix, sediments will be oven-roasted to promote drying and then re-submerged in water to facilitate disaggregation of clays and fine silts. Subsequent screen washing will remove these fine sediments and leave fossil specimens in a clean concentrate. This concentrate will be visually examined with a binocular microscope and hand-sorted to remove fossil specimens.

The curation plan further includes sampling for fossil pollen. In those cases where pollen is identified from bulk samples in the field, additional sampling should be initiated where warranted in a series of more precise (e.g., 2 centimeters) sampling horizons. This will potentially enable determination of changes in plant distributions and microclimate through time.

Should plant macrofossils be exposed or identified during a mitigation program, such fossils should be collected and prepared to a point of identification and permanent preservation (*not* exhibition). Preparation generally requires full exposure of the collected resource(s) by splitting of thin sedimentary layers along their bedding planes, followed by application of a hardening agent. Misting with a 10:1 water/white glue mixture is usually sufficient for preserving such fossils. Application of nitrocellulose thinned with acetone is also recommended in some instances (LePage and Basinger 1993). In some cases, select rock slabs thought to contain fossilized plant remains will be left intact for future researchers.

Other curatorial tasks will include the identification, curation, and accessioning of all collected specimens into the retrievable storage collections of an approved, accredited curation facility. All data pertaining to the specimens will be recorded in the collections database of the repository. Resource locality information will also be plotted on topographic maps and entered into a computerized locality database. Card stock printouts of all pertinent faunal, floral, locational, and lithologic data pertaining to each resource locality will be produced and filed. Card stock files from the locality database will also be printed and kept on file.

Following preparation, fossils will be stored in steel cabinets with steel geological specimen trays. Accession and locality data will be printed in archival ink on acid-free paper tags associated with each specimen, generated from the specimen database. Accession numbers of large fossils will be written on the bone in permanent ink. Large fossils will be stored in their plaster jackets where necessary to help retain the integrity of the bone. Excess plaster will be cut away prior to storage to maximize storage space. Microfossils will be stored in glass vials with cork stoppers. Extremely small specimens (e.g., ostracodes) will be placed in gelatin capsules within the glass vials. Accession data slips, also generated from the computer database, will be placed inside each of the glass vials to prevent accidental shuffling of the collection, and provide a means of "earthquake-proofing" the collection. The glass vials will be placed in cardboard jewelers' boxes with their data slips, then permanently stored in the geological specimen trays. Labels bearing accession number data will be glued to rock slabs bearing marine invertebrates or fossil plant remains, in such a manner so as not to damage or obscure the fossil(s).

Specimens collected during the course of the mitigation program will be identified by professional paleontologists who have appropriate expertise in vertebrate and invertebrate paleontology and paleobotany.

The fossils will be curated, stored, and accessioned into the permanent retrievable collections of a recognized, accredited repository. All paleontological resources will be catalogued and accessioned under a unique number, which will identify the appropriate property and/or development project as the source of the fossils.

A final report of methods and results of the paleontological mitigation plan will be provided at the cessation of the mitigation program. The report will include a detailed discussion of how the research goals of the project have been met, in addition to descriptions of significant discoveries, discussion of the curation of the resources, and results of sampling and analysis, as well as an itemized accession inventory of all specimens collected. A discussion of the significance of each taxon discovered will be provided, where feasible. All resource locality information will be presented as a confidential appendix and a printout of all locality data, as well as pull-out maps with all paleontological resource localities plotted.

5.0 LITERATURE CITED

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ATTACHMENT A
BEDROCK AND FOSSIL POTENTIAL SUMMARY

Attachment A Paleontological Sensitivity Rankings for Proposed Routes

Segment Number	Segment Length (miles)	Formation Name	Miles Crossed	Sensitivity Rating
1W(a)	**76.5**	Chugwater Formation or group	5.3	3
		Goose egg Formation	5.5	2
		Cody shale	2.6	3
		Frontier Formation	0.4	3
		Fox Hills sandstone sandstone	1.1	3
		Cloverly, Morrison, and Sundance Formations	1.8	3
		Lance Formation	3.8	3
		Mowry and Thermopolis shales	0.9	3
		Mesaverde group	8.5	3
		Niobrara Formation	1.0	5
		Steele shale	3.1	3
		Casper Formation	2.4	3
		Tensleep sandstone and Amsden Formation	0.1	2
		Madison limestone, Darby Formation, Bighorn dolomite, Gallatin Limestone, GrosVentre Formation and Flathead sandstone	0.5	3
		Alluvium and colluvium	3.8	2
		Dune sand and loess	4.4	2
		Upper Miocene Rocks	3.3	5
		Wind River Formation - at base locally includes equivalent of Indian Meadows Formation	8.4	5
		White River Formation, upper conglomerate member	7.9	5
		Archean Granitic Rocks	5.2	1
		Granite Gneiss	2.1	1
		Paleontological Sensitivity Ranking	**250.8**	
1W(c)	**70.6**	Chugwater Formation or group	7.7	3
		Goose egg Formation	3.8	2
		Cody shale	4.0	3
		Frontier Formation	0.6	3
		Fox Hills sandstone	1.0	3
		Cloverly, Morrison, and Sundance Formations	0.5	3
		Lance Formation	5.0	3
		Mowry and Thermopolis shales	0.7	3
		Mesaverde group	0.6	3
		Niobrara Formation	1.2	5
		Steele shale	2.2	3
		Casper Formation	2.5	3
		Madison limestone, Darby Formation, Bighorn dolomite, Gallatin Limestone, GrosVentre Formation and Flathead sandstone	0.7	3
		Alluvium and colluvium	7.7	2
		Upper Miocene Rocks	2.5	5
		Wind River Formation - at base locally includes equivalent of Indian Meadows Formation	9.3	5
		White River Formation, upper conglomerate member	7.8	5
		Whiter River Formation	4.5	5
		Archean Granitic Rocks	5.9	1
		Granite Gneiss	2.3	1
		Paleontological Sensitivity Ranking	**234.2**	

Attachment A Paleontological Sensitivity Rankings for Proposed Routes

Segment Number	Segment Length (miles)	Formation Name	Miles Crossed	Sensitivity Rating
2	**96.7**	Lance Formation	4.2	3
		Lewis shale	4.4	3
		Medicine Bow Formation	0.8	3
		Mesaverde group	8.4	3
		Niobrara Formation	0.5	5
		Steele shale	2.9	3
		Steele shale and Niobrara Formation	8.5	5
		Alluvium and colluvium	8.1	2
		Playa lake and other lacustrine deposits	4.4	2
		Gravel, pediment, and fan deposits	0.7	2
		Fort Union Formation	12.5	3
		Hanna Formation	21.7	5
		Ferris Formation	1.1	5
		Miocene Rocks	8.5	3
		Wasatch Formation	10.0	5
		Paleontological Sensitivity Ranking	**360.3**	
3	**56.5**	Almond Formation	4.7	3
		Fox Hills sandstone and Lewis shale	7.6	3
		Lance Formation	2.3	3
		Alluvium and colluvium	1.9	2
		Playa lake and other lacustrine deposits	2.3	2
		Dune sand and loess	5.0	2
		Fort Union Formation	5.0	3
		Green River Formation	11.2	5
		Wasatch Formation	16.4	5
		Paleontological Sensitivity Ranking	**215.3**	
4	**203.0**	Ankareh Formation, Thaynes limestone, Woodside shale, and Dinwoody Formation	2.4	3
		Nugget sandstone	2.1	3
		Stump Formation, Preuss sandstone or redbeds, and Twin Creek limestone	5.3	3
		Aspen shale	0.6	3
		Almond Formation	4.7	3
		Baxter shale	3.2	3
		Blair Formation	4.0	3
		Bear River Formation	0.4	3
		Ericson sandstone	2.5	3
		Frontier Formation	0.8	3
		Fox Hills sandstone and Lewis shale	1.7	3
		Gannett group	0.7	3
		Hilliard shale	1.0	3
		Rock Springs Formation	8.5	3
		Sage Junction, Quely, Cokeville, Thomas Fork, and Smiths Formations	1.0	3
		Sage Junction, Quely, Cokeville, Thomas Fork, and Smiths Formations	0.2	3
		Wells and Amsden Formations	1.2	3
		Phosphoria Formation and related rocks	0.6	3
		Alluvium and colluvium	7.6	2
		Landslide deposits	0.2	1
		Dune sand and loess	2.9	2

Attachment A Paleontological Sensitivity Rankings for Proposed Routes

Segment Number	Segment Length (miles)	Formation Name	Miles Crossed	Sensitivity Rating
		Gravel, pediment, and fan deposits	6.6	2
		Terrace gravel (Pleistocene and/or Pliocene)	1.5	2
		Bridger Formation	34.5	5
		Fowkes Formation (Pliocene? and Eocene)	0.6	3
		Fort Union Formation	1.3	3
		Green River Formation	22.1	5
		Evanston Formation	0.3	3
		Salt Lake Formation	0.4	3
		Wasatch Formation	17.0	5
		Alluvium, Eolian Loess	11.6	3
		Alluvial-fan deposits	0.2	3
		Bonneville and Alpine Formations	4.7	3
		Alluvium		
		Main Canyon Formation of Bright		
		Tufa and Travertine		
		Salt Lake Formation		
		Alluvium	1.1	3
		Formation of Marsh Valley		
		Salt Lake Formation	3.0	3
		Salt Lake Formation, Upper Conglomerate Unit	17.4	5
		Salt Lake Formation, Skyline Member		
		Salt Lake Formation, Cache Valley Member		
		Colluvium (Pleistocene)		
		Eolian Loess	3.6	3
		Salt Lake Formation	0.2	3
		Nugget Sandstone		
		Thaynes Limestone	3.7	5
		Twin Creek Limestone	5.2	3
		Alluvium		
		Nugget Sandstone	0.5	3
		Swan Peak Quartzite	4.6	3
		Garden City Limestone		
		St. Charles Limestone		
		Nounan Limestone	5.5	4
		St. Charles Limestone		
		Worm Creek Quartzite Member		
		Brigham Quartzite	0.3	3
		Diamicton	5.7	3
		Brigham Quartzite		
		Paleontological Sensitivity Ranking	**785.1**	
5	54.6	Great Blue Limestone, lower limestone member	3.1	3
		Floodplain sediments	1.9	3
		Formation of Marsh Valley		
		Loess		
		Alluvial-fan deposits	12.7	3
		Eolian Loess		
		Alluvial deposits		
		Loess		
		Alluvial fan gravel		
		Alluvial fan gravel	0.6	3
		Dune sand	0.0	3

Attachment A Paleontological Sensitivity Rankings for Proposed Routes

Segment Number	Segment Length (miles)	Formation Name	Miles Crossed	Sensitivity Rating
		Alluvial fan gravel		
		Bonneville flood gravel	4.8	3
		Formation of Marsh Valley		
		Starlight and Salt Lake Formations, undifferentiated	0.7	4
		Sunbeam Formation	2.0	3
		Alluvium		
		Loess	1.8	4
		Starlight and Salt Lake Formations, upper member		
		Starlight and Salt Lake Formations, undifferentiated	2.2	4
		Starlight and Salt Lake Formations, upper member		
		Oquirrh Formation, Unit D	1.7	3
		Oquirrh Formation, Unit B	12.2	3
		Oquirrh Formation, Unit A, lower limestone		
		St. Charles Formation, upper member	0.8	3
		Garden City Formation		
		Garden City Formation	4.4	3
		Swan Peak Quartzite		
		Fish Haven Dolomite		
		St. Charles Formation, upper member		
		Alluvium (Holocene and Pleistocene)	0.7	2
		American Falls Lake Beds (upper Pleistocene)	0.4	3
		Raft Formation (upper or middle Pleistocene)	0.7	2
		Dune sand and loess	0.4	2
		Sun Beam Formation (Upper Pleistocene)	2.8	2
		Terrace gravel (Pleistocene)	0.4	2
		Massacre Volcanics (Pliocene and upper Miocene)	0.1	3
		Walcott Tuff (upper Miocene)	0.0	3
		Water	0.2	0
		Paleontological Sensitivity Ranking	**162.9**	
6	**0.5**	Dune sand and loess	0.2	2
		Basalt of Notch Butte	0.3	2
		Mixed alluvial and lacustrine deposits		
		Basalt of Bacon Butte		
		Paleontological Sensitivity Ranking	**1.0**	
7	**118.1**	Floodplain sediments	3.2	3
		Formation of Marsh Valley		
		Loess		
		Alluvial-fan deposits	40.1	3
		Eolian Loess		
		Alluvial deposits		
		Loess		
		Alluvial fan gravel		
		Alluvial fan gravel	13.3	3
		No detail	9.4	3
		Bonneville flood gravel	8.5	3
		Formation of Marsh Valley		
		Starlight and Salt Lake Formations, undifferentiated	12.5	4
		Sunbeam Formation	5.3	3
		Alluvium		
		Loess	2.2	4
		Starlight and Salt Lake Formations, upper member		

Attachment A Paleontological Sensitivity Rankings for Proposed Routes

Segment Number	Segment Length (miles)	Formation Name	Miles Crossed	Sensitivity Rating
		No detail - possilby rhyolite	2.0	3
		Salt Lake Formation, undifferentiated	2.1	3
		Oquirrh Formation, Unit D	5.8	3
		Oquirrh Formation, Unit B	6.4	3
		Oquirrh Formation, Unit A, lower limestone		
		St. Charles Formation, upper member	0.9	3
		No detail - Mississippian sedimentary units	0.9	3
		No detail - Devonian sedimentary units	0.4	3
		Garden City Formation	5.0	3
		Fish Haven Dolomite		
		St. Charles Formation, upper member		
		Paleontological Sensitivity Ranking	**368.9**	
8	**131.0**	Alluvium	3.1	3
		No-Detail gravel deposits	1.3	3
		Alluvium	1.3	3
		Cold Springs Creek lava flow	0.1	2
		Bonneville Flood Deposits	1.3	3
		Pebble gravel in conspicuous iron-stained beds as much as 25 feet thick in lake deposits	1.4	3
		Black Mesa Gravel	2.7	3
		Basalt of Higby Cave	4.1	2
		Basalt of Sand Creek	5.1	2
		Sedimentary material dominated by massive lake beds of white-weathering fine silt, clay, and diatom	0.1	3
		Dune Sand	0.2	3
		Upper Basalt of Halverson Lake	0.4	2
		Basalt of Initial Point	5.8	2
		Pleistocene waterlaid detritus; may be distal deposits of glacial floods and outwash	14.7	3
		Middle Pleistocene plateau and canyon-filling basalt in and near the Snake Plain	20.6	2
		Middle Pleistocene plateau and canyon-filling basalt in and near the Snake Plain	3.9	3
		Pleistocene outwash, fanglomerate, flood and terrace gravels	2.5	3
		Upper Pleistocene Snake Plain lava flows	2.7	2
		Upper Pleistocene Snake Plain lava flows	16.7	2
		Recent relatively un weathered Snake Plain Basalt flows and cinder cones	8.2	2
		Basalt of Swan Falls Road Hill	0.9	2
		Undifferentiated basalt flows on the periphyry of the Birds of Prey area whose sources are unknown	0.8	2
		Lower Pleistocene to Pliocene basalts with associated tuffs and volcanic detritus	4.6	3
		Glenns Ferry Formation of the Idaho Group, includes some younger lacustrine and fluvial sediments	4.9	5
		Gravel and associated clastic materials from southern sources, includes materials transported from the Owyhee Mountains	3.3	5
		Basalt of Orchard Ranch	2.6	2
		Basalt of the Tombstone Patch Rapids	1.4	2

Attachment A Paleontological Sensitivity Rankings for Proposed Routes

Segment Number	Segment Length (miles)	Formation Name	Miles Crossed	Sensitivity Rating
		Idaho Group and other fluvial, lacustrine, and eolian sediments in the northeast part of the Murphy Quadrangle	12.9	5
		Basalt flows associated with the Chalk Hills and Poison Creek Formations	0.3	5
		Poison Creek and Chalk Hill Formations, undivided	1.7	5
		Water	0.1	0
		Basaltic tuff of Waldvogel Canal	0.0	2
		Basaltic tuff of McDermott Road	0.0	2
		Middle basalt of Halverson Lake	0.1	2
		Chalky volcanic field	1.2	3
		Paleontological Sensitivity Ranking	**369.4**	
9	**162.2**	Fan alluvium 2 (upper Pleistocene)	0.1	3
		Colluvium derived from hard rocks (Holocene to Lower Pleistocene)	0.9	3
		Loess Unit 2: thin loess overlying basalt (Upper and Middle Pleistocene)	2.4	3
		Loess Unit 3, Moderately thick loess overlying basalt (upper to lower? Pleistocene)	22.8	3
		Deposits of Playas (Holocene and Upper Pleistocene)	0.4	3
		Alluvium	0.6	3
		Alluvium	7.1	3
		Alluvium of sidestreams (Holocene)	0.2	3
		Deadman Canyon Lava flow	0.1	2
		Black Mesa Gravel	6.8	3
		Sedimentary material dominated by massive lake beds of white-weathering fine silt, clay, and diatom	6.1	3
		Basalt of Hub Butte (Pleistocene)	4.5	2
		Pleistocene outwash, fanglomerate, flood and terrace gravels	1.3	3
		Lower Pleistocene outwash, fanglomerate, flood and terrace gravels	8.2	3
		Middle Pleistocene plateau and canyon-filling basalt in and near the Snake Plain	0.3	2
		Middle Pleistocene plateau and canyon-filling basalt in and near the Snake Plain	5.2	3
		Tuana Gravel	0.6	3
		Glenns Ferry Formation	7.5	5
		Idaho Group and other fluvial, lacustrine, and eolian sediments in the northeast part of the Murphy Quadrangle	5.8	5
		Rhyolite of castleford Crossing (Miocene)	3.5	2
		Basalt of Devil Creek Butte or Tuana Butte (Pliocene or Miocene)	0.6	2
		Pliocene silicic welded tuff, ash and flow rock; most common in southwestern Idaho	5.0	2
		Tuff of McMullen Creek	3.9	2
		Basalt of the Murphy Area	6.2	2
		Pliocene olivine basalt flows and associated tuff and detritus of southern Idaho	1.6	3
		Poison Creek and Chalk Hill Formations, undivided	6.0	5

Attachment A Paleontological Sensitivity Rankings for Proposed Routes

Segment Number	Segment Length (miles)	Formation Name	Miles Crossed	Sensitivity Rating
		Rhyolite lava flows of Reynolds Creek	0.4	2
		Teapot volcanic field	1.5	3
		Upper Member of Tuff of Wooden Shoe Butte	0.4	3
		Alluvial fan deposits (Holocene and Pleistocene)	3.8	3
		Landslide deposits (Holocene to Middle Pleistocene)	0.2	3
		Pebble gravel in conspicuous iron-stained beds as much as 25 feet thick in lake deposits	0.2	3
		Talus	0.1	3
		Gravel surface, abundant Eocene volcanics (Quaternary or Tertiary)	0.3	3
		Gravel surface, abundant quartzite (Quaternary and Tertiary)	0.7	3
		Gravel lens or surface, abundant quartzite (Tertiary)	1.1	3
		Clay to sand sized sediments (Miocene or Pliocene)	25.3	3
		Chalky volcanic field	0.7	3
		Basalt of Sinker Creek	0.4	2
		Glenns Ferry Formation of the Idaho Group, includes some younger lacustrine and fluvial sediments	10.0	5
		Idaho Group and other fluvial, lacustrine, and eolian sediments in the northeast part of the Murphy Quadrangle	8.7	5
		Chalk Hills Formation of the Idaho Group	0.7	5
		Paleontological Sensitivity Ranking	**539.0**	
10	**33.6**	Open Water	0.3	N/A
		Alluvium of side streams	0.4	3
		Alluvial-fan deposits	1.7	3
		Basalt of Skelaton Butte	4.2	2
		Basalt of Rocky Butte	15.3	2
		Basalt of Wilson Butte		2
		Basalt of Notch Butte	2.9	3
		Mixed alluvial and lacustrine deposits		
		Basalt of Bacon Butte		
		Basalt of Hansen Butte	8.8	2
		Younger Tertiary basalt flows, undivided		
		Paleontological Sensitivity Ranking	**71.5**	

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

APPENDIX K
FRAMEWORK AGRICULTURAL PROTECTION PLAN

Appendix K

Framework Agricultural Protection Plan

Gateway West Transmission Line Project

Prepared by:

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

This Framework Agricultural Protection Plan (Plan) describes the framework for the measures intended to mitigate or provide compensation for agricultural impacts that may occur due to the construction of the Project. A goal of this Plan is to provide a basis for the Companies' discussions with owners of property where the final Project will be sited. This Plan shall not be construed as establishing any contractual obligations or representations between the Companies and any party and shall not create any third-party beneficiary rights between the Companies and any party. Proposed agriculture protection measures that will be included in the final agricultural protection plan (Final Plan) are included in Appendix Z of the Plan of Development (POD).

2.0 Conditions

For the purpose of the Plan, agricultural land is defined as annually cultivated or rotated cropland, land in perennial field crops, improved pasture, hayfields, and land in the conservation or grazing reserve programs.

Unless an easement agreement specifically provides to the contrary, the Companies will implement the protection measures described in the Final Plan in accordance with the following conditions:

- The protection measures and conditions described in the Final Plan apply only to construction activities occurring partially or wholly on privately owned agricultural land. They do not apply to construction activities on public right-of-ways (ROW), railroad ROWs, public land, or private land that is not agricultural land, except where agricultural structures, such as drainage tile and irrigation systems associated with privately owned agricultural land, pass through or extend into these areas.

- The Companies will provide a copy of the Final Plan to any landowner or landowner's designate and tenant of agricultural land prior to obtaining an easement.
- The Companies may negotiate with the landowner or landowner's designate to carry out the protections that landowners wish to perform themselves.
- The Companies will implement the protection measures contained in the Final Plan to the extent that they do not conflict with the requirements of any applicable federal, state, and local rules and regulations and other permits and approvals obtained by the Companies for the Project.
- The Companies will implement the protection measures contained in the Final Plan to the extent that they are consistent with the protection measures approved by, or other requirements of, permits and approvals issued by governing agencies.
- Certain provisions of the Plan require that the Companies consult with and/or obtain agreement with the landowner and the tenant of a property. The Companies will make a good-faith effort to secure the agreement of both the landowner and tenant in such cases. If there is a disagreement between the landowner and tenant, the Companies will secure the landowner's agreement unless the tenant can demonstrate a superior legal right in the matter.

Nothing in this document is intended to grant or suggest jurisdiction by any agency over remedies for property compensation resolved in accordance with Wyoming or Idaho law.

3.0 Other Applicable Plans

Measures for erosion control, dust control, soil protection, weed control, and restoration that will reduce impacts on agriculture are contained in the following framework plans:

- Traffic and Transportation Management Plan (Appendix L of the POD)
- Spill Prevention, Containment, and Countermeasures (SPCC) Plan (Appendix G of the POD)
- Stormwater Pollution Prevention Plan (SWPPP) (Appendix F of the POD)
- Reclamation Plan (Appendix D of the POD)
- Stream, Wetland, Well, and Spring Protection Plan (Appendix I of the POD)

4.0 ENVIRONMENTAL PROTECTION Measures

The Companies are committing to implementing the environmental protection measures contained in Appendix Z of the POD.

5.0 Plan Updates

When the preferred route is selected and final engineering is complete, the Final Plan will be prepared. The final Plan will be updated prior to the start of construction. As the Companies better define the construction order and schedule, the Final Plan will be updated to include the schedule for baseline inventories, negotiations, and road locations.

APPENDIX L
FRAMEWORK TRAFFIC AND TRANSPORTATION MANAGEMENT PLAN

Appendix L

Framework Traffic and Transportation Monitoring Plan
Gateway West Transmission Line Project

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current (AC) electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, staging areas, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), and the states of Idaho and Wyoming.

This Framework Traffic and Transportation Management Plan addresses regulatory compliance, traffic management practices, levels of right-of-way access, and protection measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the Gateway West Transmission Line Project (Project). This document provides a template for a detailed Traffic and Transportation Management Plan to be developed by the Construction Contractor.

2.0 PURPOSE

The purpose of this plan is to provide the Bureau of Land Management (BLM) and other public agencies and the Construction Contractor with a description of the type of access associated with the construction, operation, and maintenance of this Project, and to make evident the potential impacts which could be created by construction and operation of the Project. The goal of this plan is to ensure that impacts from construction of the transmission line and any associated access are kept to a minimum through the use of management practices and mitigation measures described throughout this appendix. These practices and measures are intended to mitigate the effects of transportation on environmental resources, roads, traffic, travel, and road safety.

3.0 REGULATORY

A number of agencies have jurisdiction over the transportation-related components of the Project. These include the BLM, the Wyoming Department of Transportation, Idaho Transportation Department, Federal Highway Administration, local law enforcement and road departments and local highway districts in the counties crossed by the Project. Encroachment permit applications will need to be filed with appropriate road agencies for those areas where the transmission line crosses public roads prior to construction.

Other permits and approvals not directly related to transportation could affect the construction, use, and/or maintenance of roads in certain areas. Persons responsible

for Project transportation activities must be familiar with all relevant sections of Project's Plan of Development (POD).

4.0 TRAFFIC MANAGEMENT PRACTICES

Ground travel will be the primary means of transporting construction and maintenance crews and equipment during Project construction. Helicopters will be used as deemed necessary. All vehicles will obey jurisdictional traffic speed regulations and the posted speed limit. Speeds along access roads and spur roads within the right-of-way may be limited to 15 mph in some areas to prevent excessive amounts of construction related dust, as necessary.

Before construction, authorized access routes will be clearly marked in the field with signs or flagging. The Construction Contractor will review the location of permitted access and will be responsible for ensuring construction travel is limited to designated areas that clearly identify the limits of disturbance.

All field personnel will attend an environmental training program. Through this program, field personnel will be instructed to use only approved access roads, drive within the delineated road limits, and obey jurisdictional and posted speed limits to minimize potential impacts to biological, paleontological, and cultural resources.

Every effort will be made to minimize the effects of the Project construction activities on public transportation and to provide for public safety. The Construction Contractor and all environmental monitors will maintain a communications network that consists of one or both of the following devices: two-way radios or cellular phones. This will allow for coordination of equipment traffic along existing access roads so public safety, traffic impacts, and resource impacts are minimized. In addition, any necessary permits for the movement of equipment and materials will be obtained and complied with.

In general, the number of construction vehicles needed for the Project is not expected to substantially increase traffic volumes. Similarly, road and land closures are anticipated to be minimal, and will most likely occur during conductor stringing activities or during blasting. If road and lane closures are needed, the appropriate regulatory agencies, affected parties, and emergency service providers will be notified in advance.

Although construction traffic is not expected to disrupt access to residences along the right-of-way, adjacent landowners will be notified of the construction schedule (where appropriate). Signs will be posted in the Project area to notify landowners and others of the construction activity. Flagging will be maintained until final cleanup and/or reclamation is completed, after which they will be removed.

- A flagging scheme will be included in the final plan covering:
- Project access road;
- Temporary work areas (pulling sites, material yards, etc.);
- Protected animals/plants or sensitive environmental areas;
- Invasive weed cleaning stations;
- Proposed structure locations;
- Structure offsets;

- Outside edge of permitted right-of-way or centerline; and
- Cadastral survey monument

Construction crews will park only in designated areas and will be shuttled to the appropriate work sites if necessary.

5.0 LEVELS OF RIGHT-OF-WAY ACCESS

Access to the Project right-of-way and other areas (e.g., multi-purpose areas), will be needed for Project construction, operation, and maintenance activities. Listed below are five types of roadways that will be used for this transmission line.

5.1 Paved Roads

These roads are typically highways and state routes and will be used for travel to existing and new dirt roads to access the right-of-way. No staking will be required for this type of access.

5.2 Existing Unpaved Roads Not Requiring Improvements

These are existing dirt or gravel roads that generally will not require any improvements to support construction vehicles to access the right-of-way. Regular maintenance for construction (regarding wash-out areas, graveling, and installation of gravel pads for controlling trackout) is allowed in these areas. The outer edge of existing dirt access roads that have been approved for the Project will be staked. If it is determined that one of these roads does need improvement, the Companies must be notified and any change approved through the variance process described the Environmental Compliance and Management Plan – Appendix C to this POD.

5.3 Existing Unpaved Roads Requiring Improvements

These are existing dirt or gravel roads that may require improvements to support construction vehicles to access the right-of-way, and may be widened to a minimum of 14 feet wide travel way and 16- to 20-foot-wide road width in turns. Improvements to these existing roads may include road widening, road straightening/realignment, mowing, blading, tree removal, and bridge/culvert construction. These roads will require reclamation to pre-construction condition if they are not identified as service roads for future operation and maintenance of the transmission line. The required road disturbance area and travel way in areas of rolling to hilly terrain will require a wider disturbance to account for cuts and fills, turning radii, and/or where vehicles are required to pass one another while traveling in opposite directions. The amount of disturbance due to hilly terrain conditions is described in Transmission Line and Substation Components – Appendix B.

5.4 New Access Roads

Development of new roads begins with tree removal and grading to create a horizontal and vertical alignment suitable for passage of construction vehicles. These are new roads are generally a minimum of 14 feet wide travel way and 16- to 20-foot-wide road width in turns and may bridge/culvert installation. These roads will require reclamation to pre-construction condition if they are not identified as service roads for future operation and maintenance of the transmission line. The required road disturbance area

and travel way in areas of rolling to hilly terrain will require a wider disturbance to account for cuts and fills, turning radii, and/or where vehicles are required to pass one another while traveling in opposite directions. The amount of disturbance due to hilly terrain conditions is described in Transmission Line and Substation Components – Appendix B.

5.5 Temporary Roads

Roads will be constructed to temporary facilities such as multi-purpose areas and fly yards. They may comprise existing or new roads. In either case these roads will require reclamation to pre-construction condition once construction is complete.

6.0 MITIGATION MEASURES

Protection measures to avoid or reduce impacts associated with access to and from the transmission line are listed in Appendix Z of the POD.

APPENDIX M
FRAMEWORK BLASTING PLAN

Appendix M

Framework Blasting Plan

Gateway West Transmission Line Project

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

The Framework Blasting Plan outlines methods to mitigate risks and potential impacts associated with blasting procedures that may be required for construction of the Project. This document provides a template for the detailed Final Blasting Plan to be developed by the Construction Contractor.

2.0 PURPOSE

Once completed, the Blasting Plan will provide construction crews, the Compliance Inspection Contractor (CIC), and environmental monitors with project-specific information concerning blasting procedures, including the safe use and storage of explosives. The objective of the Blasting Plan is to prevent adverse impacts to human health and safety, property, and the environment that could potentially result from the use of explosives during project construction.

Blasting may be needed in certain areas with rocky terrain to excavate tower footings, prepare substation pads, and for construction of access roads. Blasting will be used only in areas where traditional excavation and earth moving equipment and practices are unable to accomplish the excavation. In addition, the Construction Contractor may elect to utilize implosive sleeves during line stringing activities to fuse conductor wire together. Areas where blasting will likely occur will be identified based on the geologic setting of the proposed alignment, as identified in the geotechnical investigation for the Project.

3.0 REGULATORY COMPLIANCE AND PROCEDURES

The Blasting Contractor will be responsible for preparing and implementing the Blasting Plan and must comply with all applicable federal, state, and local laws and regulations which pertain to explosives. No blasting operations will be undertaken until approval and

appropriate permits have been obtained from the applicable agencies. Failure to comply with such laws could result in substantial financial penalty and/or imprisonment.

The Construction Contractor will use a qualified, experienced, and licensed Blasting Contractor that will perform blasting using current and professionally accepted methods, products, and procedures to maximize safety during blasting operations. Blasting procedures will be carried out according to, and in compliance with, applicable laws and will be closely monitored by the CIC.

4.0 BLASTING PLAN GUIDANCE

Prior to blasting, the Blasting Contractor shall prepare a Blasting Plan for review and approval by the BLM, CIC, and any other relevant jurisdictional organization (i.e., School and Institutional Trust Lands Administration, county, city), as applicable. The plan will address safety as well as design for production and controlled blasting. The Blasting Plan also will contain the full details of the drilling and blasting patterns, as well as the controls the Blasting Contractor proposes to use for both controlled and production blasting. Review of the plan by the parties shall not relieve the Blasting Contractor of the responsibility for the accuracy and adequacy of the Blasting Plan when implemented in the field. A minimum of two weeks should be allowed for review and approval of the Blasting Plan by the BLM and appropriate agencies. If at any time changes are proposed to the Blasting Plan, the Blasting Contractor shall submit them to the BLM and CIC for review and approval.

4.1 Overview of Blasting Principles

4.1.1 Locations

The Construction Contractor's Blasting Contractor will avoid blasting in potential rockslide/landslide areas to the maximum extent possible and will consult with a geologist before blasting in such areas. A common practice for fusing conductor wire together is the use of implosive sleeves, which utilize explosive materials. The Blasting Contractor will be knowledgeable about this practice and will coordinate with the CIC, particularly with regard to the locations of these practices.

4.1.2 Materials

The Blasting Contractor will determine the specific materials needed for blasting operations. These materials will be included on the hazardous materials list for the Project, and their use and storage will comply with applicable federal, state, and local laws and regulations.

4.2 Blasting Plan Contents

The Blasting Plan prepared by the Blasting Contractor shall contain the following minimum information in the following format:

1. Purpose
2. Scope of the Blasting
3. Definitions
4. Responsibilities
    a. Management Organization

   b. Authority Responsibility
   c. Blaster in Charge (licensed in Wyoming and Idaho)
5. Location of Blasting Area
   a. Description of Blasting Area
   b. Description of Bedrock and Geological Problems
   c. Description of Adjacent Utility Facilities
6. Environmental Considerations
7. Safety Considerations
   a. General
   b. Warning Signs and Signals
   c. Procedures around Adjacent Utility Facilities
   d. Traffic Control
   e. Emergency Blast Initiation
   f. Safety Publications
   g. Fire Prevention
   h. Safety Hazards
   i. Emergency Services and Communication
   j. Minor or Non-Emergency Medical Care
   k. First Aid
8. Risk Management
   a. Protection of Adjacent Utility Facilities
   b. Lightning
   c. Flyrock (Note: Flyrock will be controlled with blasting mats.)
   d. Carbon Monoxide
   e. Ground Vibrations
   f. Seismically Sensitive Receptors
   g. Pre-blast Survey and Inspection
   h. Blast Damage Complaints
   i. Airblast
9. Blast Design Concept
   a. Station limits of proposed shot
   b. Plan and section views of proposed drill pattern, including free face, burden, blasthole spacing, blasthole diameter, blasthole angles, lift height, and sub-drill depth
   c. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming
   d. Initiation sequence of blastholes, including delay times and delay system
   e. Manufacturers' data sheets for all explosives, primers, and initiators to be employed
10. Procedures
   a. Delivery of Explosives
   b. Storage of Explosives and Blasting Agents
   c. Blast Hole Drilling
   d. General Handling of Explosives
   e. Blast Hole Loading
   f. Notification
   g. Initiation of Blast
   h. Misfire Management

i. Test Blasting
11. Records
12. Attachments

5.0 SAFETY PROCEDURES

Safe storage and use of explosive materials will be a top priority during construction. The safety measures discussed in this section are intended to prevent theft and/or vandalism of the explosive materials, protect against fire, and prevent personal injury and property damage. These measures are intended as general guidelines.

5.1 Storage

Explosives must be stored in an approved structure (magazine) and kept cool, dry, and well-ventilated. The Companies' Construction Contractor will provide the Bureau of Alcohol, Tobacco, Firearms and Explosives (BATF) Cheyenne, Wyoming and Boise, Idaho Fields Offices with a list of dates and locations for the explosives and blasting agent storage facilities to be used on the Project at least 14 days before the establishment of such storage facilities.

At a minimum, the following storage requirements will be implemented:

- Explosives must be stored in an approved structure (magazine), and storage facilities will be bullet-resistant, weather-resistant, theft-resistant, and fire-resistant.
- Magazine sites will be located in remote (out-of-sight) areas with restricted access; kept cool, dry, and well ventilated; and will be properly labeled and signed.
- Detonators will be stored separately from other explosive materials.
- The most stringent spacing between individual magazines will be determined according to the guidelines contained in the BATF publication or state or local explosive storage regulations.
- Both the quantity and duration of temporary on-site explosives storage will be minimized.

The Blasting Contractor will handle and dispose of dynamite storage boxes in accordance with relevant federal, state, and local laws.

5.2 Blasting Notification and Safety Procedures

The Construction Contractor will obtain a permit from the appropriate county as needed, for the period when blasting may occur and will comply with the following requirements developed by the BLM:

- The holder shall publish a proposed blasting schedule in the local newspaper one week prior to any blasting taking place. The schedule shall identify the location, dates, and times blasting will occur. No blasting shall occur outside of the published schedule, except in emergency situations.

- The holder shall post warning signs at all entry points for the Project. Warning signs shall include information on blasting, including the general hours blasting might take place, and audible signals to be used warning of impending blasting and to indicate that the site is all clear.
- Access points to areas where blasting will take place will be blocked to prevent access by the public at least 30 minutes prior to blasting. The site shall be swept 5 minutes prior to blasting to ensure no unauthorized personnel have wandered onto the site. An audible warning signal, capable of carrying for one-half mile, shall be used at least 2 minutes prior to blasting. An “all-clear” signal will be given once it has been determined the area is safe.
- Blasting in the vicinity of pipelines will be coordinated with the pipeline operator and will follow operator-specific procedures, as necessary.
- Damages that result solely from the blasting activity will be repaired or the owner fairly compensated.

A determination of all clear danger will be derived once the blasting area has been inspected for undetonated or misfired explosives. The blasting area will also be inspected for hazards such as falling rock and rock slides. Once the area has been inspected and these issues have been addressed, the all-clear signal as described above will sound and persons will be able to safely re-enter the blast zone.

Additional safety precautions will be developed to address site-specific conditions at the time of the blast. Special attention will be given to preventing potential hazards in the blasting area resulting from flying rock, destabilized walls, structures, presence of low flying aircraft, and dispersion of smoke and gases.

5.3 Fire Safety

The presence of explosive materials on the Project site could potentially increase the risk of fire during construction. Special precautions will be taken to minimize this risk in conjunction with the Framework Fire Prevention and Suppression Plan (Appendix O of the Plan of Development), including but not limited to:

- Prohibiting ignition devices within 50 feet of explosives storage areas.
- Properly maintaining magazine sites so they are clear of fuels and combustible materials, well ventilated, and fire-resistant.
- Protecting magazines from wildfires that could occur in the immediate area.
- Posting fire suppression personnel at the blast site during high fire danger periods.
- Prohibiting blasting during extreme fire danger periods.

5.4 Transportation of Explosives

Transportation of explosives will comply with all applicable federal, state, and local laws, including Title 49 of the Code of Federal Regulations, Chapter III. These regulations are administered by the U.S. Department of Transportation (USDOT) and govern the packaging, labeling, materials compatibility, driver qualifications, and safety of transported explosives. In general, these regulations require vehicles carrying explosive

materials must be well-maintained, properly marked with placards, and have a non-sparking floor. Materials in contact with the explosives will be non-sparking, and the load will be covered with a fire- and water-resistant tarpaulin. Vehicles also must be equipped with fire extinguishers and a copy of the Emergency Response Guidebook (USDOT 2008). Every effort will be made to minimize transportation of explosives through congested or heavily populated areas.

Prior to loading an appropriate vehicle for carrying explosives, the vehicle shall be fully fueled and inspected to ensure its safe operation. Refueling of vehicles carrying explosives shall be avoided. Smoking shall be prohibited during the loading, transporting, or unloading of explosives. In addition, the following specific restrictions apply to transport of other items in vehicles carrying explosives:

- Tools may be carried in the vehicle, but not in the cargo compartment.
- Detonation devices can, in some cases, be carried in the same vehicle as the explosives, but they must be stored in a specially constructed compartment(s).
- Batteries and firearms shall never be carried in a vehicle with explosives.
- Vehicle drivers must comply with the specific laws related to the materials being transported.

Vehicles carrying explosives shall not be parked or left unattended except in designated parking areas with approval of the State Fire Marshall. When traveling, vehicles carrying explosives will avoid congested areas to the maximum extent possible.

5.5 Other Specific Stipulations and Methods

Blasting has the potential to cause environmental impacts. Implementing the protection measures listed Appendix Z of the POD will mitigate these impacts.

Stipulations developed by BLM will be followed for protection of sensitive species as well as the required notification discussed above in Section 5.2. The Construction Contractor will notify the CIC and environmental monitors 72 hours prior to scheduled blasting and comply with the permit requirements for notification by appropriate counties, including any requirements for dust abatement. Regular field meetings will be held with the CIC and environmental monitors to review the process and its implementation. If changes are needed to the notification process, changes will be made to facilitate protection of environmental resources.

6.0 LITERATURE CITED

USDOT (U.S. Department of Transportation). 2008. Emergency Response Guidebook. Available online at http://www.ehso.com/hmerg.php

APPENDIX N
FRAMEWORK DUST CONTROL AND AIR QUALITY PLAN

Appendix N

Framework Dust Control and Air Quality Plan

Gateway West Transmission Line Project

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

This Framework Dust Control and Air Quality Plan addresses regulatory compliance, environmental concerns, mitigation recommendations, and monitoring. This plan will be utilized for the construction of the Project to ensure impacts associated with construction activities are minimized as they relate to soil conservation and air quality.

2.0 PURPOSE

This plan provides measures to be utilized by the BLM, Compliance Inspection Contractor (CIC), and the Construction Contractor to ensure protection of the soils and air quality that will be affected by the Project. This plan is to be implemented during the construction, operation, and maintenance phases of the Project. These measures are intended to 1) address soil erosion and sedimentation, and 2) minimize dust and air emissions from construction-related activities. This document provides a template for the detailed Final Dust Control and Air Quality Plan to be developed by the Construction Contractor.

3.0 REGULATORY COMPLIANCE

Construction, operation, and maintenance activities for the Project are subject to various regulations designed to protect environmental resources and the public from erosion, dust, and other possible effects to air quality. The following permits and documents contain requirements for preventing accelerated erosion and minimizing dust and air emissions. Refer to these documents, along with this plan, when assessing which mitigation measures are appropriate for a specific area. At a minimum, the Companies and the Construction Contractor will need to adhere to or obtain the following permits.

3.1 Federal Permits

- BLM – Right-of-way grant and temporary use permit: Federal Land Policy and Management Act of 1976 (Public Law 94-579); 43 United States Code (U.S.C.) 1761-1771; 43 Code of Federal Regulations (CFR) 2800
- U.S. Army Corps of Engineers (USACE) – Clean Water Act (CWA), Section 401: CWA (33 U.S.C. 1344)
- U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit

3.2 State Permits

- Wyoming Department of Environmental Quality (WDEQ) – Air Quality Division Construction Permit to control fugitive dust emissions during construction.
- WDEQ – Sections 401, 402, and 404, CWA, Water Quality Certification (State implementation of the USACE permits for air quality and stormwater discharges).
- Idaho Department of Environmental Quality (IDEQ) – Fugitive dust control plan for construction projects.
- IDEQ – State implementation of the USACE CWA Section 401, 402, and 404 permits.

3.3 Local Permits

- County conditional use permits, temporary use permits for staging areas, road crossing permits and/or encroachment permits. May have erosion or air quality considerations. Requirements vary by county.

4.0 ENVIRONMENTAL CONSIDERATIONS

4.1 Soil Conservation and Erosion

Soil conservation for the Project includes minimizing impacts that will affect soils from the construction and operation of the proposed transmission line, such as minimizing wind and water erosion, soil compaction, surface disturbance, and construction activities in wet soils. Prior to ground disturbance, geotechnical studies have been conducted and a report for affected areas has been prepared to provide more specific detail/measures regarding soil conservation for the Project.

Erosion potential is the result of several factors including slope, vegetation cover, climate, and the physical and chemical characteristics of the soil. Increased soil erosion may occur when vegetation is removed during construction, or in areas where the surface is disturbed by heavy equipment. Increased water erosion often occurs during high-intensity or long-duration rainstorms and may reduce the productivity of the soil as well as affect water quality of streams by accelerating sediment loading. Wind is also an erosion factor throughout portions of the Project areas. Soil compaction could also be a concern if there is repeated traffic use on sections of access roads.

Where disturbance is anticipated in areas of steep terrain with high potential for erosion; vegetation clearing and grading will be conducted in a manner to minimize these effects. Soil stabilization and reclamation practices will also be implemented to reduce erosion. In select locations, helicopter construction may be used to further reduce these impacts. In areas of soil compaction (e.g., temporary access roads) soil treatment and reclamation will be implemented as directed in Appendix D – Framework Reclamation Plan. In these areas, care should be taken to avoid any installed grounding or counterpoise.

4.2 Air Quality and Dust Control

Construction of the transmission line and related facilities will cause a temporary and minimal increase in fugitive dust. Ambient levels of nitrogen oxides, hydrocarbons, and carbon monoxide near the construction zone will also be temporarily increased due to emissions from heavy construction equipment. Related facilities will cause a minimal increase in fugitive dust.

Air quality control measures are intended to minimize fugitive dust and air emissions and to maintain conditions as free from air pollution where practical. All requirements of those entities having jurisdiction over air quality matters will be adhered to, and any permits needed for construction activities will be obtained. The Construction Contractor will not proceed with any construction activities without taking reasonable precautions to prevent excessive particulate matter from becoming airborne and creating nuisance conditions.

Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance, and no open burning of construction trash or other open fires will be allowed.

Where necessary, water or magnesium chloride ($MgCl_2$) may be used as BLM-approved dust control methods during construction, including the grading of roads or the clearing of land and of the right-of-way, and will be applied on unpaved roads, material stockpiles, and other surfaces, which can create airborne dust. Where application of water is not possible, material stockpiles will be enclosed or covered. In addition, open-bodied trucks transporting materials likely to become airborne will be covered. Earth or other materials that may become airborne will promptly be removed from paved roads. Matting will be used in rock blasting operations to minimize and control dust (see Appendix M – Framework Blasting Plan).

5.0 MITIGATION MEASURES

Mitigation measures will be applicable to Project construction, reclamation, operation, and maintenance. If new disturbances occur during the operation and maintenance phases of the Project, or if erosion control and air quality measures implemented during construction and reclamation are not effective in dust control and maintaining air quality, the mitigation measures will be reviewed and modified where necessary.

Because of potential impacts from construction activities, several measures may be necessary to mitigate particular impacts. Proposed erosion, dust control, and air quality

protection measures that will be included in the final Dust Control and Air Quality Plan are included in Appendix Z of the Plan of Development (POD).

6.0 MONITORING MEASURES

Monitoring of erosion control mitigation measures will continue until reclamation efforts are considered complete and successful, and accelerated erosion and air emissions have been controlled. Proposed erosion, dust control, and air quality monitoring measures are included in Appendix Z of the POD.

7.0 OPERATION AND MAINTENANCE PHASE

After construction and reclamation, monitoring the erosion control mitigation measures will continue on an annual basis during the operation and maintenance phase until affected soils have been stabilized. Monitoring should continue until there is no or minimal accelerated erosion or air emissions and until reclamation efforts are considered complete and successful.

APPENDIX O
FRAMEWORK FIRE PREVENTION AND SUPPRESSION PLAN

Appendix O

Framework Fire Prevention and Suppression Plan

Gateway West Transmission Line Project

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project is principally necessary to serve future needs in Utah and Idaho, though other markets may also be served, including Wyoming's oil and gas field electricity needs. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

This Framework Fire Prevention and Suppression Plan (Plan) describes the framework for measures to be taken by the Companies and their contractors (Contractor) to ensure fire prevention and suppression measures are carried out in accordance with federal, state, and local regulations. Measures identified in this Plan apply to work within the project area defined as the right-of-way (ROW); access roads; all work and storage areas, whether temporary or permanent; and other areas used during construction and operation of the Project. This document provides a template for the detailed Final Fire Prevention and Suppression Plan to be developed by the Construction Contractor.

1.1 Purpose

The risk of fire danger during transmission line construction is related to smoking, refueling activities, operating vehicles and other equipment off roadways, welding activities, and the use of explosive materials and flammable liquids. During operation, the risk of fire is primarily from vehicles and maintenance activities that require welding. Additionally, weather events that affect the transmission line could result in the transmission line igniting a fire.

This Plan establishes standards and practices to minimize risk of fire ignition and, in case of fire, provide for immediate suppression.

1.2 Wyoming's Wildfire Protection System

The prevention and suppression of wildfires in southern Wyoming is carried out by the BLM, Forest Service, and local fire districts and agencies (Table O-1). The agencies' activities are closely coordinated, primarily through the National Interagency Fire Center in Boise, Idaho, and Regional Interagency Dispatch Centers in Casper, Wyoming, and Rawlins, Wyoming. Individual fire crews from BLM field offices and Forest Service Ranger Districts coordinate fire suppression activities on federal land within their

jurisdictions. The Wyoming State Forestry Division (WSFD) is responsible for fire suppression on Wyoming state land. Local fire districts and agencies provide fire prevention and suppression activities on private land, and may assist with fires on state or federal lands as requested by those agencies.

Table O-1. Fire Suppression Responsibilities in Wyoming

Who	Where	Miles of Proposed Route
Bureau of Land Management	National System of Public Lands	204
U.S. Forest Service	National Forest (NF) and National Grasslands	7
Bureau of Reclamation	Bureau of Reclamation Lands	3
Wyoming State Forestry Division	Wyoming State Lands	66
City fire departments and rural fire protection districts in mutual aid with WSFD	Structures in Wyoming's wildland interface areas covered by mutual-aid agreements.	256

Source: GIS Ownership_Analysis_20111219.xlsx.

1.3 Idaho's Wildfire Protection System

Wildland fire suppression in Idaho operates much the same way as described for Wyoming (Table O-2). Wildland fire suppression and fire-management activities in Idaho are organized through the National Interagency Fire Center in Boise, Idaho, and locally on federal land by individual BLM field offices or Forest Service Ranger Districts. Various mutual-aid agreements with community fire departments and the Idaho Department of Lands (IDL) are in force throughout the Project area.

Table O-2. Fire Suppression Responsibilities in Idaho

Who	Where	Miles of Proposed Route
Idaho Department of Lands	State-owned lands	30
Bureau of Land Management	National System of Public Lands	276
Bureau of Reclamation	Bureau of Reclamation Lands	2
U.S. Forest Service	National Forest (NF)	9
City fire departments and rural fire protection districts	Private lands	250

Source: GIS Ownership_Analysis_20111219.xlsx.

1.4 Responsibilities and Coordination

This Plan will be implemented by the Companies and the Contractor on the Project. The Companies and the Contractor are responsible for providing all necessary fire-fighting equipment on the project site to their respective employees and operating under the requirements of this Plan. Prior to construction, the Companies will contact the appropriate fire-control authorities to establish communications, obtain any required permits (such as burning or fire waiver permits prior to conducting any heavy equipment or burning activities), and/or fulfill other obligations as directed by fire-control authorities.

The Companies will also do the following:

- Ensure prevention, detection, pre-suppression, and suppression activities are in accordance with this Plan and federal, state, and county laws; ordinances; and regulations pertaining to fire.
- Accompany agency representatives on fire tool and equipment inspections and take corrective action upon notification of any fire-protection requirements not in compliance.
- Restrict operations on federal lands during conditions of high fire danger as described in Section 2.2, Restricted Operations.

The fire prevention and suppression measures described in this Plan will be in effect from pre-construction to the end of restoration. These restrictions may change by advance written notice by fire-control authorities. However, required tools and equipment will be kept in serviceable condition and will be immediately available at all times.

2.0 FIRE PREVENTION MEASURES

2.1 Preconstruction and Construction

Methods and procedures to be implemented prior to and during construction, operation, maintenance, and termination of the Project to minimize the risk of fire are described in the following sections.

2.1.1 Training

The Contractor will train all personnel on the measures to take in the event of a fire. The Contractor will also inform each construction crew member of fire dangers, locations of extinguishers and equipment, and individual responsibilities for fire prevention and suppression during regular safety briefings. Smoking and fire rules also will be discussed with the Contractor and all field personnel during the Project's environmental training.

2.1.2 Smoking

Smoking is never permitted in any area designated by DANGER or NO SMOKING signs. Smoking is not permitted in these areas regardless of any other factor. Smoking is only permitted on access roads, within vehicles, and in approved smoking areas.

2.1.3 Spark Arresters

During construction, operation, maintenance, and decommissioning of the ROW, all equipment operating with an internal combustion engine will be equipped with federally-approved spark arresters. Spark arresters are not required on trucks, buses, and passenger vehicles (excluding motorcycles) equipped with an unaltered muffler or on diesel engines equipped with a turbocharger. Agency fire-inspection officers will have full authority to inspect spark arresters on Project equipment prior to its use on the Project on federal lands and periodically during construction.

2.1.4 Parking, Vehicle Operation, and Storage Areas

In no case will motorized equipment, including worker transportation vehicles, be driven or parked outside the designated and approved work limits. Equipment parking areas, the ROW, staging areas, designated vehicle-parking areas, and small stationary engine sites—where permitted—will be cleared of all flammable material. Clearing will extend a minimum of 2 feet beyond the edge of the area to be occupied but not beyond the boundaries of the approved ROW, extra workspace, or ancillary site. Glass containers will not be used to store gasoline or other flammables.

2.1.5 Equipment

All motor vehicles and equipment will carry at least 1 long-handled (48-inch minimum), round-point shovel; a double-bit ax or Pulaski (3.5 pounds or larger); and one dry chemical fire extinguisher (with an Underwriters Laboratories [UL] rating of at least 5B or C). Individuals using power saws and grinders will have a shovel as described above, and an 8-ounce capacity fire extinguisher immediately available. All equipment will be kept in a serviceable condition and readily available.

The Contractor shall maintain a list, to be provided to local fire-protection agencies, of all equipment that is either specifically designed for, or capable of, being adapted to fighting fires. The Contractor shall provide basic fire-fighting equipment on-site during construction, including fire extinguishers, shovels, axes, and other tools in sufficient numbers so each employee on-site can assist in the event of a fire-fighting operation.

2.1.6 Road Closures

The Contractor will notify the appropriate fire-suppression agency of the scheduled closures prior to the open-cut crossing of a road. If required, the Contractor will construct a bypass prior to the open-cut installation of a road crossing, unless a convenient detour can be established on existing project-approved roads or within project-approved work limits. All bypasses will be clearly marked by the Contractor. During road closures, the Contractor will designate one person who knows the bypass to direct traffic. The Contractor will minimize, to the extent possible, the duration of road closures.

2.1.7 Refueling

Fuel trucks will have a large fire extinguisher charged with the appropriate chemical to control electrical and gas fires. The extinguisher will be a minimum size 35-pound capacity with a minimum 30 BC rating. Power-saw refueling will be done in an area that has first been cleared of material that could catch fire.

2.1.8 Burning

Contractor and Companies' personnel are prohibited from burning slash, brush, stumps, trash, explosives storage boxes, or other Project debris unless specifically contracted to do so.

2.1.9 Flammable Liquids and Explosives

The handling and use of explosives shall be conducted in strict conformance with all local, state, and federal regulations as detailed in the Companies' Construction Specification on Blasting.

2.1.10 Communications

The Contractor will be responsible for maintaining contact with fire-control agencies and will be equipped with a radio or cellular telephone so immediate contact with local fire-control agencies can be made. If cellular telephone coverage is not available, the Contractor will use the radio to contact their base, who will telephone emergency dispatch.

2.1.11 Welding

One 5-gallon backpack pump will be required with each welding unit in addition to the standard fire equipment required in all vehicles. All equipment will be kept in a serviceable condition and readily available.

2.1.12 Fire Suppression

The Contractor will take the following actions should a fire occur within the Project area during construction:

- Take immediate action to suppress fires using all available manpower and equipment.
- Immediately notify the nearest fire-suppression agency of the fire location, action taken, and status (see Section 4.0).
- Immediately notify the Companies of the fire location and action taken.
- Relinquish fire-suppression activities to agency fire-management officers upon their arrival.

If a reported fire is controlled, the Contractor will note the location and monitor the progress in extinguishing the fire. A Contractor's employee will remain at the fire scene until it is fully extinguished. The extinguished fire will be monitored in accordance with procedures described in Section 2.3 of this document.

2.2 Restricted Operations

The Contractor will restrict or cease operations in specified locations during periods of high fire danger at the direction of the land-management agency's closure order. Restrictions may vary from stopping certain operations at a given time to stopping all operations. The Companies may obtain approval to continue some or all operations if acceptable precautions are implemented. A written waiver must be issued to the Contractor.

During periods of high fire danger, the Contractor will monitor daily for local restrictions. It is the Contractor's responsibility to ensure personnel are aware of and following area fire orders.

2.3 Monitoring

The contractor will be responsible for compliance with all provisions of this Plan. In addition, federal, state, and local fire-control agencies may perform inspections in areas under their jurisdiction at their discretion.

To help reduce the potential for fire starts during construction of the Project, the Companies will implement or require the construction Contractor to implement the environmental protection measures (EPMs) contained in Appendix Z of the Plan of Development currently being discussed with the Agencies. When these discussions are completed, finalized measures will be listed herein.

3.0 OPERATION AND MAINTENANCE

3.1 Operation

During transmission line operation, the risk of fire danger is minimal. The primary causes of fire on the ROW result from unauthorized entry by individuals for recreational purposes and from fires started outside the ROW. In the latter case, authorities can use the ROW as a potential firebreak. During transmission line operation, access to the ROW will be restricted in accordance with jurisdictional agency or landowner requirements to minimize recreational use of the ROW.

3.2 Maintenance

During maintenance operations, the Companies or their Contractor will equip personnel with basic fire-fighting equipment, including fire extinguishers and shovels as described in Section 2.1.5, Equipment. Maintenance crews will also carry emergency response/fire control phone numbers.

To help reduce the potential for fire starts during the operation and maintenance of the Project, the Companies or their Contractor will implement the finalized EPMs.

4.0 NOTIFICATION PROCEDURES

Construction crew members will report all fires, whether extinguished or controlled. If the fire is uncontrolled, the Contractor will call the nearest fire-suppression agency (911) and the Companies' lead environmental inspector. Information regarding the location of the fire, property ownership, and closest access roads should be reported to 911 and the Companies.

If a reported fire is controlled but not extinguished, the fire guard will call to notify the nearest police/fire authorities using the non-emergency telephone line to alert them of the situation. The status of the fire will be monitored by the Contractor, and the nearest fire-suppression agency will be notified.

The Companies will maintain and provide the Contractor with an up-to-date list of landowner and land management agency contacts along the transmission line ROW.

To assist with the notification and reporting of fires, the Companies or their Contractor will implement the finalized EPMs.

APPENDIX P
FRAMEWORK HAZARDOUS MATERIAL MANAGEMENT PLAN

Appendix P

Framework Hazardous Material Management Plan

Gateway West Transmission Line Project

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Attachment A Sample Hazardous Materials Management Plan Framework Forms

1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,100 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current (AC) electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project is principally necessary to serve future needs in Utah and Idaho, though other markets may also be served, including Wyoming's oil and gas field electricity needs. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service, and the states of Idaho and Wyoming.

This Framework Hazardous Material Management Plan for the Project is intended to reduce the risks associated with the use, storage, transportation, production, and disposal of hazardous materials (including hazardous substances and wastes). This Plan will identify Project-specific mitigation measures and other specific stipulations and methods to address spill prevention, response, and cleanup procedures for the Project. This document provides a template for the development of a detailed Hazardous Material Management Plan to be developed by the Construction Contractor.

In conjunction with the Hazardous Material Management Plan, a Spill Prevention, Containment, and Countermeasures (SPCC) Plan will be developed to identify specific legal requirements and practices to achieve identified goals. Refer to Appendix G – Framework Spill Prevention, Containment, and Countermeasures Plan of the Plan of Development (POD) for more information.

The term "hazardous material," as presented in this framework plan, will refer to hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, and materials designated as hazardous for transportation as defined in 49 Code of Federal Regulations (CFR) 171.8.

The Hazardous Material Management Plan will clearly identify which legal requirements apply to specific types of hazardous materials and will identify best management practices that, although not legally required, will be followed to reduce risks associated with hazardous materials. Nothing in this framework plan or in the Hazardous Material Management Plan (to be developed by the Construction Contractor) shall be construed as an admission regarding the legal applicability of requirements or practices to any particular class of hazardous material.

2.0 PURPOSE

The goal of this framework plan is to 1) minimize the potential for a spill of fuel or other hazardous material, 2) contain any spill to the smallest possible area, 3) protect areas that are environmentally sensitive, and 4) provide a template for the development of a detailed Hazardous Material Management Plan (by the Construction Contractor). This plan framework includes the following components:

- Framework for developing the Hazardous Material Management Plan.
- Spill control, response, and cleanup methods.
- An overview of the notification and documentation procedures to be followed in the event of a spill.
- Operation and maintenance considerations.

In addition, sample hazardous materials management forms (which may be used as examples by the Construction Contractor) are provided in Attachment A.

In general, hazardous materials, hazardous wastes, and cleanup equipment will be stored in approved containers until they can be properly transported and disposed of at an approved treatment, storage, and disposal facility. Persons responsible for handling or transporting hazardous materials for the Project will be trained in the proper use/management of the materials and should be familiar with all applicable laws, policies, procedures, and mitigation measures related to such handling or transportation.

It is the responsibility of the Construction Contractor to maintain file records of proper training/certification for any individual(s) who may potentially handle hazardous materials for the Project. The Companies reserve the right to audit any subcontractors to ensure compliance.

3.0 REGULATORY COMPLIANCE

Major legislation pertaining to hazardous materials includes the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act, Clean Air Act, and Clean Water Act.

Numerous other federal, state, and local regulations also govern the use, storage, transportation, production, and disposal of hazardous materials. Some of the key requirements of these laws are outlined in:

Occupational Safety and Health Administration (OSHA) (29 CFR 1900-1910)

- 28 CFR 1900-1910 Occupational Safety and Health Act
- 29 CFR 1904 Recording and Reporting Occupational Injuries and Illness
- 29 CFR 1910.120 Hazard Communication
- 29 CFR 1926 Safety and Health Regulations for Construction

Clean Water Act (40 CFR 100-149)

- 40 CFR 110 Discharges of Oil
- 40 CFR 112 Oil Pollution Prevention
- 40 CFR 116 Designation of Hazardous Substances
- 40 CFR 117 Determination of Reportable Quantities for Hazardous Substances
- 40 CFR 129 Toxic Pollutant Effluent Standards
- 40 CFR 131 Water Quality Standards
- 40 CFR 141-149 Safe Drinking Water Act

Clean Air Act (40 CFR 50-99)

- 40 CFR 50 National Ambient Air Quality Standards
- 40 CFR 61-63 National Emissions Standards for Hazardous Air Pollutants

Toxic Substances Control Act (TSCA) (40 CFR 700-799)

- 40 CFR 710 TSCA Chemical Inventory Regulations
- 40 CFR 761 PCBs Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

CERCLA/Superfund Amendments and Reauthorization Act (40 CFR 300-399)

- 40 CFR 300 National Oil and Hazardous Substances Pollution Contingency Plan
- 40 CFR 302 Designation, Reportable Quantities, and Notification
- 40 CFR 355 Emergency Planning and Notification
- 40 CFR 370 Hazardous Chemical Reporting: Community Right-to-Know
- 40 CFR 372 Toxic Chemical Release Reporting: Community Right-to-Know

Solid and Hazardous Wastes (40 CFR 239-299)

- 70 CFR 201-211 Noise Abatement Programs
- 40 CFR 243 Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
- 40 CFR 260 Hazardous Waste Management System: General
- 40 CFR 261 Identification and Listing of Hazardous Waste
- 40 CFR 262 Standards Applicable to Generators of Hazardous Waste
- 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste
- 40 CFR 273 Standards for Universal Waste Management
- 40 CFR 279 Standards for the Management of Used Oil

Hazardous Materials Transportation Act (49 CFR 100-199)

- 49 CFR 130 Oil Spill Prevention and Response Plans

- 49 CFR 171 General Information, Regulations, and Definitions
- 49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
- 49 CFR 177 Carriage by Public Highway

Wyoming-Specific Regulations

- Wyoming Department of Environmental Quality (WDEQ) Wyoming Air Quality Standards and Regulations (WAQSR) Chapter 1 Wyoming Environmental Quality Act
- WAQSR Chapter 2 Ambient Standards
- WAQSR Chapter 3 General Emissions Standards
- WAQSR Chapter 6 Permitting Requirements
- WAQSR Chapter 7 Monitoring Requirements
- WAQSR Chapter 8 Non-attainment Area Regulations
- WAQSR Chapter 9 Visibility Impairment/PM Fine Controls
- WAQSR Chapter 13 Mobile Sources
- WDEQ Water Quality Standards (WQS) Chapter 1 Surface Water Quality Standards
- WQS Chapter 4 Regulations for Release of Oil and Hazardous Substances into Waters of the State
- WQS Chapter 8 Quality Standards for Wyoming Groundwater
- WQS Chapter 9 Wyoming Groundwater Pollution Control Permit
- WDEQ Solid and Hazardous Waste Division (SHWD) Hazardous Waste Permitting and Corrective Action
- SHWD Voluntary Remediation
- SHWD Inspection and Compliance
- SHWD Storage Tank Program

Idaho-Specific Regulations

- Idaho Department of Environmental Quality (IDEQ) Idaho Administrative Procedures Act (IDAPA) IDAPA 58.01.01 Rules for the Control of Air Pollution in Idaho
- IDAPA 58.01.02 Water Quality Standards
- IDAPA 58.01.05 Rules and Standards for Hazardous Waste
- IDAPA 58.01.11 Ground Water Quality Rule
- IDAPA 58.01.18 Land Remediation Rules

- IDAPA 58.01.24 Standards and Procedure for Application of Risk Based Corrective Action at Petroleum Release Sites

4.0 FRAMEWORK E HAZARDOUS MATERIALS MANAGEMENT PLAN

The following sections provide specific methods for the Construction Contractor to prepare the Hazardous Materials Management Plan and the SPCC Plan (refer to Appendix G of the POD for more information), if applicable, per 40 CFR 112. The Construction Contractor shall provide all information requested in the forms at the end of this appendix to the Companies. In addition, the Contractor shall complete any other required county, state, or federal forms.

4.1 Certifications, Acknowledgments, and Designation of Coordinator/ Responsible Person

4.1.1 Certifications

The Construction Contractor shall certify all of the information provided in the Hazardous Materials Management Plan is accurate and complete to the best of their knowledge. The Construction Contractor also will certify they are committed to implementing the plan as written. If an SPCC plan is required, per the requirements of 40 CFR 112, the Construction Contractor additionally may be required to have the plan reviewed and certified by a registered professional engineer.

4.1.2 Amendments

The Construction Contractor shall agree to make all necessary and appropriate amendments to the Hazardous Materials Management Plan and submit any and all such amendments to the Companies and the appropriate county (if required), state, or federal authorities within seven (7) days of finding that an amendment is necessary.

Amendments to the Hazardous Materials Management Plan shall be necessary under any of the following circumstances:

- Applicable laws or regulations are revised.
- A 100 percent or more increase of a previously disclosed hazardous material.
- Any handling of a previously undisclosed hazardous material subject to inventory requirements.
- A change in properties of a previously disclosed hazardous material (e.g. solid to liquid).
- A change of business address, name or ownership.
- The list of emergency coordinators changes.
- The list of emergency equipment changes.

The Construction Contractor may be required to amend any SPCC plan, as required by the applicable regulations.

4.1.3 Coordinator/Responsible Person

The Construction Contractor shall identify an emergency coordinator/responsible person for hazardous materials management and emergency response. Two alternates shall also be identified. Business, residential, and mobile phone or pager numbers shall be provided for all three persons to allow for contact on a 24-hour basis. Primary and alternate emergency response coordinators shall be knowledgeable of the chemicals and processes involved in construction of the Project, and will have the authority to commit Construction Contractor resources to implement the plan. They also shall have stop-work authority in case of non-compliance or danger to human health or the environment.

4.2 Facilities Description and Inventory of Materials

4.2.1 Site Maps

The Construction Contractor will provide site maps or facility maps in the Hazardous Materials Management Plan that contain storage and safety precautions for each location containing hazardous materials and hazardous wastes. Maps shall, at a minimum, include the following information:

- Orientation and scale
- Total land area in square feet
- Access and egress points
- Buildings and/or temporary trailers
- Parking areas
- Adjacent land uses (if business, indicate business name)
- Surrounding roads, storm drains, and waterways (including streams and wetlands)
- Locations of hazardous materials and hazardous waste storage areas
- Underground and above ground storage tanks
- Containment or diversion structures (dikes, berms, retention ponds)
- Shutoff valves and/or circuit breakers
- Location of emergency response materials and equipment
- Location of material safety data sheets (MSDS), the Hazardous Materials Management Plan, and the SPCC Plan
- Location of emergency assembly area

4.2.2 Inventory

The Construction Contractor shall provide a complete inventory of all hazardous materials. The Construction Contractor shall be responsible for consulting with the relevant agencies if they handle extremely hazardous substances. All inventory forms shall be provided to the Construction Contractor by the Companies as a part of the Hazardous Materials Management Plan.

5.0 SPILL PREVENTION PROCEDURES

Construction, operation, and maintenance of the Project will require the use of certain potentially hazardous materials, such as fuels, oils, explosives, and herbicides. By definition, hazardous materials (substances and wastes) have the potential to pose a significant threat to human health and the environment based upon their quantity, concentration, or chemical composition. When stored, used, transported, and disposed of properly, as described below, the risks associated with these materials can be reduced substantially.

5.1 Overview of Hazardous Materials Proposed for Use

The following measures pertain to all vehicle refueling and servicing activities, as well as the storage, transportation, production, and disposal of hazardous materials/wastes. These measures are intended to prevent the discharge of fuels, oils, gasoline, and other harmful substances to waterways, groundwater aquifers, and/or other sensitive resource areas during Project construction and maintenance.

Hazardous materials used during Project construction may include petroleum products such as gasoline, diesel fuel, and hydraulic fluid; lubricating oils and solvents; cleansers; explosives; and other substances. Some of these materials will be used in relatively large quantities at material yards and in rare instances on the right-of-way to operate and maintain equipment during construction. Explosives will be used for blasting rock where needed to install transmission towers and associated access roads (refer to Appendix M – Framework Blasting Plan).

Smaller quantities of other materials such as pesticides and fertilizers, paints, and chemicals (e.g., sulfur hexafluoride) may be used during Project operation and maintenance. Pesticides and herbicides are hazardous materials and they will be used according to labeling (see also Appendix E – Framework Noxious Weed Plan). The Construction Contractor will maintain an inventory of all hazardous materials used and MSDS for all materials. The Construction Contractor shall maintain copies of the required MSDS for each hazardous chemical and shall ensure the copies are readily accessible during each work shift to all employees when they are in their work area(s). The MSDS will provide basic emergency response information for small and large releases of the hazardous materials. In the case that bulk hazardous materials are used, the Emergency Response Guidebook, produced by the U.S. Department of Transportation (USDOT), is an acceptable reference. The Construction Contractor should have a well-developed hazardous material program in place and work to use non-hazardous substances in routine construction and maintenance activities, to the extent possible.

5.2 Refueling and Servicing

Construction vehicles (trucks, bulldozers, etc.), helicopters, and equipment (pumps, generators, etc.) generally will be fueled and serviced in designated areas at least 100 feet from streams (including intermittent and perennial) and wetlands (including dry or seasonal wetlands). Refueling locations generally should be flat to minimize the chance of a spilled substance reaching a stream. In most cases, smaller rubber-tired vehicles will be refueled and serviced at local gas stations or material yards. Tracked vehicles

typically will be refueled and serviced on site. In some cases, pickup trucks or tankers will be used to refuel and service construction vehicles on the right-of-way. Every effort will be made to minimize the threat of a fuel spill during refueling and servicing. Fuel/service vehicles will carry a suitable absorbent material to collect approximately 20 gallons of spilled materials. In addition, all vehicles will be inspected for leaks prior to being brought on-site and regularly throughout the construction period.

Washing of construction vehicles, such as concrete trucks, will be allowed only in designated areas at least 100 feet from streams and wetlands (as defined above). Washing areas will be contained with berms/barriers to prevent migration of wastewater and/or sediments into streams and waterways. Waste concrete material will be removed and properly disposed of once it has hardened. Additionally, all preventive measures, identified in Appendix E – Framework Noxious Weed Plan, will be followed, specifically relating to vehicle washing procedures.

5.3 Transportation of Hazardous Materials

Procedures for loading and transporting fuels and other hazardous materials will meet the minimum requirements established by the USDOT, Wyoming Department of Transportation, Idaho Transportation Department, and other pertinent regulations. Prior to transporting hazardous materials, appropriate shipping papers shall be completed. Transportation of hazardous materials should be performed by a hazardous material transport firm in accordance with USDOT regulations. In addition, the Construction Contractor(s) will ensure all handling or packaging of hazardous materials and all paperwork for transport of hazardous materials is performed by properly trained personnel in accordance with USDOT and applicable state regulations.

At all times, all hazardous materials used for the Project will be properly stored in approved containers and labeled, including during transportation. Smaller containers will be used on-site to transport needed amounts of hazardous materials to a specific location. Transfer of materials from large to small containers will be performed using appropriate equipment, including pumps, hoses, and safety equipment; hand pouring techniques will not be utilized. These smaller (service) containers also will be clearly labeled. Special provisions apply to the transportation of explosives (refer to Appendix M – Framework Blasting Plan).

5.4 Storage of Hazardous Materials

Hazardous materials will be stored only in designated material yards. Material yards will be located at least 100 feet from the edge of perennial and intermittent streams, wetlands (including dry or seasonal wetlands), and sensitive areas and will be able to contain the single largest quantity/unit stored at any one time, plus 10 percent. If material yards cannot be located at least 100 feet from streams and wetlands because of topographic conditions or space limitations, special precautions will be taken to prevent the spill or release of hazardous materials into the waterway. These precautions will include limiting the quantity and amount of time such materials are stored near waterways, fortifying barriers, providing additional containment between hazardous materials and the waterway, and using trained personnel to monitor activities at the yard. Cleanup materials, including absorbent spill pads and plastic bags, will also be stored in these areas. The Construction Contractor will specify the appropriate spill kit

containing these materials in the Hazardous Materials Management Plan. Hazardous materials will not be stored in areas subject to flooding or inundation. The Construction Contractor shall coordinate with the Compliance Inspection Contractor when storage areas cannot be located at least 100 feet from streams and wetlands.

5.4.1 Physical Storage Requirements

Storage Containers: Containers holding hazardous waste or materials will be compatible with the wastes or materials stored. If the container is damaged or leaks, the waste must be transferred to a container in good condition. The Construction Contractor shall inspect containers weekly at a minimum to verify the integrity of the containers and any containment systems. Containers used for transportation must comply with USDOT and applicable state transportation requirements.

Incompatible Materials: Materials, including hazardous wastes, will not be placed in containers that previously held an incompatible waste or material.

Ignitable or Reactive Materials: Containers holding hazardous wastes or materials that are reactive or may ignite must be located at least 50 feet from the material yard's property line. "NO SMOKING" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive material.

Container Management: Containers holding hazardous wastes will be kept closed at all times, except when it is necessary to add or remove contents. Before the handling and/or transportation of containers carrying hazardous wastes, the containers should be inspected to ensure they are sealed such that no material spillage occurs.

Secondary Containment: Secondary containment will consist of bermed or diked areas that are lined and capable of holding 110 percent of the volume of the stored material and will be provided for liquid hazardous materials stored on-site.

Security: Hazardous wastes and materials will be stored in secure areas to prevent damage, vandalism, or theft. All storage containers will remain sealed when not in use and storage areas shall be secured (gated, locked, and/or guarded) at night and/or during non-construction periods.

Explosives: Storage of explosives is discussed in Appendix M – Blasting Plan Framework.

5.4.2 Container Labeling Requirements

The Construction Contractor(s) shall comply with the following labeling requirements for any container (including tanks) used on-site to store accumulated hazardous wastes. Figure P-1 shows an example of a hazardous waste label for on-site storage. The containers shall be labeled with the information below and as required in 40 CFR 262:

- The accumulation start date and/or the date the 90-day storage period began.
- The words: "Hazardous Waste".
- The composition and physical state of the waste.
- Warning words indicating the particular hazards of the waste, such as flammable, corrosive, reactive or toxic.
- The name and address of the facility that generated the waste.

HAZARDOUS WASTE
Contents: _____
Physical State (gas, liquid, solid): _____
Accumulation Start Date: _____
Hazards: _____
Name and Address of Generator: _____
_____
_____
Contact Person: _____
Telephone: _____
HANDLE WITH CARE!
CONTAINS HAZARDOUS OR TOXIC WASTES

Figure P-1. Sample Hazardous Waste Label for On-Site Storage

5.5 Disposal of Hazardous Wastes

Hazardous wastes will be collected regularly and disposed of in accordance with all applicable laws and regulations. The Construction Contractor shall determine details on the proper handling and disposal of hazardous waste and shall assign responsibility to specific individuals prior to construction of the Project.

Every effort will be made to minimize the production of hazardous waste during the Project, including, but not limited to, minimizing the amount of hazardous materials needed for the Project; using alternative non-hazardous substances when available; recycling usable material such as oils, paints, and batteries to the maximum extent; and filtering and reusing solvents and thinners whenever possible.

Any generator of hazardous waste must apply for a U.S. Environmental Protection Agency Identification (ID) Number. The ID number is needed to complete the Uniform Hazardous Waste Manifest to ship wastes off-site. A generator can accumulate hazardous wastes on-site for a period of up to 90 days without having to obtain a permit as a storage facility.

5.6 Contaminated Containers

Containers that once held hazardous materials as products or held hazardous wastes must be considered as potential hazardous wastes due to the possible presence of residual hazardous material. Regulations specify certain requirements, listed below, for the container to be handled as a non-hazardous waste.

- The containers must be empty, which means as much of the contents have been removed as possible using the practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating) so none will pour out in any orientation.
- A container that held compressed gas is empty when the pressure in the container approaches atmospheric.

- If empty containers are less than five gallons, they may be disposed of as a non-hazardous solid waste or scrapped.
- If empty containers are less than five gallons, they may be disposed of as a non-hazardous solid waste or scrapped.
- If the empty containers are greater than five gallons, they must be handled in the following manner: 1) returned to the vendor for re-use, 2) sent to a drum recycler for reconditioning, or 3) used or recycled on-site.
- All these actions must occur within one year of the container being emptied.

5.7 Waste Oil Filters

Used metal canister oil filters can be managed as non-hazardous wastes if:

- They are thoroughly drained of “free flowing” oil (oil exiting drop-by-drop is not considered “free flowing”).
- The filters are accumulated, stored, and transferred in a closed, rainproof container.
- The filters are transferred for the purposes of recycling.
- The filters are not terne-plated (an alloy of tin and lead).

Terne-plated oil filters are a hazardous waste, exhibiting the hazardous characteristic of lead. Terne-plated oil filters not recycled must be managed as a hazardous waste.

5.8 Used Lubricating Oil

Lubrication oil is considered a used oil, as listed below:

- Any oil that has been refined from crude oil and as a result of use has been contaminated with physical or chemical impurities.
- Any oil that has been refined from crude oil and, as a consequence of extended storage, spillage, or contamination with non-hazardous impurities such as dirt, rags, and water, is no longer useful to the original purchaser.
- Spent lubricating fluids that have been removed from a truck, heavy equipment, automobile, or bus.

Used oil may be a hazardous waste if:

- The concentrations of polychlorinated biphenyls (PCB) exceed 50 parts per million (ppm).
- Total halogens exceed 1,000 ppm.
- Mixed with a hazardous waste.

Used oil not being burned or recycled must be managed as a hazardous waste unless it is determined to be non-hazardous through laboratory analysis.

6.0 MITIGATION MEASURES

Standard mitigation measures, applied Project-wide, will address many of the concerns associated with hazardous substances and have been developed in accordance with the BLM standards. The mitigation measures for storage, handling, transport, use, and disposal of hazardous materials and wastes are presented in Appendix Z of the Plan of Development.

ATTACHMENT A
SAMPLE HAZARDOUS MATERIALS MANAGEMENT PLAN FRAMEWORK FORMS

CERTIFICATIONS, ACKNOWLEDGMENTS, AND DESIGNATION OF EMERGENCY COORDINATOR

The Construction Contractor(s) responsible for managing the material yards shall complete and submit the following information:

GENERAL INFORMATION

Business Name

Facility Street Address

( )

City County Zip Code Phone

Mailing Address (if different)

( )

City County Zip Code Phone

EMERGENCY COORDINATOR

	( )	( )	( )
Primary Emergency Coordinator	Business Phone	24-hour Phone	Pager/Cellular Phone
	( )	( )	( )
1st Alternate	Business Phone	24-hour Phone	Pager/Cellular Phone
	( )	( )	( )
2nd Alternate	Business Phone	24-hour Phone	Pager/Cellular Phone

Note: Certification is only necessary if an SPCC Plan is required (see Appendix N).

SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE

The Construction Contractor(s) shall identify all sources of potential spills including tank overflow, rupture, or leakage. Spill Prevention, Containment, and Countermeasure information must be included for all containers with a capacity of 55 gallons or greater that contain oil including petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste.

(1) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

(2) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

(3) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

(4) Material:_____ Total Quantity:_____
Location of use:_____
Potential direction of flow:_____ Maximum rate of flow:_____
Structures of equipment to contain spills:_____
_____

EMERGENCY CHECKLIST

** DIAL 911 FOR EMERGENCY RESPONSE**

Emergency Coordinator:	_____	( ) _____ (day phone)	( ) _____ (night phone)
First Alternate:	_____	( ) _____ (day phone)	( ) _____ (night phone)
Second Alternate:	_____	( ) _____ (day phone)	( ) _____ (night phone)

_____ _____
Contractor Telephone Number

_____
Address

EMERGENCY NUMBERS

Emergency Response
(Ambulance, Fire, Police, Sheriff, Utah Highway Patrol) call 911

Poison Control Center (800) 456-7707

Nearest Hospitals (2) _____ Phone: _____
_____ Phone: _____

Cleanup Contractor _____ Phone: _____

Other (specify) _____ Phone: _____

Other (specify) _____ Phone: _____

AGENCY NOTIFICATIONS (to be made by the Proponent's environmental manager or environmental field supervisor or emergency response coordinator)

Wyoming Department of Environmental Quality (307) 777-7937

Idaho Department of Environmental Quality: (208) 373-0502

Division of Environmental Response and Remediation

National Response Center (800) 424-8802

Other (specify) _____ Phone #: _____
Other (specify) _____ Phone # _____

Note: The Construction Contractor(s) shall verify and update the emergency numbers on this page before and during Project construction.

WEEKLY HAZARDOUS MATERIALS/WASTE INSPECTION LOG

For each item listed below, the Construction Contractor(s) shall indicate whether existing conditions are acceptable (A) or unacceptable (U). Resolution of all unacceptable conditions must be documented. The Construction Contractor(s) shall inspect all storage facilities on a regular basis, but not less than weekly. The Construction Contractor(s) shall keep records of all inspections on file.

I. STORAGE AREAS FOR FUELS, LUBRICANTS, AND CHEMCIALS

General

A/U

____ Material yard and storage areas secured
____ National Fire Protection Association 704 system symbol posted in storage area or at material yard entrance
____ Storage areas properly prepared and signed
____ No evidence of spilled or leaking materials
____ Incompatible materials separated
____ All containers labeled properly
____ All containers securely closed
____ All containers upright
____ No evidence of container bulging, damage, rust, or corrosion
____ Material Safety Data Sheets available
____ Hazardous Materials Management and Spill Prevention Plan available

Secondary Containment Areas

A/U

____ Containment berm intact and capable of holding 110 percent of material stored
____ Lining intact
____ No materials overhanging berms
____ No materials stored on berms
____ No flammable materials used for berms

Compressed Gases

A/U

____ Cylinders labeled with contents
____ Cylinders secured from falling
____ Oxygen stored at least 25 feet away from fuel
____ Cylinders in bulk storage are separated from incompatible materials by fire barriers or by appropriate distance

II. HAZARDOUS WASTE MANAGEMENT

Waste Container Storage

A/U

____ No evidence of spilled or leaking wastes
____ Adequate secondary containment for all wastes
____ Separate containers for each waste stream – no piles
____ Waste area not adjacent to combustibles or compressed gases
____ All containers securely closed
____ Bungs secured tightly
____ Open-top drum hoops secured
____ All containers upright
____ No evidence of container bulging, corrosion
____ No severe container damage or rust
____ Containers are compatible with waste (e.g., plastic liner for corrosives, metal liner for solvents)
____ No smoking and general danger/warning signs posted

Waste Container Labeling

A/U

____ Containers properly labeled
____ Name, address, and EPA ID number or ID Number of generator listed
____ Accumulation start date listed
____ Storage start date listed
____ Chemical and physical composition of waste listed
____ Hazardous properties listed

Nonhazardous Waste Areas

A/U

____ No litter in material yard
____ No hazardous wastes with trash (e.g., contaminated soil, oily rags, or other oily materials)
____ Empty oil and aerosol containers for disposal as non-hazardous waste are completely emptied

III. EMERGENCY RESPONSE EQUIPMENT

A/U

____ Shovels
____ Absorbent material
____ Personal protective equipment (tyvek suit, gloves, goggles and booties, as appropriate)
____ Fire-fighting equipment
____ First aid supplies (e.g., medical supplies, squeeze bottle eye wash)
____ Communication equipment
____ Bung wrench (non-sparking)

IV. CORRECTIVE ACTIONS TAKEN (Required for all unacceptable conditions)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Date: _____ **Company (print):**_____

Inspected by (print):_____

Signature:_____

APPENDIX Q
FRAMEWORK CONSTRUCTION EMERGENCY PREPAREDNESS AND RESPONSE PLAN

Appendix Q

Framework Emergency Response Preparedness and Response Plan

Gateway West Transmission Line Project

Prepared by:

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Salt Lake City, UT 84116

and

Idaho Power Company
1221 West Idaho Street
Boise, ID 83702

January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current (AC) electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, staging areas, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), and the states of Idaho and Wyoming.

The Emergency Preparedness and Response Plan Framework is intended to provide an overview of methods to be implemented if the need for emergency management is imminent. This document discusses the existing support structure, chain of command, and emergency communications protocols to be used as a guide for an Emergency Preparedness and Response Plan to be completed by the Companies' Construction Contractor and approved by the BLM. More specific emergency procedures for blasting, fire, and hazardous materials are included in Appendices M – Framework Blasting Plan, O - Framework Fire Prevention and Suppression Plan, and P – Framework Hazardous Materials Management Plan.

Emergency response procedures will be implemented for the following potential events, or similar events:

- Downed transmission lines, structures, or equipment failure
- Fires
- Sudden loss of power
- Natural disasters
- Serious personal injury

2.0 PURPOSE

The purpose of an Emergency Preparedness and Response Plan is to provide clear procedures and information to enable the Companies, the Construction Contractor, the Compliance Inspection Contractor (CIC), and BLM Project Manager to prepare for and effectively respond to emergency situations. The primary objective of this plan is to prevent adverse impacts to human health and safety, property, and the environment that could potentially occur as a result of the construction, operation, and maintenance of Gateway West Transmission Line Project (Project).

3.0 REGULATORY COMPLIANCE

Health and safety guidelines related to high-voltage transmission lines are provided by a number of sources, including the National Electric Safety Code, American National Standards Institute, American Medical Association Council on Scientific Affairs, American Conference of Governmental Industrial Hygienists, various state regulations, and other organizations. The Occupational Safety and Health Administration (OSHA) also provide regulations for construction activities.

4.0 RESPONSIBILITIES

The Companies and the Construction Contractor are responsible for the effective response to any emergency situation or event related to the construction, operation, and maintenance of the Project. To ensure a coordinated and effective response, a chain of command will be developed as part of the Emergency Preparedness and Response Plan and followed in the event of an emergency.

In the establishment of a chain of command, considerations such as the level of activation and the participation necessary to respond to specific situations are to be taken into account. The following are factors for the establishment of a chain of command:

- Type of event (natural, environmental, electrical supply/outage, external forces)
- Severity and geographic area (multiple or combination of events)
- Anticipated duration
- Multi-division/discipline response required
- External agency coordination

5.0 RESPONSE COORDINATION

The amount of resources and coordination required for response to a specific hazard or emergency is determined by type, severity, location, and duration of the event. Most events require managing at the field operations level and will require increasing resource requirements to match the severity and duration of the event. This emergency management organization will be included as part of this Emergency Preparedness and Response Plan and will provide increasing levels of resources and the coordination necessary to support immediate or escalating emergency events.

In the event of an emergency, crews will be dispatched quickly to repair or replace any damaged equipment. Repair of the transmission line will have priority under emergency conditions and all reasonable efforts will be made to protect plants, wildlife, and other resources. Reclamation procedures following completion of repair work will be similar to those prescribed during construction.

6.0 EMERGENCY COMMUNICATIONS

Effective communication and exchange of information is essential in every emergency response. Misdirected, incorrect, or untimely information can be detrimental and even increase the threat to life or property. As an emergency event escalates, the rapid increase of information creates chaos and confusion. Simple communication diagrams can help to alleviate this situation.

6.1 Emergency Contact List

In case of emergency, call 911 first. Additional potential emergency contacts are listed in Table 6-1 and should be called as appropriate, depending on the situation (e.g., fire, injury). Further guidance on emergency response, notification, and reporting protocols are included in Appendices M – Framework Blasting Plan, O - Framework Fire Prevention and Suppression Plan, and P – Framework Hazardous Materials Management Plan.

Table Q-1. Emergency Contact List

IN CASE OF EMERGENCY - Call 911		
FIRE – Call 911 First		
Counties: Primary Contact: TBD Secondary Contact: TBD	**BLM Field Offices:** TBD USFS Ranger Districts TBD	**State Interagency Fire Centers:** TBD
LAW ENFORCEMENT		
County Sheriffs: TBD	**State Highway Patrols:** TBD	
POISON CONTROL		
National/State Poison Control Centers: TBD		
HOSPITALS AND CLINICS		
County and Municipal as Applicable: **TBD**		
HAZARDOUS SPILL RESPONSE AND NOTIFICATION – Call 911 Directly after 911 notification, the following mandatory notifications will be made by the CIC. Select and notify the appropriate government agencies based on geographic location of the spill site. Also see Appendix P – Framework Hazardous Materials Management Plan.		
Counties: TBD	**State Divisions of Emergency Services & Homeland Security:** TBD	**National Response Center:** TBD
State Departments of Environmental Quality: TBD		
OTHER NUMBERS		
Counties Fire Dispatch TBD	**BLM Authorized Officer or Representative:** TBD	**The Construction Contractor Manager:** TBD

This Emergency Contact List shall be verified at the beginning of construction and updated throughout the Project by the Construction Contractor to ensure accurate contact information.

7.0 HAZARD IDENTIFICATIONS AND KEY RESPONSE CRITERIA

The right-of-way corridor for the Project can pose potential hazards or threats in association with construction activities. The most effective response to any situation is awareness of the hazard, its potential effects and consequences, and an understanding of the resources and actions necessary to respond. It would be unreasonable to list all

the potential hazards and detail each response. Responses to different events may vary as the event evolves, but response methods and responsibilities to be determined in the Emergency Preparedness and Response Plan will be essential for any possible situation.

Effective Emergency Response training is based on plausible scenarios and then developing the understanding, elements, and actions necessary to respond. Scenarios to consider are electrocution, fatality, massive equipment failure, structure failure, weather/environment, etc.

APPENDIX R
FRAMEWORK OPERATIONS, MAINTENANCE, AND EMERGENCY RESPONSE PLAN

Appendix R

Framework Operations, Maintenance, and Emergency Response Plan

Gateway West Transmission Line Project

Prepared by:

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current electric transmission system, called the Gateway West Transmission Line Project (Project), consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving towers, access roads, multiuse areas, fly yards, and pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

This document presents the plan proposed by the Companies for conducting routine and emergency operation and maintenance (O&M) activities for the Project. This plan is intended to ensure the following:

- O&M activities comply with applicable state and federal laws and policies;
- Consistency across and within federal jurisdictions;
- The Companies are able to access the transmission line and ancillary facilities and implement the necessary O&M activities in a timely, cost effective and safe manner;
- Impacts to the environment are avoided where practicable or are minimized; and
- The Companies comply with the North American Electric Reliability Corporation (NERC) and Western Electric Coordinating Council (WECC) reliability and service requirements.

NERC's mission is to ensure the reliability of the bulk power system in North America. To achieve that, NERC develops and enforces reliability standards; assesses adequacy annually via 10-year and seasonal forecasts; monitors the bulk power system; evaluates users, owners, and operators users for preparedness; and educates, trains, and certifies industry personnel. NERC works with eight regional entities to improve the reliability of the bulk power system. The members of the regional entities come from all segments of the electric industry: investor-owned utilities; federal power agencies; rural electric cooperatives; state, municipal and provincial utilities; independent power producers; power marketers; and end-use customers. These entities account for virtually all the electricity supplied in the United States, Canada, and a portion of Baja California Norte, Mexico.

The Western Systems Coordinating Council (WSCC) was formed with the signing of the WSCC Agreement on August 14, 1967 by 40 electric power systems. Those "charter

members" represented the electric power systems engaged in bulk power generation and/or transmission serving all or part of the 14 Western States and British Columbia, Canada. The WECC was formed on April 18, 2002, by the merger of WSCC, Southwest Regional Transmission Association (SWRTA), and Western Regional Transmission Association (WRTA). WECC's interconnection-wide focus is intended to complement current efforts to form Regional Transmission Organizations (RTO) in various parts of the West.

WECC and the nine other regional reliability councils were formed due to national concern regarding the reliability of the interconnected bulk power systems, the ability to operate these systems without widespread failures in electric service, and the need to foster the preservation of reliability through a formal organization.

WECC members have long recognized the many benefits of interconnected system operation. During the mid-1960s, expansion of interconnecting transmission lines among systems in the western United States and western Canada resulted in the complete interconnection of the entire WECC region. As this expansion was taking place, systems generally adopted the Operating Guides of the North American Power Systems Interconnection Committee (NAPSIC) to promote consistent operating practices within the region. NAPSIC later became the NERC Operating Committee.

The reliability management system (RMS) was created as a way to enforce compliance. This contract obligates entities to abide by certain critical reliability standards and to provide the data needed to verify compliance. The contract also imposes sanctions, both monetary and non-monetary according to a set schedule, for violations of reliability criteria. Currently all control areas but one are signatories to the RMS agreement, and almost 90 percent of the customer load in the Western Interconnection is served under RMS.

This Plan addresses routine, corrective and emergency response activities for O&M of the transmission line and its ancillary facilities. This Plan will be reviewed and updated as necessary and as agreed to by the Companies and the BLM, Forest Service, and Bureau of Reclamation (Agencies).

2.0 OPERATION AND MAINTENANCE

The Companies perform a number of activities to keep transmission lines operational and in good repair. Most of these activities, such as those for routine patrols, inspections, or scheduled maintenance, are planned in advance. However, there will be an occasional need for emergency response in cases where public safety and property are threatened, to prevent imminent damage to the transmission line and ancillary facilities, or to restore service in the event of an outage.

Routine, corrective, and emergency response activities will be conducted in accordance with this O&M Plan without previous notification or approval from the Agencies. Exceptions where prior notification and approval are required are described in Section 4. Maintenance activities outside of the right-of-way (ROW), outside of established service and access roads or other Project related ancillary facilities, or that are not identified in this Plan will not be conducted until approved by the Agencies. An exception to this would be when emergency action/maintenance is needed which

requires some outside ROW work to be completed to ensure reliable power to customers.

Typical schedules and equipment used for the O&M activities are provided below. However, additional vehicles and equipment may be necessary depending on the terrain, site access, and necessary maintenance work. Work may also be conducted outside of the typical schedule; schedule changes may occur as a result of weather, manpower, equipment availability, budgets, and other factors.

2.1 Routine Maintenance (Preventive Maintenance)

Routine maintenance activities are conducted on a regular basis and have been carried out historically to identify and repair any deficiencies. These activities do not damage vegetation or soil outside of the ROW, do not adversely impact sensitive resources — including known federal and state listed species, waters of the United States, and cultural resources — and do not require land manager approval. Personnel are generally present in any one area for less than one day. The following are examples of routine maintenance activities:

- Routine air patrols from a helicopter to inspect for structural and conductor defects, conductor clearance problems and hazardous trees.
- Routine ground patrols to inspect structural and conductor components. Such inspections generally require either an all-terrain vehicle (ATV) or pickup and possibly additional support vehicles traveling on access and service roads and may rely on either direct line-of-sight or binoculars. In some cases, the inspector may walk the ROW. Patrols are typically conducted in the spring and fall. Follow-up maintenance is scheduled depending on the severity of the problem — either as soon as possible or as part of routine scheduled maintenance.
- Climbing surveys may be necessary to inspect hardware or make repairs. Personnel generally access these structures by pickup, ATV, or on foot.
- Structure or conductor maintenance typically occurs from a bucket truck or boom truck. The maintenance vehicle may be located on or off a road, and no-to-minimal grading is necessary to create a safe work area.
- Cathodic protection surveys to check the integrity and functionality of the anodes and ground beds. These surveys typically require personnel to use an ATV or pickup and make brief stops.
- Routine cyclical vegetation clearing to trim or remove tall shrubs and trees to ensure adequate ground-to-conductor clearances. Vegetation clearing cycles vary from 3 to 10 years or as needed (dependent upon the vegetation present). Personnel generally access the area by pickup, ATV, or on foot; use chainsaws to clear the vegetation; and typically spend less than half a day in any one specific area. In some cases vegetation may be cleared using mechanical means.
- Removal of individual trees or snags (hazard trees) that pose a risk of falling into conductors or structures and causing outages or fires. Personnel generally access hazard trees by truck, ATV, or by foot from an access or service road, and cut them with a chainsaw or similar tool. Any felled trees or snags are left in

place as sources of large woody debris or as previously directed by the land management agency. Felled green trees are limbed to reduce fire hazard.

- Wood poles are periodically treated to retard rotting and structural degradation. Wooden poles are limited to the distribution lines serving substations and regeneration stations on this Project. Personnel typically access structures by pickup, ATV, or on foot; inspect and test (including the subsurface) the poles; and then treat them by injecting preservatives into the poles if required. Wood pole inspections and treatments generally occur on a 10-year cycle.
- Routine road maintenance, such as blading (as needed) the road to improve surface condition and drainage, or removing minor physical barriers, such as rocks and debris. All initial road maintenance is performed by field crews which typically use ATVs, pickups, chainsaws, and hand tools. Trees and brush are cut off at grade to minimize damage to vehicles. Slash, deadfall, and boulders are placed at the edge of the road or down slope of the road bed, depending on site topography, to serve as a filtering windrow to minimize erosion and sedimentation. Smaller vegetation (e.g., grasses) is left in the road bed unless it is too tall, hinders access, or could be construed as a fire hazard to O&M vehicles.
- Vegetation removal may be required on service roads to allow the necessary clearance for access and provide for worker safety. Field crews access the service roads by pickup or ATV and use chainsaws and hand tools to clear the vegetation. Where practicable and feasible, mechanical methods may be used.
- Installation of bird protection devices, bird perch discouragers, and the relocation or removal of bird problem nests posing imminent fire or outage risk.
- Noxious weed control and vegetation management activities that include the use of herbicides. Herbicide use is based on agreement with the landowner or federal land management agency for the parcel in question and the chemicals used are agreed to in advance.

2.2 Corrective Maintenance

Corrective maintenance activities are relatively large-scale efforts that occur infrequently, may result in more extensive vegetation clearing or earth movement, and may include rehabilitation seeding and associated activities (e.g., measures to control noxious weeds). Personnel are generally present in any one location or area for a prolonged time, generally more than one day. The following are examples of corrective maintenance:

- Non-cyclical vegetation clearing to remove saplings or larger trees in the ROW.
- Structure or conductor maintenance in which earth must be moved, such as the creation of a landing pad for construction or maintenance equipment.
- Structure (e.g., cross-arm, insulator, structure) replacement.
- Road maintenance involving erosion control, water drainage installation or repair (such as culverts or rock crossings), road rehabilitation after major disturbances

(such as slumping or a storm event), or other road maintenance requiring heavy equipment (not including routine grading).

- Follow-up restoration activities, such as seeding, noxious weed control, and erosion control.
- Conductor repair or replacement, which requires the use of several types of trucks and equipment and grading to create a safe work area to hang and pull the conductor into place.

3.0 EMERGENCY SITUATIONS

Emergency situations are those conditions that may result in imminent or direct threats to public safety or threaten or impair the Companies' ability to provide reliable transmission service to its customers. Emergency situations may include:

- Failure of conductor splices;
- Damage to structures or conductors from wildfire, high winds, ice, or other weather-related conditions;
- Line or system outages or fire hazards caused by trees falling into conductors;
- Breaking or imminent failure of cross-arms or insulators, which could, or does, cause conductor failure; or
- Damage to structures or conductors from vandalism.

In the case of an emergency where life or substantial property is at risk or there is a potential or actual interruption in service, the Companies will promptly respond to the emergency and conduct any and all activities, including emergency repair requiring heavy equipment access to the structures or other ancillary facilities, needed to remedy the emergency and will implement feasible and practicable environmental protection measures (EPMs). Follow-up actions will follow this Plan.

4.0 ENVIRONMENTAL PROTECTION MEASURES

O&M activities are planned to minimize impacts to the environment. EPMs will be implemented by the Companies during routine and corrective O&M activities and, to the extent possible, during emergency situations.

4.1 Service Road Management

Transmission line service roads are necessary for access to, and maintenance of, transmission lines, structures or ancillary facilities, but they are not part of the public or federal network of roads. They are generally closed to the public and will be maintained by the Companies.

During routine operations, vehicular access will be needed to reach each structure for periodic inspections and maintenance and to areas of forest or tall shrubs to control vegetation in the ROW for safe operation. The Companies plan to employ live-line maintenance techniques on the transmission line (see Appendix B, Section 3.1.3). Live line maintenance and repair techniques require the utilization of high-reach bucket trucks

and other trucks and equipment. Roads required as routine service roads for the operational life of the Project will be revegetated following construction but will not be recontoured; they would be maintained free of trees and shrubs for a minimum 8-foot width.

For non-routine maintenance requiring access by larger vehicles, the full width of the access road may be used. Roads would be repaired, as necessary, but would not be routinely graded. In order to preserve the ability to enter rapidly, the road structure (cuts and fills) would be left in place. In an emergency (i.e., in the event of a tower or conductor failure) full emergency access, including cranes and other heavy equipment, will be needed. Based on historical reliability of h-frame and lattice structures, it is anticipated that only a small fraction of the tower sites will require emergency access over the life of the Project.

Other roads may be travelled over by the Companies during operations. However, these roads are not classified as service roads and will not be maintained by the Companies except as noted. These include:

- Public roads, including state highways and county roads—These roads are for public use, and the appropriate state or county entity maintains them.
- Open roads on federal land—The appropriate federal agency (typically BLM or Forest Service) maintains these roads, which are open to the public. These roads, including drainage features, cuts, and fill slopes, would be repaired by the Companies if damaged during O&M activities but not maintained on a routine basis.
- Closed federal land roads—These roads are still needed for administrative or emergency functions, but they have been closed to the public because of management policies to protect natural resources or reduce maintenance costs. If utilized during O&M activities The Companies would assume some maintenance responsibilities proportionate to their use for O&M purposes.

The Companies typically perform two types of road maintenance activities: 1) vegetation and debris clearing to maintain safe access and 2) repairs using heavy equipment. Roads are inspected generally every 3 to 6 years and repairs are made as necessary. Typically, a small crew uses hand tools to cut small brush and trees (greater than 12 inches tall); remove dead-fall and debris; and repair and replace signs on access and service roads. Crews also prepare an inventory of road damage that will require ground disturbance (e.g., repair of a failed bank), and repair work is scheduled accordingly (typically the following year). Inspections and maintenance are typically conducted from spring through summer, when roads are clear of snow.

The Companies will implement the O&M EPMs described in Appendix Z of the POD when maintaining roads and follow the seasonal restrictions by time and location for big game crucial winter range time shown in Table R-1.

Table R-1. Company Proposed Seasonal O&M Restrictions by Time and Location for Big Game Crucial Winter Range

Field Office	Seasonal Timing Description	Segment Proposed	Species Mile Marker where Seasonal Restriction is Applicable (mileage)				
			Mule Deer	Elk	Antelope	Moose	Bighorn Sheep
BLM Casper Field Office	No surface-disturbing and wildlife-disturbing activities are allowed from November 15 through April 30 on all crucial big game winter ranges.	1W(a)	19.0 – 26.2				
		1W(c)	6.1 – 20.3		2.4 – 6.7		
BLM Rawlins Field Office	No surface disturbance and distrupting activities within big game crucial winter range are allowed from November 15 to April 30.	1W(a)	71.7 – 77.88 (end)		57.4 – 63.4		
					76.7 – 77.88 (end)		
		1W(c)	67.1 – 77.81 (end)		51.5 – 57.7		
					70.2 – 77.81 (end)		
		2	0 – 1.5		0 – 9.0		
			25.3 – 28.6		29.1 – 37.7		
			32.7 – 37.6		62.6 – 67.9		
			44.0 – 51.9				
		3			18.7 – 22.6		
BLM Rock Springs Field Office	Big game winter ranges would be protected to ensure continued usability by limiting activities during crucial seasons of use and by limiting the amount of habitat disturbed	3	4.7 – 7.7		22.6 – 45.27 (end)		
		4 (Anticline to Jim Bridger tie-in)			0 – 3.0		
					4.9 – 5.02 (end)		
		4			0 – 1.1		
					6.2 – 16.2		
					19.0 – 20.8		
					24.8 – 30.9		
					51.8 – 57.8		
BLM Kemmerer Field Office	(winter and parturition)	4	117.0 – 123.1	109.5 – 119	83.5 – 85.1	106.0 – 107.2	
						115.6 – 118.9	
BLM Pocatello Field Office	None Identified	4	132.5 – 147.6	141.4 – 144.7			
			153.7 – 161.1	158.5 – 162.1			
			169.6 – 173.9	170.9 – 173.8			
			176.5 – 177.1				
			178.7 – 184.0				
			186.0 – 196.2				
		5	3.2 – 11.9				
			20.3 – 21.1				

Table R-1. Company Proposed Seasonal O&M Restrictions by Time and Location for Big Game Crucial Winter Range (continued)

Field Office	Seasonal Timing Description	Segment Proposed	Species Mile Marker where Seasonal Restriction is Applicable (mileage)				
			Mule Deer	Elk	Antelope	Moose	Bighorn Sheep
BLM Pocatello Field Office (cont'd)		5 (cont'd)	26.9 – 32.2				
			34.0 – 49.5				
			50.0 – 52.2				
		7	3.1 – 11.0				
			19.8 – 21.1				
			26.4 – 31.9				
			33.5 – 40.9				
			44.0 – 46.8				
BLM Burley Field Office	None Identified	5	53.7 – 55.0				
		7	51.1 – 56.9				
			76.4 – 81.3				
			82.1 – 88.5				
			109.7 – 118.0				
		9	0 – 10.0				
BLM Shoshone Field Office	None Identified	8	0 – 0.3				
			4.5 – 16.4				
			24.3 – 45.3				
		10	15.7 – 19.1				
			7.6 -13.2				
			0 – 1.6				
BLM Four Rivers Field Office	Cascade RMP - No surface occupancy during December 1 through April 1 in crucial habitat, Kuna MFP – Restricted/closed in critical winter range if necessary – November 15 through April 15.	8	45.3 – 56.7	74.4 – 90.0	72.1 – 79.6		124.0 – 125.5
BLM Owyhee Field Office	None Identified	9			137.1 – 159.4		

4.2 Vegetation Management

The Companies manage vegetation within their ROWs and in access and service roads to minimize interference with the flow of electricity, to address safety issues, and to facilitate O&M activities. The vegetation management complies with the National Electric Safety Code, ANSI A300 Part 7: American Operations Integrated Vegetation Management and Electric Utility Rights-of-Way and the ISA Best Management Practices. Additionally, the Companies comply with vegetation management standards required by the NERC and WECC vegetation management guidelines; failure to comply with these requirements can result in substantial financial penalties.

Objectives of Integrated Vegetation Management (IVM) on utility ROWs are to establish sustainable plant communities that are compatible with the electric facilities. The intent is to provide stable, low growing plant ecotypes that reduce fire risk and maintain safe access to the line and associated facilities. In general, this involves removing tall growing tree species. Establishment of vegetation will also reduce the potential for noxious weeds to become established in the ROW.

IVM has a series of control methods used to achieve the aforementioned objectives. These include, but are not limited to:

- Manual Control Methods: workers with hand-carried tools, including power tools, used in selective or environmentally sensitive areas.
- Mechanical Control Methods: conducted with a large variety of different types of machines that are efficient in clearing dense stands of vegetation.
- Chemical Control Methods:
  - Tree Growth Regulators that are designed to reduce the natural growth rates by interfering with natural plant processes.
  - Herbicides: Noxious or invasive weeds along with stumps and saplings of tall growing species may be controlled with EPA approved herbicides.
- Biological Control Methods: use of natural processes to control undesirable vegetation.
- Cultural Control Methods: take advantage of seed banks of native, compatible species lying dormant on-site; this encourages the establishment of early successional plant communities.

For the purposes of IVM, the ROW has been divided into the wire zone and the border zone as shown in Figure R-1 and as defined below:

- Wire Zone – The ROW portion directly under the wires and 10 feet beyond the outside phases.
- Border Zone – The outside edge of the wire zone to the edge of the ROW.

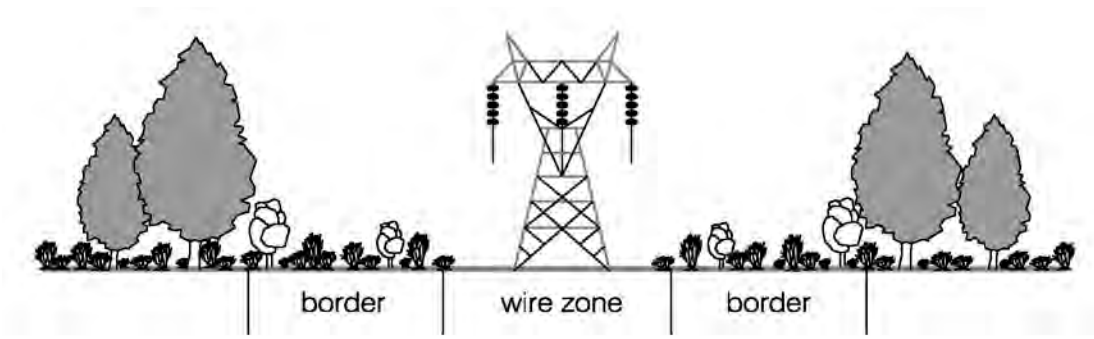


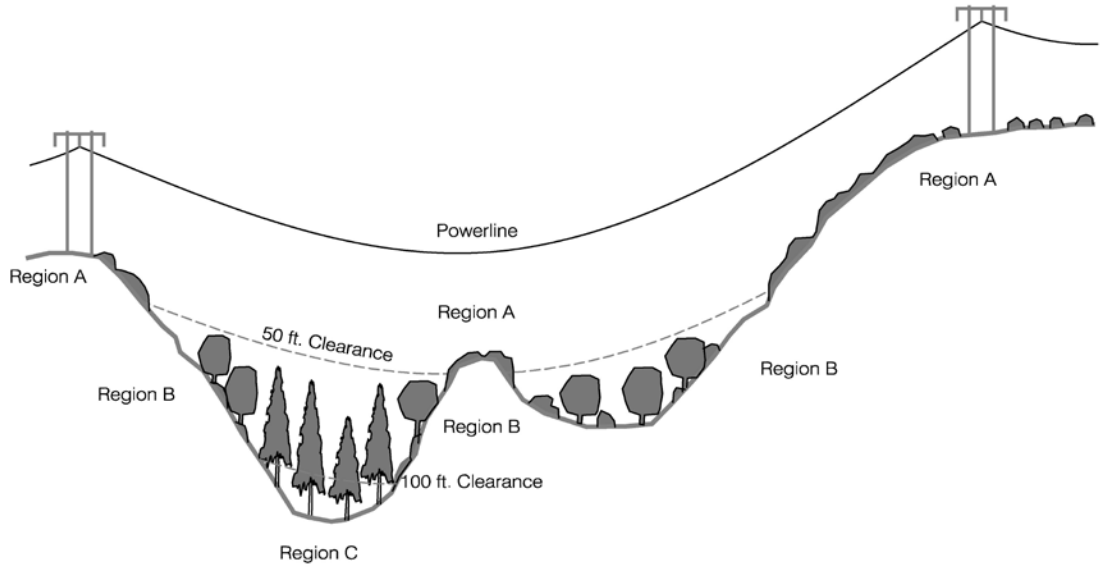
Figure R-1. Transmission Line Vegetation Management Zones.

The IVM control method(s) implemented may be directed by the distance of the conductor to the ground surface (based on maximum calculated sag) as shown on Table R-2 and Figure R-2, and is defined by region as follows: Region A, where the lines are less than 50 feet off the ground, Region B where the lines are 50 to 100 feet off the ground, and Region C where lines are greater than 100 feet off the ground. Table R-2 indicates the heights at which vegetation will be managed, based on zones and regions.

Table R-2. IVM Recommended Management Heights in the Wire Zone and Regions

Zone	Region		
	A	**B**	**C**
Wire Zone	Remove All Trees	Remove all trees if less than 50 feet clearance between top of tree and conductor.	Remove all trees if less than 50 feet clearance between top of tree and conductor.
Border Zone	Remove all trees greater than 25 feet in height.	Removal of any hazard trees*.	Removal of any hazard trees*.

* Hazard tree is defined as any tree that is structurally unsound that could strike a target (any utility related infrastructure) when it falls. Hazard trees can occur outside of the ROW and are typically removed annually.



Region Definitions:
Region A: Where conductor to ground distance is less than 50 feet.
Region B: Where conductor to ground distance is more than 50 feet, but less than 100 feet.
Region C: Where conductor to ground distance is greater than 100 feet.

Figure R-2. Vegetation Management Regions Based on Line Height

Generally, the Companies propose to conduct IVM control methods/activities within the ROW every 3 to 10 years, depending on a variety of conditions such as topography, vegetation type and growth rates, and the potential for vegetation to interfere with safe operation of the line prior to the next clearing cycle. The Companies propose to use a variety of IVM control methods and have developed the O&M EPMs described in Appendix Z of the POD for maintaining vegetation within the transmission line ROW.

4.3 Noxious Weed Control

Maintenance vehicles, ATVs, and equipment have the potential to transport weed seeds from one area to another via dirt and debris that inadvertently collects on the equipment. The Companies will implement the O&M EPMs described in Appendix Z of the POD.

4.4 Protection Measures for Aquatic Resources

Streams or watercourses with definable streambeds or stream banks, regardless of whether there is flowing water, are important because they provide habitat for a variety of animal and plant species. The Project transmission lines parallel and cross numerous waterways and riparian areas. Of critical importance is the protection of habitat for sensitive plant and animal species, including aquatic species. The Companies propose the O&M EPMs described in Appendix Z of the POD to protect aquatic resources while maintaining vegetation in and around important aquatic resources.

4.5 Protection for Threatened, Endangered, and Sensitive Plant and Animal Species

The Companies have taken a thorough, systematic approach in providing protection for threatened, endangered, and sensitive plant and animal species. After taking into consideration wildlife and plant resources as well as other important resources during siting and routing, the Companies recognized the need for additional measures to minimize the impact from construction of the Project and submitted a Wildlife Conservation Measures Plan.

The Companies will implement the O&M measures described in Appendix Z of the POD to protect plant and animal species during routine and corrective O&M activities:

Nesting, roosting, and perching birds can cause power outages if their feces or nesting materials interfere with conductors, insulators, or air gap. The Companies, in consultation with the U.S Fish and Wildlife Service (USFWS), manage nesting on transmission line structures to reduce conflicts. Such management may include relocating nests, modifying structures, and providing nesting platforms. The Companies will continue to consult with the USFWS, and when a problem nest is located on federal or state lands, the appropriate land management agency.

If an emergency occurs and access is immediately needed, the federal agency will be notified as soon as possible. Depending on the urgency, the agency may not have responded until after the repair work has begun. Timing restrictions may not be adhered to, but the other measures listed above will be followed to the extent possible.

4.6 Restoration and Revegetation

The Reclamation, Revegetation, and Weed Management Plan to be written by the Companies and approved by the appropriate agency with regulatory authority over lands within the Project area, will include site-specific restoration measures, species to be replanted, and monitoring. It combines the Companies' best management practices (BMPs) with site-specific mitigation developed in consultation with the agencies. After ground-disturbing maintenance activities, the Companies propose to use the O&M EPMs described in Appendix Z of the POD to ensure that appropriate reclamation and revegetation is implemented, and to prevent accidental introduction or transport of noxious weeds along the ROW.

4.7 Protection Measures for Cultural Resources

As part of the environmental impact statement preparation, and prior to any construction activities, a 100 percent pedestrian survey of the ROW and areas proposed for disturbance outside the ROW will have cultural and/or paleontological surveys conducted. All cultural and/or paleontological resources or historic or prehistoric sites or objects discovered by the Companies, or their designated contractor, will be immediately reported. Additional surveys will not be conducted for O&M activities if the work area was previously surveyed prior to construction of the line and ancillary facilities.

If new probable historic, cultural, or paleontological resources are discovered during routine or corrective O&M activities, potentially destructive work within 300 feet of the find will be halted and the appropriate federal or state agency notified. The Companies will also immediately implement the O&M measures described in Appendix Z of the POD.

a) Flagging will be erected to prohibit potentially destructive activities.

b) The Companies' archaeologist or designated archaeologist will make a preliminary assessment of the newly discovered resource.

c) If the archaeologist determines that the discovery represents a potential new site or an undocumented feature of a documented site, the appropriate federal or state agency will be notified.

d) O&M will not resume in the identified area until cleared by the appropriate Agency.

Regarding routine and corrective, the Companies propose to use the O&M EPMs presented in the POD to ensure that appropriate protection to cultural resources is given.

All human interments will be treated with the respect accorded them by state and federal laws applying to human remains. If human remains are discovered during O&M activities, the Companies will stop all work in the immediate area to protect the integrity of the find and notify the appropriate law enforcement agency and the landowner or land management agency as soon as possible. In addition, the location of the find will be flagged or fenced off to protect it from further impacts. The law enforcement agency or coroner will determine the age of the human remains. If the remains are not modern,

then the Companies will work with the federal or state agency to determine what mitigation is necessary and, once the mitigation is complete, resume work in the area.

4.8 Fire Protection

Fire regulations on federally managed lands are generally in effect between April 1 and October 31 and at other times with unusual weather conditions. O&M activities will follow the requirements and procedures specified by the appropriate federal or state agency when conducted on federal or state lands.

The Companies are responsible for inspecting the transmission lines for fire hazards. When working during fire season, the Companies and/or their contractor will carry the following suppression tools and equipment:

- All power-driven equipment shall be equipped with one (1) fire extinguisher having a UL rating of at least 5 BC and one “D” handled or long handled round point shovel, size “0” or larger;
- Each motor patrol, truck, and passenger-carrying vehicle shall be equipped with a double-bit axe or Pulaski, 31/2 pounds or larger; and
- Each internal combustion engine shall be equipped with a spark arrester that meets the federal land managing agency’s standards.

The Companies and the federal or state land manager will work cooperatively to evaluate request for Industrial Fire Precaution Level (IFPL) Waivers that would allow the Companies and/or their contractors to continue working when certain fire restrictions are in place.

Transmission lines in the western United States may be interconnected with the lines of other utilities. Continued operation of these lines provides stability to the entire interconnected Western transmission system. In addition, continuous operation of the transmission lines is necessary for the Companies to supply electric service to their customers. Therefore, the federal or state agency will use its best efforts to avoid using fire suppression techniques that could take the lines out of service. If the federal or state land manager determines that it must use fire suppression techniques, they will notify the Companies of any and all fire suppression efforts that could come into close proximity (2 miles) with the transmission lines prior to initiating those efforts.

The Agencies will notify the Companies if they are planning a prescribed burn within two (2) miles of the transmission line or ancillary facilities.

4.9 Emergency Notification Procedures

If the Companies become aware of an emergency situation that is caused by a fire on or threatening federal or state land that could damage the transmission lines or their operation, they will notify the appropriate federal contact. Likewise, if the federal or state land manager becomes aware of an emergency situation that is caused by a fire on or threatening federal or state land and that could damage the transmission lines or their operation, it will notify the Companies.

5.0 O&M PLAN HISTORY

The O&M Plan is a living document and changes are anticipated after the plan's acceptance. Amendments will include the date on which changes were made, a brief description of those changes, and the signatures of authorized representatives of the Companies and the agency accepting the changes.

This plan and its updates will be distributed to the following BLM and Forest Service field offices (see Table R-3). Additionally, the Plan will be made available, as appropriate, to Company personnel and their contractors. The Companies will be responsible for distributing updates when they are made. If the federal agencies identify additional parties that require a copy of the Plan, they are responsible for distribution and ensuring that party has the current plan.

In addition, the following items will become part of this section of the O&M plan:

- List of road closures, and gate locations.
- Maps containing known locations of sensitive plant and animal species mapped as "sensitive areas" without specifying the resource.
- Known locations of cultural features mapped as "sensitive areas" without specifying the resource.

Table R-3. O&M Contact List

Department/Role	Contact Name	Telephone	Cell Phone	Email
Idaho BLM				
Boise District Office & Four Rivers Field Office 3948 Development Avenue Boise, ID 83706	Aden Seidlitz (DO) Terry Humphreys (FO)	(208) 384-3391 (208) 384-3300	(208) 850-5268 None	aiden_seidlitz@blm.gov terry_humphreys@blm.gov
Twin Falls District 440 W F Street Shoshone, ID 83352	Jenifer Arnold	(208) 736-2382	(208) 308-1003	jenifer_arnold@blm.gov
Bruneau Field Office 3948 Development Avenue Boise, ID 83706	Cecil Werven	(208) 384-3455	(208) 384-3493	cecil_werven@blm.gov
Owyhee Field Office 20 First Avenue West Marsing, ID 83639	Kelley Moore	(208) 896-5917	(208) 896-5940	kelly_moore@blm.gov
Jarbidge Field Office 440 W F Street Shoshone, ID 83352	Brian Davis	(208) 736-2380	None	bdavis@blm.gov
Burley Field Office 15 East 200 South Burley, ID 83318	Mike Courtney	(208) 677-6635	None	mike_courtney@blm.gov
Shoshone Field Office 440 W F Street Shoshone, ID 83352	Ruth Miller	(208) 732-7227	None	ruth_miller@blm.gov
Idaho Falls District 4350 Cliffs Drive Pocatello, ID 83204	Joe Kraayenbrink	(208) 524-7500	None	joe_kraayenbrink@blm.gov
Pocatello Field Office 4350 Cliffs Drive Pocatello, ID 83204	David Pacioretty	(208) 478-6341	None	david_pacioretty@blm.gov

Table R-3. O&M Contact List (continued)

Department/Role	Contact Name	Telephone	Cell Phone	Email
Wyoming BLM				
Wyoming State Office PO Box 1828 Cheyenne, WY 82003	Diane Schurman	(307) 775-6189	None	diane_schurman@blm.gov
Rawlins Field Office PO Box 2407 Rawlins, WY 82301	Matt Simons	(307) 328-4282	None	matt_simons@blm.gov
Rock Springs Field Office 280 Highway 191 North Rock Springs, WY 82901	Patricia Hamilton	(307) 352-0334	None	patricia_hamilton@blm.gov
Casper Field Office 2987 Prospector Drive Casper, WY 82604	Randy Sorenson	(307) 261-7522	None	randy_sorenson@blm.gov
Kemmerer Field Office 312 Highway 189 North Kemmerer, WY 83101	Kelly Lamborn	(307) 828-4505	None	kelly_lamborn@blm.gov
Forest Service				
Caribou/Targhee NF 1405 Hollipark Drive Idaho Falls, ID 83401	Dennis Duehren	(208) 847-8935	None	dduehren@fs.fed.us
Medicine Bow NF 2468 Jackson St. Laramie, WY 82070	Misty Hays	(307) 358-7102	None	mahays@fs.fed.us
Sawtooth National NF Minidoka Ranger District 2306 Hiland Avenue Burley, ID 83318	Scott Nannenga	(208) 678-0430	None	snannenga@fs.fed.us

6.0 LITERATURE CITED

IPC and RMP (Idaho Power Company and Rocky Mountain Power Company). 2010. Revised Proposed Plant and Wildlife Conservation Plan – Construction Activities. Report dated December 12, 2008.

APPENDIX Z
ENVIRONMENTAL PROTECTION MEASURES

Appendix Z

Environmental Protection Measures
Gateway West Transmission Line Project

Prepared by:

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January 2013

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1.0 INTRODUCTION

Rocky Mountain Power and Idaho Power Company (Companies) are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV and 500-kV alternating current (AC) electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground-disturbing activities associated with the construction of above-ground, single- circuit transmission lines involving towers, access roads, staging areas, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), and the states of Idaho and Wyoming.

This document presents the environmental protection measures (EPMs) proposed by the Companies for the avoidance and minimization of impacts to environmental resources related to construction and operation activities for the Gateway West Transmission Line Project (Project).

1.1 Purpose

The objectives of this plan are to recognize the substantial effort already invested by the Companies in avoiding and minimizing impacts and to present a comprehensive plan that does the following:

- Meets the intent of the current BLM and USFS management guidance for federal lands;
- Apply EPMs from a practical perspective based on differences in land ownership and management patterns of the Project; and
- Balances cost, practicality, and feasibility of Project implementation with avoiding or minimizing environmental impacts.

1.2 Relationship to Other Environmental Protection Plans

Section 4.0 and Table 4-1 of the POD describe the framework plans the Companies will use to ensure environmental protection during construction, operation, and maintenance. Each plan will include EPMs. These measures have been developed by the Companies to maintain environmental quality and meet requirements of various agencies. For the purposes of ongoing review and discussion with agencies, the measures are submitted herein as Appendix Z. Once the measures are finalized, they will be incorporated into individual plans. The Companies will be responsible to ensure their contractors and employees will implement these measures.

1.3 Contents

- **Column 1**: This column contains the EPM number as presented in the DEIS. By presenting this number the reader can more easily reference back to the DEIS to see the frame of reference in which it was presented and how the wording of the measure may have changes based on comments received during the DEIS comment period, through additional analysis and discussions with BLM.
- **Column 2**: This column contains the EPM number agreed to between the Companies and BLM to allow for a clear and consecutive presentation of EPMs by resource.
- **Column 3**: A description of the EPM that the Companies are proposing to implement during construction and operations. There EPMs become part of the Project as proposed by the Companies.
- **Columns 4-6**: These columns serve as a guide to the phases of the project for which the EPM would apply: design and engineering; construction; or operations and maintenance.
- **Columns 7-9.** These columns identify where the EPM is proposed to be applied by the Companies based on ownership. In addition the Companies propose to apply the EPMs more broadly for certain segments based on land pattern characteristics. The Wyoming segments of the proposed Project cross a relatively large percentage of Federal land, and private lands tend to be unsigned and isolated sections of land in a checkerboard pattern. In Idaho, the proposed Project for Segments 6, 8, and 9 is largely on Federal land, with private and state land interspersed. Therefore, in Wyoming and Idaho Segments 6, 8, and 9, the EPMs will be applied to the entire segment (i.e., including the private and state land) except as follows:
    - Proposed substation and regeneration sites located on private land unless they are standard EPMs of the Companies;
    - EPMs that are only applicable to a specific BLM Field Office;
    - EPMs that are only applicable to National Forest System lands; and
    - Different practices will be followed on private property that are at the request of the property owner and don't violate the law.

    In Idaho, Segments 4, 5, 7 and 10 are predominantly private ownership in agriculture and other development, and for the most part, the Federal land in these segments is clustered. In these segments, EPMs will be applied based on ownership as identified in Table Z-1 below except as follows:

    - Proposed transmission line substation and regeneration sites located on private land unless they are standard EPMs of the Companies; and
    - Different practices will be followed on private property that are at the request of the property owner and don't violate the law.

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	New EPM Number for FEIS Submittal	Environmental Protection Measures	Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
OPERATIONS AND MAINTENANCE								
G-1	G-1	Resource Management Plan (as amended) design criteria, Best Management Practices (BMPs), and mitigation requirements will apply on BLM-managed lands.	•	•	•	•		
G-2	G-2	Forest Plan Standards and Guidelines (as amended) will apply on National Forest System (NFS) lands. Ground-disturbing and vegetation management activities will comply with all Agency-wide, regional, and state BMPs.	•	•	•	•		
–	G-3	Third-party Environmental Construction Inspection Contractor (CIC) Monitors approved by the Agencies will monitor construction activities. Monitoring activities will be structured in accordance with the Environmental Compliance Management Plan included as Appendix C of the Plan of Development.		•		•		
–	G-4	All wildlife and plant surveys/pre-construction surveys will be considered as "casual use" activities and will not be restricted or prevented to occur due to overlapping season and temporal restrictions.		•		•		
OM-1	OM-1	The Proponents will comply with the road maintenance standards of the federal or state agency controlling the land.		•	•	•	•	•
OM-2	OM-2	Roads will be maintained to have crossroad drainage in order to minimize the amount of channeling or ditches needed. Water bars will be installed at all alignment changes (curves), significant grade changes, and as requested by the federal or state agency.			•	•	•	•
OM-3	OM-3	All access road drainage structures, constructed and installed for Proponent use only, will be maintained or repaired by the Proponents during O&M activities or emergency response.			•	•	•	•
OM-4	OM-4	Although routine and corrective O&M is of limited duration and impact, the Proponents will attempt to adhere to specific closure periods and areas and are proposing not to conduct any routine and corrective O&M activities during the timeframes and at the locations identified in Table R-1 in Appendix R of the Plan of Development to the greatest extent practical. The appropriate federal or state agency will notify the Proponents of any spatial or temporal restrictions that are in effect for the Project area (e.g., fire restrictions).		•	•	•	•	
OM-5	OM-5	Existing improvements (fences, gates, etc.) will be repaired or replaced if they are damaged by O&M activities, as agreed to by the parties involved.			•	•	•	•
OM-6	OM-6	The Agencies may restrict general public access to closed federal or state roads and		•	•	•	•	

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	New EPM Number for FEIS Submittal	Environmental Protection Measures	Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
		access roads that the Proponents maintain (Proponents will maintain access roads constructed for Proponent use only). In cases of restricted access, the Proponents will physically close the road with a gate. Gates will be locked with both a lock supplied by the Proponents and with a federal agency lock. This access management plan will be updated as necessary to reflect current road closures and gate locations.						
OM-8	OM-7	Any integrated vegetation management (IVM) control method, including those listed on pages 9 and 10 in Appendix R of the Plan of Development, may be used to control the growth of trees and tall shrubs to maintain clearances, the IVM recommended wire and border zones as indicated in Table R-2 [page 10 in Appendix R of the Plan of Development] and improve access to facilities.			•	•	•	•
OM-9	OM-8	Any IVM control method including those listed on pages 9 and 10 in Appendix R of the Plan of Development may be used to control the growth of additional vegetation to maintain clearances, the IVM recommended wire and border zones as indicated in Table R-2 [page 10 in Appendix R-1], and improve access to facilities.			•	•	•	•
OM-10	OM-9	Where possible, low-growing vegetation and small tree species within the ROW that will not grow into the minimum required clearance distance will be left in place; trees may be removed on a subsequent maintenance cycle as they increase in size. Hazard trees are typically those trees or snags within or adjacent to the ROW that are likely to interfere with or fall into transmission lines or associated facilities. Hazard trees and other "hot spots" (high priority areas requiring vegetation management actions) are identified during routine line inspections and removed annually. In addition to hazard trees, other critical conditions that may require immediate attention include trees that interfere with transmission conductors and trees whose growth will not allow safe clearance until the next scheduled maintenance cycle.			•	•	•	•
OM-11	OM-10	Any control method may be used for vegetation maintenance on access roads; this is typically scheduled at the same time as vegetation maintenance within the ROW. However, in cases where vegetation grows quickly, removal may occur annually. Vegetation that will not interfere with the safe operation of vehicles and equipment will be left in place.			•	•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
OM-12	OM-11	Slash will be lopped and scattered throughout the surrounding land. Stumps resulting from vegetation treatments will not be over 1 foot tall (unless the tree is not able to be safely cut at or below one foot from the ground surface), and lopped slash will be left as close to the ground as possible. Lopped slash will be a maximum of 18 inches in length for small trees and limb wood. If the federal land managing agency determines that fuel levels are unacceptable, they shall notify the Proponents and develop a mutually agreed upon method to reduce fuels. This may include, but is not limited to, chipping.			•	•	•	•
OM-13	OM-12	Hazard trees will be felled in a direction away from the ROW. Slash and limbs that fall within the ROW will be treated as described above; boles of trees greater than 8 inches will be left in place.			•	•	•	•
OM-14	OM-13	Any chemical control will be done in accordance with any applicable local, state, and federal rules and regulations. Herbicides or other chemical control will be selected from the BLM and Forest Service's list of previously approved herbicides and in accordance with any herbicide plans. If the federal land managing agency determines that a previously approved herbicide and/or plan is unacceptable, they shall notify the Proponents.			•	•	•	•
OM-16	OM-14	Before beginning an O&M project on federal or state land, the Proponents or their subcontractors will clean all equipment that will operate off-road or disturb the ground. Tracks, skid plates, and other parts that can trap soil and debris will be removed for cleaning when feasible, and the entire vehicle and equipment will be cleaned at an off-site location.			•	•	•	•
OM-17	OM-15	To help limit the spread and establishment of noxious weed species in disturbed areas, desired vegetation needs to be established promptly after disturbance. The Proponents will rehabilitate significantly disturbed areas as soon as possible after ground-disturbing activities and during the optimal period. Seed and mulch will be certified "noxious weed free" and seed mix will be agreed to in advance by the landowner or land managing agency.			•	•	•	•
OM-18	OM-16	Routine and corrective O&M activities in streams with sensitive fish species will occur from July 1 to September 1 in an effort to minimize impact to spawning and migration activities. These activities include, but are not limited to, culvert installation and or replacement, stream bank stabilization. Fording streams at existing crossings on existing roads (e.g., dip, culvert, bridge) will occur as necessary throughout the year.			•	•	•	•
OM-19	OM-17	Woody vegetation management within 50 feet of streams will be conducted by hand crews.			•	•	•	•

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GATEWAY WEST TRANSMISSION LINE PROJECT

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OM-20	OM-18	Herbaceous plants and low-growing shrubs will be left in place if they do not interfere with the safe O&M of Project lines and equipment as described in Table R-2 in Appendix R of the Plan of Development.			•	•	•	•
OM-21	OM-19	The Proponents will use existing stream crossings or new, permanent crossings that were approved as part of the Project, and will not create additional crossings without prior agency permitting and approval.			•	•	•	•
OM-22	OM-20	Only herbicides approved by the land managing agency as safe to use in aquatic environments and reviewed by the Proponents for effectiveness will be used within 100 feet of sensitive aquatic resources.			•	•		
OM-23	OM-21	Prior to the start of O&M activities, all supervisory personnel will be instructed on the protection of natural resources, including sensitive plant and wildlife species and habitats. If a contractor is used, the construction contract will address (a) the sensitive plant species that may be present in a particular area based on previous surveys and literature review; (b) the federal and state laws regarding protection of plants and wildlife; (c) the importance of these resources; (d) the purpose and necessity of protecting them; and (e) methods for protecting sensitive resources (e.g., Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and BLM wildlife policy).			•	•	•	•
OM-24	OM-22	Sensitive plant populations that occur within or near the ROW and work areas will be marked on the ground, where practical, to ensure that they are avoided. If species are discovered during the work, the Proponents will establish a spatial buffer zone, will contact the appropriate Agency within 24 hours, and will continue with the O&M activities outside of the established buffer unless otherwise directed. The Agency may evaluate the adequacy of the buffer on a case-by-case basis. Unless the Proponents are informed otherwise, work outside of the buffer area will continue. If the Proponents need to work within the buffer area, the Agencies and Proponents will work together to develop a solution that is acceptable to both parties and will allow for the Proponents to complete the work in a timely manner or within the scheduled outage window, if applicable. After the project is complete or no longer poses a threat to the plant population, the marking (stakes), if used, will be promptly removed to protect the site's significance and location from unwanted attention. As needed, marking will be reinstated during the land rehabilitation period.			•	•		

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
OM-25	OM-23	If sensitive wildlife species are discovered during O&M activities, and the animals are not directly within ground disturbance areas, they will be protected by marking the edges of the ROW and new access roads in the general vicinity to ensure that workers do not leave those areas. If the animals are within work areas that have, or will have, ground disturbance, the Proponents will establish an appropriate buffer zone and will contact the federal or state land manager immediately. The federal or state agency may evaluate the adequacy of the buffer on a case by case basis. Unless the Proponents are informed otherwise, work outside of the buffer area will continue. If the Proponents need to work within the buffer area, the Agencies and Proponents will work together to develop a solution that is acceptable to both parties and will allow for the Proponents to complete the work in a timely manner or within the scheduled outage window, if applicable. After the O&M activities are completed, or no longer pose a threat to the species, the marking (stakes) will promptly be removed to protect the site's significance and location from unwanted attention. As needed, marking will be reinstated during the land rehabilitation period.			•	•	•	•
OM-28	OM-24	The Proponents will provide crews and contractors with maps showing avoidance areas; these maps will include work zones as well as ROW areas where overland travel will be avoided.			•	•	•	•
OM-29	OM-25	In the event any sensitive plants require relocation, permission will be obtained from the federal agency. If avoidance or relocation is not practical, the topsoil surrounding the plants will be salvaged, stored separately from subsoil, and respread during the restoration process.			•	•		
OM-30	OM-26	If sensitive wildlife species are killed or injured due to O&M activities, the appropriate federal agency will be notified.			•	•		
OM-31	OM-27	All on-site personnel will be made aware that all birds of prey are protected by federal and state laws.			•	•	•	•
VISUAL								
VR-1	VIS-1	The 500-kV transmission line lattice steel towers will be specified to have a dull galvanized finish. The proposed surface finish is a galvanized finish, treated after the initial galvanizing process to produce a dulled finish to reduce surface reflectivity. This process results in an installed tower with more visual absorption and thus allows the towers to blend in better with the landscape.	•			•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
VR-2	VIS-2	The three subconductor (500-kV) and two subconductor (230-kV) that make up the conductor bundles would be specified to have a non–specular finish. Similar to the dulled finish of the transmission structures, the conductors reduce surface reflectivity. This process results in eliminating the shiny ribbon effect often seen in older untreated transmission lines and thus allows the conductors to blend in better with the landscape.	•			•	•	•
VR-3	VIS-3	The proposed 230-kV transmission lines between Windstar and Aeolus would use a steel H-frame structure configuration similar to the existing 230-kV in the same general location. The steel pole H-frame would utilize self-weathering steel. Self-weathering steel is manufactured from a group of steel alloys that were developed to eliminate the need for painting. This type of steel alloy forms a stable rust-like appearance if exposed to the weather for several years. In areas where the 230-kV structures are skylined, dull galvanized steel will be considered to minimize visual impacts. Dulled galvanized steel has a galvanized finish, treated after the initial galvanizing process to produce a dulled finish to reduce surface reflectivity. This process results in an installed tower with more visual absorption and thus allows the towers to blend in better with the terrain, while at the same time preserving the corrosion resistant properties of the galvanized coating on the steel.	•			•	•	•
VIS-1	VIS-4	No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity except as required under the timber sale contracts.		•		•	•	•
VIS-2	VIS-5	To minimize ground disturbance and/or reduce scarring (visual contrast) of the landscape, the alignment of any new access roads or cross-country routes will follow the landform contours where practicable, providing that such alignment does not impact resource values additionally or result in new impacts to resources that were previously avoided.	•	•		•	•	•
VIS-3	VIS-6	To minimize sensitive feature disturbance and/or visual contrast in designated areas on federal lands, structures will be placed so as to avoid sensitive features such as, but not limited to, riparian areas, water courses and cultural sites and/or to allow conductors to clearly span the features, within the limits of standard tower design. Where conflicts arise between resources, the applicable land manager will be consulted.	•	•		•		
VIS-4	VIS-7	To reduce visual impacts on federal land, including potential impacts on recreation values and safety, towers will be placed at the maximum feasible distance from the	•	•		•		

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		highway, canyon and trail crossings within limits of standard design and to the extent practical.						
VIS-5	VIS-8	Crossings of rivers shall be at approximately right angles where practical. Strategic placement of structures will be done both as a means to screen views of the transmission line and rights-of-way and to minimize the need for vegetative clearing.	•	•		•	•	•
VIS-6	VIS-9	Insulators will be made of materials that have reduced potential to reflect and refract light. Glass insulators that are highly reflective will not be permitted in scenic areas on federally managed lands. .	•	•		•		
VIS-7	VIS-10	For segments of the line 1) within the 0- to 0.5-mile zone of Interstate highways where existing lines of the same voltage are paralleled and 2) within the 0- to 0.5-mile zone of residences where existing lines of the same voltage are paralleled, new towers will be located adjacent to existing towers, within the limits of standard transmission line design and considering the ruling span length of adjacent proposed and existing lines.	•	•		•	•	•
VIS-8	VIS-11	Site-specific "micrositing," within the limits of standard engineering design, will be required near certain sensitive areas, as identified by the agencies, where proposed transmission facilities would impact visual quality; these situations include: • Crossings over major highways; • Crossings of high quality historic trails; • Crossings over the North Platte and Snake Rivers; • Sensitive travelways, use areas, residential areas, recreational facilities as identified by the agencies (including national recreation and scenic trails, campgrounds, recreation areas, and trailheads), and other areas identified by management plans; and • To avoid bisecting forest patches within the Sawtooth NF. The Proponents will consult with the applicable local land management agency during transmission line design.	•	•		•		
VIS-11	VIS-12	The lighting specified for the marshaling yards will be the minimum required to meet safety and security standards. All light fixtures within 1,000 feet of a residence will be hooded to eliminate any potential for glare and to prevent light from spilling off the site or up into the sky. Additionally, the fixtures will have sensors and switches to permit the lighting to be turned off at times when it is not required.		•		•	•	•

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GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
VIS-13	VIS-13	To reduce visual contrast in areas where overstory vegetation is removed for access, tower pads, or conductor clearance, specific sections of the right-of-way on federal land will have uneven edges (trees will be removed from the edge of the right-of-way out or away from the right-of-way boundary) to give a natural appearance, where not in conflict with regulatory requirements (e.g., NERC, WECC, and Occupational Safety and Health Administration requirements). This will be a onetime application and conducted with agency approval.	•	•	•	•		
VIS-15	VIS-14	To mitigate potential visual impacts on federal land, the construction and maintenance plan to be developed by the Proponents will include measures to reduce ROW scarring and enhance restoration. The plan will be approved by the land management agency prior to ground clearing and construction.	•		•	•		
CULTURAL								
CUL-1	CR-1	All work conducted in accordance with the Historic Properties and Trails Plan (HPTP) will be performed by qualified paleontologists and archeologists with trained assistants.		•		•	•	•
CUL-2	CR-2	An Unanticipated Discovery Plan will be included as part of the HPTP. This plan will specify what steps will be taken if a subsurface cultural resource or fossil is discovered during construction, including stopping construction in the vicinity of the find, notification of the appropriate land management agency, identification of a qualified archaeologist or paleontologist to conduct an evaluation of the find, and the development of an approved data recovery program or other mitigation measures.		•		•	•	•
CUL-3	CR-3	The Cultural Resource and Paleontological Monitoring and Mitigation Plan will include provisions for the preparation and curation of any fossil collections from federal lands and for the preparation of a final report based on the data recovered for activities on federal lands.		•		•		
CUL-4	CR-4	Literature reviews and Class III surveys will be completed for cultural resources. A literature review will be conducted on public and private lands and will cover a study area of one-half mile on either side of the proposed and alternate transmission line alignments as well as areas identified for use as staging areas and access roads. Class III surveys covering a 500-foot-wide area centered on the transmission line will be conducted on 100 percent of federal and state lands, and for those private lands for which survey access is granted, prior to the completion of the NEPA process. A good-faith effort will be made to obtain survey permission prior to the completion of the NEPA process.	•			•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
CUL-5	CR-5	If construction will adversely affects any properties listed on, or eligible for listing on, the NRHP, mitigation will be required. Mitigation will be in accordance with the HPTP and may include, but not be limited to, one or more of the following measures: a) avoidance through the use of relocation of structures through the design process, realignment of the route, relocation of temporary workspace, or changes in the construction and/or operational design; b) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures; and c) the use of landscaping or other techniques that will minimize or eliminate effects on the historic setting or ambience of standing structures.		•		•	•	•
CUL-6	CR-6	Avoidance areas will be flagged prior to construction activities. Flagging will be removed once construction is completed in an area.		•		•	•	•
CUL-7	CR-7	To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, all workers will attend mandatory training on the significance of cultural resources and the relevant federal regulations intended to protect them.		•		•	•	•
CUL-8	CR-8	If human remains are discovered, construction will be halted and the coroner will be notified and measures specified in the HPTP will be followed.		•		•	•	•
CR-5	CR-9	On NFS lands, a management plan should be developed for each historic property nominated to the NRHP. The plan should be drafted during the nomination process. The National Heritage Strategy should be used to guide decisions on issues related to the Heritage Program.	•		•	•		
RECLAMATION								
REC-1	REC-1	Proponent personnel and their contractors will be trained on noxious and invasive weed identification to facilitate avoidance of infestations where possible or identification of new infestations.			•	•	•	•
REC-2	REC-2	Pre-construction weed treatment would be conducted prior to the start of ground-disturbing activities and at the time most appropriate for the target species.		•		•	•	•
REC-3	REC-3	Pre-construction weed treatment would be limited to the areas that are expected to have surface-disturbing activities. The final Reclamation Plan will include a schedule showing the phased in-service dates for different segments. Pre-construction weed treatment will be scheduled accordingly.		•		•	•	•

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REC-4	REC-4	Pre-construction treatment may use mechanical control, hand spraying, grazing, or herbicides. The final Reclamation Plan will discuss those options, as applicable.		•		•	•	•
REC-5	REC-5	All herbicide applications would comply with label restrictions, federal, state and/or county regulation, the Proponents' specifications and landowner agreements. No spraying would occur prior to notification of the applicable land management agency. On federal or state controlled lands, a herbicide use plan will be submitted prior to any herbicide application as recommended in the BLM herbicide EIS (http://www.blm.gov/wo/st/en/prog/more/veg_eis.html). The herbicide use plan will include the dates and locations of application, target species, herbicide, adjuvants, and application rates and methods (e.g., spot spray vs. boom spray). No herbicide would be applied to any private property without written approval of the landowner. The final Reclamation Plan will contain a list of herbicides that may be used, target species, best time for application, application rates, and if they are approved for use on BLM-managed and NFS lands.		•		•	•	•
REC-6	REC-6	Herbicides may be applied using a broadcast applicator mounted on a truck or all-terrain vehicle (ATV), backpack sprayers, or with hand sprayers as conditions dictate. Herbicide applications would be conducted only by licensed operators or under the supervision of a licensed operator. Where allowed, a broadcast applicator would likely be used. In areas where noxious weeds are more isolated and interspersed with desirable vegetation, noxious and invasive weeds would be targeted, thereby avoiding other plants. Pre-construction herbicide applications would not occur adjacent to known special status species or near water bodies.		•		•	•	•
REC-7	REC-7	All areas treated would be documented using GPS technologies and included in the annual report.			•	•	•	•
REC-8	REC-8	Areas of existing noxious weeds and invasive species will be avoided where possible.		•	•	•	•	•
REC-9	REC-9	Project vehicles will arrive at the job site clean of all soil and herbaceous material.		•	•	•	•	•
REC-10	REC-10	When the contractors demobilize from the job site where identified infestations of noxious weeds are present, they will use appropriate decontamination measures as defined in the final Reclamation Plan.		•	•	•	•	•
REC-11	REC-11	Soil stockpiles from areas that did not have noxious weeds or invasive species present, will not be placed adjacent to populations of noxious weeds or invasive species, where practicable.		•		•	•	•

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GATEWAY WEST TRANSMISSION LINE PROJECT

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REC-12	REC-12	Areas disturbed by Project activities are susceptible to the establishment and spread of noxious weeds. Erosion control measures identified in the SWPPP(s) would also assist in preventing the establishment of weeds on exposed soils.		•		•	•	•
REC-13	REC-13	Project-related storage and staging yards, fly yards, and other areas that are subject to regular long-term disturbance will be kept weed-free through regular site inspections and herbicide applications, subject to the consent of the land owner.		•		•	•	•
REC-14	REC-14	Where pre-construction surveys have identified noxious or invasive weed species infestations, topsoil and other soils will be placed next to the infested area and clearly identified as coming from an infested area. Topsoil would be returned to the area it was taken from and will not be spread in adjacent areas. If the topsoil is not suitable for backfill, then it will be spread in another previously disturbed area and clearly identified for future weed treatments as applicable.		•		•	•	•
REC-15	REC-15	Straw or hay that may be used as a BMP to control erosion and sedimentation must be certified weed free. If certified weed-free materials are not available, then alternative BMPs will be used. The use of alternative BMPs will be coordinated with the construction storm water inspector.		•		•	•	•
REC-16	REC-16	The topsoil layer will be removed, taking care not to mix it with the underlying sub-soil. Where topsoil separation is employed, topsoil will be stored in a separate stockpile.		•		•	•	•
REC-17	REC-17	Certified weed-free straw, mulch, gravel, and other BMPs as appropriate, will be used as described in the SWPPP to stabilize the stockpile and limit erosion and standing water, control dust, and control the establishment of noxious or invasive weeds in stockpiled soils.		•		•	•	•
REC-18	REC-18	Topsoil and sub-surface soils will be replaced in the proper order during reclamation.						
REC-19	REC-19	Where it is necessary to spread soils (subsurface soils or waste rock resulting from excavations or foundation drilling), it will be done where practicable and in close proximity to where the disturbance occurred (within the ROW). Material will be spread uniformly to match existing contours and covered with topsoil when available and reseeded.		•		•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

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REC-20	REC-20	Temporarily disturbed lands within the ROW will be re-contoured to blend with the surrounding landscape. Re-contouring will emphasize restoration of the existing drainage patterns and landform to pre-construction conditions, to the extent practicable. (Tower pads would not be recontoured.)		•		•	•	•
REC-21	REC-21	De-compaction: Areas within the ROW, laydown or staging yards, and other areas of extensive vehicle travel will typically contain compacted soils. These soils will be de-compacted on a case-by-case basis through negotiation with the landowner or land management agency.		•		•	•	•
REC-22	REC-22	Final Cleanup: Final cleanup will ensure that all construction areas are free of any construction debris including but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.		•		•	•	•
REC-23	REC-23	The Proponents will utilize soil amendments (e.g., fertilizer, wood or straw mulches, tackifying agents, or soil stabilizing emulsions) on a case-by-case basis and with landowner or land management agency approval. Specific soil amendments will be identified in the final Reclamation Plan and be consistent with the SWPPP.		•		•	•	•
REC-24	REC-24	Broadcast seeding will apply the seed directly on the ground surface. The type of broadcast spreader will depend on the size of the area to be seeded, and the terrain. Seed will be placed in direct contact with the soil, ideally at a depth of approximately 0.5 to 1-inch deep. It will then be covered by raking or dragging a chain or harrow over the seed bed; to remove air pockets.		•		•	•	•
REC-25	REC-25	Drill seeding would be used on areas of sufficient size with moderate or favorable terrain to accommodate mechanical equipment. Drill seeding provides the advantage of planting the seed at a uniform depth.		•		•	•	•
REC-26	REC-26	Hydroseeding, which is the spraying of seeds and water onto the ground surface, or hydroseeding/hydromulching, which is the spraying of seeds, mulch and water, may be implemented on steeper slopes. Tackifier may be added to facilitate adherence of hydromulch to slopes greater than 25 percent.		•		•	•	•
VEGETATION								
REC-2–17, 23–26	REC-2–17, 23–26	(Described under Reclamation)						

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GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
VEG-2	VEG-1	During construction, blading of native plant communities should be minimized, consistent with safe construction practices. Where feasible, shrubs should be cut at or near ground level to facilitate re-growth after construction. The footprint of construction and operations facilities should be kept to the minimum necessary.		•		•	•	•
VEG-3	VEG-2	Where feasible, locate new access roads to minimize the number of trees removed during construction . However, new access roads will not be relocated if the change would result in an increase in the overall disturbance (acres); require additional cut and fill activities, or impact other sensitive resources (e.g., sagebrush plant community, sensitive species habitat, and/or cultural resources or viewshed).	•			•		
VEG-4	VEG-3	In areas where revegetation would be completed, topsoil salvage and replacement should be used for all areas of cut or fill areas and for areas larger than 1 acre where soils would be disturbed during construction.			•	•	•	•
VEG-8	VEG-4	Prior to the start of construction and maintenance activities, all contractor vehicles and equipment (including personal protective equipment) will be cleaned of soil and debris capable of transporting invasive plant seeds or other propagates. All vehicles and equipment will be inspected by Agency-approved inspectors and certified as weed free by agency approved personnel, in order to ensure they have been cleaned properly. The final Reclamation and Noxious Weed Plans will include the location of all cleaning stations, how materials cleaned from vehicles at these stations will be either captured or treated so that cleaning station locations would not also become infected, and who would confirm/certify that vehicles leaving cleaning stations and/or entering construction sites are free of invasive plant materials.		•		•	•	•
VEG-9	VEG-5	The Agency-approved Environmental Construction Inspection Contractor (CIC) will approve weed-free straw or other erosion control materials on federally managed lands prior to application.		•		•		
VEG-10	VEG-6	The Proponents will consult with the appropriate land management agency to determine tree seedlings to be planted in decommissioned roadbeds and other temporarily disturbed areas on federally managed lands (where trees were removed) to assure seedlings are matched to site conditions.			•	•		
VEG-11	VEG-7	The Proponents will notify the Forest Service when topsoil salvage operations are scheduled and seek assistance with field identification of top soil material.	•	•		•		

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
VEG-12	VEG-8	Annual post-construction monitoring and treatment of invasive plants on closed roads (access roads dedicated for use by Proponents only), temporary roads, fly yards, and other disturbed areas in the ROW shall continue for 3 years in areas where infestations or populations of noxious weeds have been identified. If after 3 years post-construction conditions are not equivalent to or better than pre-construction conditions (in accordance with applicable permit), monitoring and treatment will continue until these conditions are met. If adjacent land uses are contributing to the introduction and/or persistence of invasive plant species within areas disturbed by the project, then Proponents will not be required to treat noxious weeds for more than three years.			•	•		
VEG-13	VEG-9	The Proponents will meet the terms and stipulations within the timber sale contracts for timber removal operations on the Medicine Bow-Routt, Caribou-Targhee, and Sawtooth NFs.		•		•		
TES-PLANTS								
OM-23–24 and 28–29	OM-21–22 and 24–25	(Described under Operations and Maintenance.)						
PPC-1	TESPL-1	Blowout Penstemon – Surface disturbance will be allowed in suitable habitat where species-specific surveys have determined that no populations are present. The species-specific surveys will be conducted the year prior to construction, and the proposed disturbance areas will be redesigned to avoid direct impact to populations.		•		•		
PPC-2	TESPL-2	Colorado Butterfly Plant – Surface disturbance will be allowed in suitable habitat where species-specific surveys have determined that no populations are present. The species-specific surveys will be conducted the year prior to construction, and the proposed disturbance areas will be redesigned to avoid direct impact to populations.		•		•		
TESPL-3	TESPL-3	Qualified botanists shall conduct pre-construction surveys during a season when target species are readily identifiable for special status or globally rare species. Where feasible, micrositing of project facilities shall avoid direct impacts to identified populations. Survey reports documenting the surveys, their results, and recommendations must be provided to land management agency for approval prior to construction. Agency botanists may evaluate individual sites based on site-specific conditions. Documentation of the evaluation of avoidance of impacts to sensitive and globally rare plants must be provided to the Agencies prior to construction.	•			•		
TESPL-4	TESPL-4	Slickspot Peppergrass – Environmental monitors will survey for and mark slickspots and	•	•		•	•	•

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GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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		aboveground populations of slickspot peppergrass within 50 feet of the construction area prior to ground disturbance (including roads) in potential or occupied slickspot peppergrass habitat. No construction shall occur within 50 feet of any slickspot peppergrass plants or slickspots found by the environmental monitor. Also, construction shall not occur within 50 feet of previously known occupied slickspot peppergrass areas, based on Idaho CDC data, even if aboveground plants are not observed by the environmental monitor. Within proposed critical habitat, impacts to Primary Constituent Elements, such as native sagebrush/forb vegetation, will be avoided to the extent practicable. Seeding during reclamation in areas of suitable habitat will use methods that minimize soil disturbance such as no-till drills or rangeland drills with depth bands. Reclamation will use certified weed-free native seed. Excess soils will not be stored or spread on slickspots.						
TESPL-6	TESPL-5	Sand dune and cushion plant communities should be avoided, where feasible.	•	•		•		
TESPL-1	TESPL-6	Goose Creek Milkvetch – Surface disturbance will be allowed in suitable habitat for Goose Creek milkvetch where species-specific surveys have determined that no populations are present. The species-specific surveys will be conducted the year prior to construction, and the proposed disturbance areas will be redesigned to avoid direct impacts to populations.	•			•	•	
TESPL-3	TESPL-7	Ute Ladies'-tresses – Qualified botanists shall conduct pre-construction surveys during a season when target species are readily identifiable for special status or globally rare species. Where feasible, micrositing of project facilities shall avoid direct impacts to identified populations. Survey reports documenting the surveys, their results, and recommendations must be provided to land management agency for approval prior to construction. Agency botanists may evaluate individual sites based on site-specific conditions. Documentation of the evaluation of avoidance of impacts to sensitive and globally rare plants must be provided to the Agencies prior to construction.	•			•	•	•
WEEDS								
REC-1–15	REC-2–15	(Described under Reclamation)						
OM-14, 16–17, 22	OM-13, 14–15, 20	(Described under Operations and Maintenance)						

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
WEED-1	WEED-1	The Proponents shall consult with each appropriate local land management agency (Forest Service and BLM) office to determine appropriate seed mix and commercial seed source for revegetation. The Reclamation, Revegetation, and Weed Management Plan shall specify the approved seed mixes for federal lands. Disturbed soil will not be allowed to support the growth of noxious weeds or invasive weedy species. Prevention of noxious weeds will apply to all phases of the Project.	•	•		•	•	
WEED-2	WEED-2	Weed control and prevention measures shall adhere to all agency standards and guidelines. These measures shall be developed in consultation with local, state, and federal weed agencies; all implemented measures would follow the principle of integrated weed management.		•		•	•	•
WEED-6	WEED-3	Soil stockpiles in areas containing noxious weeds and invasive plant species shall be kept separate from soil removed from areas that are free of noxious weed and invasive plant species, and the soil will be replaced in or near the original excavation. If requested by the applicable land-management agency, soil stockpiles shall be covered with plastic if the soil stockpile will be in place for two weeks or more and is not being actively used. On lands managed by the Forest Service or per private landowner request, stockpiles will not be covered with plastic.		•		•		
WETLANDS								
REC-1–22	REC-1–22	(Described under Reclamation)						
SW-1, 4–5	WQA-1, 4–5	(Described under Water Quality)						
SW-6	WQA-6	(Described under Water Quality)						
SW-7–12	WQA-13–18	(Described under Water Quality)						
WET-1	WET-1	Impacts on wetland and riparian areas will be avoided unless physically or economically infeasible or where activities are permitted. Land management agencies' plans (RMPs, MFPs, and Forest Plans) that have standards, guidelines, stipulations, or avoidance buffers will be adhered to. Where these do not exist, Inland Fish Strategy (INFISH) buffers will be followed,	•			•		
WET-2	WET-2	Wetland delineations will be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the Project.	•			•	•	•
WET-3	WET-3	Where impacts on wetlands are not avoidable, site-specific crossing plans and measures	•			•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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		to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Proponents will obtain all necessary permits prior to discharging dredged or fill material to waters of the U.S. and state.						
WET-4	WET-4	To meet USACE requirements for CWA 404 permitting, the Proponents will submit a mitigation plan that is accepted by the USACE. The framework for this plan is included in the Final EIS.	•			•	•	•
FISH								
OM-18	OM-16	(Described under Operation and Maintenance)						
BLA-2	BLA-2	(Described under Public Safety)						
FISH-1	FISH-1	On BLM-administered land, all culverts, whether temporary or permanent, must be designed to meet BLM Gold Book standards (Surface Operating Standards and Guidelines for Oil and Gas Exploration Development). On NFS lands, Forest Plan standards and guidelines shall apply.		•		•		
FISH-3	FISH-2	When taking water from TES fish-bearing streams for road and facility construction and maintenance activities, intake hoses shall be screened with the most appropriate mesh size (generally 3/32 of an inch), or as determined through coordination with NMFS and/or USFWS.		•	•	•	•	•
FISH-4	FISH-3	All wetlands and waters in the project area are assumed to contain aquatic invasive species and all equipment contacting water will be properly disinfected. After work is complete in a waterbody, any equipment involved in construction in that waterbody must be washed to remove any propagules of aquatic invasive species and to prevent the spread of those species to other waterbodies.		•		•	•	•
WILDLIFE								
WILD-1	WILD-1	Requests for exceptions from closure periods and areas will be submitted by the Proponents to the appropriate BLM Field Office in which the exception is requested through the Environmental Construction Inspection Contractor (CIC). Established exception processes on BLM-managed lands will be followed. The agency, the CIC, or a contractor chosen by the Proponents and approved by the agency will conduct any surveys and coordinate with any other agencies as necessary. Factors considered in granting the exception include animal conditions, climate and weather conditions, habitat conditions and availability, spatial considerations (e.g., travel routes and landscape		•	•	•		

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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		connectivity), breeding activity levels, incubation or nestling stage, and timing, intensity, and duration of the Proposed action. Requests will be submitted in writing no more than 2 weeks prior to the proposed commencement of the construction period, to ensure that conditions during construction are consistent with those evaluated. The authorized officer, on a case-by-case basis, may grant exceptions to seasonal stipulations, and has the authority to cancel this exception at any time. A good faith effort will be made to act on exceptions within 5 business days of receiving a request to allow for orderly` construction mobilization. The CIC will conduct any required site visit and report the status to BLM for consideration of the decision to accept or deny the request. There is no exception process for NFS lands; all closure periods will be adhered to. Any proposed modifications to closure periods will be discussed on a case-by-case basis with the Forest Service.						
WILD-2	WILD-2	Vehicular speeds during construction and operations will be limited to 25 mph on all unsurfaced access roads. Crew and vehicle travel will be restricted to designated routes while on federally designated big game winter range (except for areas within the ROW).		•	•	•		
WILD-3	WILD-3	The Project will be designed and constructed in compliance with Avian Power Line Interaction Committee (APLIC) standards (APLIC 2006, 2012) in order to reduce impacts to avian species. Any changes to the Project's design, as requested by federal, state, or local jurisdictions, as well as any changes considered by the Proponents, will also be in compliance with APLIC guidance.	•	•	•	•	•	•
WILD-4	WILD-4	Pre-construction pedestrian or aerial nest surveys will be conducted in suitable habitat during the appropriate nesting time periods needed to identify new raptor nest locations, and to establish the status of previously identified raptor nests. Appropriate buffers will be applied to active nests during construction. All encounters of nesting raptors in the Analysis Area will be reported to the biological monitor and to appropriate agencies.		•		•		
WILD-5	WILD-5	Surveys will be conducted along the route across the Caribou-Targhee NF prior to construction for caves, abandoned mines, and adits. If suitable bat roosts are identified, the Proponents will consult with the Forest Service to determine appropriate protective measures.	•	•		•		
WILD-7	WILD-6	Guy wires will be marked with bird deterrent devices on federal lands to avoid avian collisions with structures, as directed by local land manager.	•		•	•		
WILD-8	WILD-7	Flight diverters will be installed and maintained where the transmission line crosses	•		•	•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
		rivers at the locations identified in Table 3.10-4. Additional locations may be identified by the Agencies or the Project Proponents. The flight diverters will be installed as directed in the Proponents' approved Avian Protection Plans and in conformance with the MBTA and Eagle Acts as recommended in the current collision manual of the Avian Power Line Interaction Committee (APLIC).						
WILD-9	WILD-8	Pre-construction pedestrian or aerial surveys will be completed during appropriate nesting time periods, needed to identify each raptor species. The Proponents will provide survey results to the authorized officer for approval. (See WILD-1)		•		•		
WILD-10	WILD-9	To the extent feasible, all vegetation clearing would be conducted prior to the onset of the avian breeding season (generally April 15 through July 31, depending on local conditions and federal land management plan requirements) in order to minimize impacts to migratory birds. Where this is not feasible, pre-construction surveys within the disturbance footprint shall be conducted within seven days prior to clearing. If an active nest (containing eggs or young) of a bird species protected under the MBTA is found during either pre-construction surveys or construction activities, the nest will be identified to species, inconspicuously marked, and left in place until any young have fledged before the vegetation is removed.		•		•	•	•
WILD-11	WILD-10	Snags will be maintained to the extent practical and where it does not conflict with the Proponents vegetation management specifications along the outer portions of the Project's ROW in order to reduce the impacts to habitat for cavity nesters.		•		•		
WILD-12	WILD-11	Any areas that may require blasting will be identified and a blasting plan will be submitted to the appropriate agency for approval. Blasting within 0.25 mile of a known sensitive wildlife resource will require review and approval by the appropriate agency.		•		•		
TES-WILDLIFE								
TESWL- 3	TESWL-1	H-frame structures will be equipped with anti-perch devices to reduce raven and raptor use, and limit predation opportunities on special status prey species on federally managed lands.	•	•	•	•		
TESWL-4	TESWL-2	In the event that an ESA-listed species not covered by the Biological Opinion (BO) is discovered during surveys, construction will cease, the USFWS will be notified, and Section 7 consultation will be initiated. In addition, the transmission line or structures will be relocated to minimize direct impacts to newly discovered ESA species, to the extent practical.		•	•	•	•	•

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GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
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TESWL-5	TESWL-3	Black-footed Ferret – Pre-construction surveys will be conducted for the black-tailed prairie dog (in addition to those already proposed for the white-tailed prairie dog) in Segment 1W.	•	•	•	•	•	•
TESWL-8	TESWL-4	The Environmental Construction Inspection Contractor (CIC), an agency biologist, or agency designee will accompany the Construction Contractor site engineers during the final engineering design or prior to ground-disturbing activities to verify and flag the location of any known occupied structures (e.g., nests, burrows, colonies) utilized by sensitive species. This will include, but not be limited to, artificial burrows that have been constructed as part of research/restoration efforts, prairie dog colonies, and raptor nests, which could be impacted by the Project based on the indicative engineering design. The final engineering design will be "microsited" (routed) to avoid direct impact to these occupied structures to the extent practical within engineering standards and constraints.	•			•		
TESWL-10	TESWL-5	Sharp-tailed Grouse – Proponents will provide the Agencies a list of the protocols that the Proponents will use during greater sage-grouse and sharp-tailed grouse pre-construction surveys. The Agencies will either approve these protocols, or suggest alternative protocols to be used.	•	•	•	•		
TESWL-11	TESWL-6	Sharp-tailed Grouse – In areas where sharp-tailed grouse leks occur in proximity to greater sage-grouse leks, surface disturbance will be avoided within 4 miles of occupied or undetermined greater sage-grouse leks from March 1 to July 15. In areas where sharp-tailed grouse leks occur in isolation from greater sage-grouse leks, surface disturbance will be avoided within 1.2 miles of occupied or undetermined sharp-tailed grouse leks from March 15 to July 15.	•	•	•	•		
TESWL-13	TESWL-7	Yellow-billed cuckoo - A pre-construction survey for the yellow-billed cuckoo will be conducted at any proposed crossing of suitable habitat. If these birds are detected within 1 mile of the centerline (within existing habitat), construction will not occur until the young have fledged or the nest is abandoned. The crossing-specific plan will contain proposed monitoring measures to assure compliance with this measure.	•	•	•	•		
TESWL-14	TESWL-8	Sage-Grouse – On federal lands, there will be no surface occupancy (NSO) within 0.6 mile of the perimeter (or centroid if the perimeter has not been mapped) of occupied greater sage-grouse leks located within Core areas in Wyoming, and NSO within 0.25 mile in non-Core areas (as required by BLM IM WY-2012-19 and BLM land management		•	•	•		

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		plans). "No surface occupancy," as used here, means no new surface facilities, including roads, will be placed within the NSO area. Other activities (i.e., non-surface occupancy) may be authorized, with the application of appropriate seasonal stipulations, provided the resource's protected area is not adversely affected.						
TESWL-15	TESWL-9	Sage-Grouse – On federal lands, surface disturbance will be avoided within 4 miles of occupied or undetermined greater sage-grouse leks from March 1 to July 15. This distance (i.e., 4 miles) may be reduced on a case-by-case basis by the applicable agency, if site-specific conditions would allow the Project to be located closer to the lek than 4 miles (e.g., topography prevents the Project from being visible from the lek, or a major disturbance such as a freeway or existing transmission line is located between the Project and the lek).		•	•	•		
TESWL-19	TESWL-10	Sage-Grouse – If Winter Concentration Areas for the greater sage-grouse are designated, there will be no surface disturbances within the designated areas from November 1 through March 15.		•	•	•		
TESWL-22	TESWL-11	Sage-Grouse – No structures that require guy wires will be used in occupied sagebrush obligate habitats within the area managed under the Kemmerer RMP.		•	•	•		
TESWL-17	TESWL-12	Colorado River T&E Fishes – A payment of a one-time fee, based on a fee schedule provided by the USFWS, will be made based on the amount of water used during construction of any segments that cross the Colorado River system.		•		•	•	•
TESWL-18	TESWL-13	Midget faded rattlesnake – Preconstruction surveys for occupied or potential midget faded rattlesnake hibernacula (i.e., rock outcrops with south to east aspect) will be conducted. The Proponents shall prepare a plan identifying measures to reduce impacts to midget faded rattlesnake if they are discovered. This plan shall require approval by BLM and the WGFD prior to its implementation	•	•	•	•		
PALEONTOLOGICAL RESOURCES								
CUL-9	PALEO-1	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.		•	•	•	•	•

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PALEO-1	PALEO-2	Paleontological resources (as defined by omnibus Public Land Management Act – Paleontological Resources Preservation Section) on federally managed land shall be managed and protected using scientific principles and expertise. Appropriate plans for inventory, monitoring, and the scientific and educational use of these resources shall be developed in accordance with applicable agency laws, regulations and policies.	•	•	•	•		
PALEO-2	PALEO-3	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.		•	•	•	•	•
GEOLOGIC HAZARDS								
BLA-1, 2	BLA-1, 2	(See description under Public Safety)						
GEO-2	GEO-1	Review the final location of the preferred alternative with affected mine operators and lessees to ensure all measures are taken to protect against subsidence.	•			•	•	•
GEO-4	GEO-2	A site-specific soil analysis shall be conducted prior to construction to verify any areas identified as unstable or marginally unstable on federal lands. A site-specific geotechnical analysis shall be conducted of federal lands prior to construction to locate areas where there is landslide risk. If such areas are identified, the Proponents will develop mitigation and submit a report to the appropriate land management agency.	•		•	•		
SOILS								
SW-1, 4, 5, 7–13	WQA-1–13	[See description under Water Quality]						
SPC-1-5	WQA-13–17	[See description under Water Quality]						
SOIL-1	SOIL-1	The Wyoming BLM State Reclamation Policy and applicable Agency management plan requirements for soil management will be followed on federal lands in the state of Wyoming.		•	•	•	•	•
SOIL-2	SOIL-2	The Proponents will submit a Compaction Monitoring Plan for review and Agency approval prior to construction that specifies the conditions under which construction will either not start or will be shut down due to excessively wet soils. Conditions will be measurable in the field and easy to demonstrate to construction workers.	•			•	•	•
SOIL-3	SOIL-3	During decommissioning, some obviously compacted areas, such as established newly constructed access roads, will require loosening prior to revegetation. If necessary to re-establish vegetation, the Proponents will use a ripper blade, till, or similar instrument to			•	•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

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		loosen the surface soil layer.						
SOIL-6	SOIL-4	Detrimental soil disturbance such as compaction, erosion, puddling, and displacement will be minimized through implementing measures identified in the SWPPP. Measures may include road ripping, frequent waterbars, cross-ditching (e.g., rolling dips) or other methods to reduce compaction while preventing gully formation. Ripping pattern should be altered to a crossing, diagonal, or undulating pattern of tine paths to avoid concentrated runoff patterns that can lead to gullies.	•	•	•	•	•	•
SOIL-7	SOIL-5	The Proponents are responsible for monitoring to ensure soil protection is achieved, and providing a monitoring report on reseeding success and/or other methods to stabilize soils to the Forest Service by the end of each growing season for areas on NFS lands for 3 years or until requirements are met for the applicable permit.		•	•	•		
SOIL-8	SOIL-6	Reclamation of all temporary disturbances on NFS lands (such as road cuts) should include replacement of material to original contours and re-compaction to pre-disturbance compaction percentage (which should be identified during reclamation at adjacent locations to the disturbance). Guidelines for streambank re-compaction to maximize vegetative regrowth and mechanical stability are covered in USACE publication ERDC TN-EMRRP-SR-26 (Goldsmith et al. 2001).		•	•	•		
SOIL-10	SOIL-7	In order to meet Forest Plan Soil Standards on NFS lands, the Reclamation and Revegetation Plan will describe on-site restoration using topsoil salvaging.	•	•	•	•		
WATER QUALITY								
SW-1	WQA-1	The appropriate NPDES permits for construction activities that disturb one acre or more of land will be obtained from the Department of Environmental Quality and USEPA or their designees.		•	•	•	•	•
SW-2	WQA-2	NPDES permit requirements will be met. This includes implementing and maintaining appropriate BMPs for minimizing impacts to surface water.		•	•	•	•	•
SW-3	WQA-3	One or more responsible persons will be designated to manage stormwater issues, conduct the required stormwater inspections, and maintain the appropriate records to document compliance with the terms of the NPDES permit.		•	•	•	•	•
SW-4	WQA-4	The SWPPPs will be modified as necessary to account for changing construction conditions.		•	•	•	•	•
SW-5	WQA-5	The SWPPPs will identify areas with critical erosion conditions that may require special		•	•	•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	New EPM Number for FEIS Submittal	Environmental Protection Measures	Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
		construction activities or additional BMPs to minimize soil erosion.						
SW-7	WQA-6	Stormwater BMPs will be maintained on all disturbed lands during construction activities, as described in the SWPPP.		•	•	•	•	•
SW-8	WQA-7	Approved sediment and erosion control BMPs will be installed and maintained until disturbed areas meet final stabilization criteria.		•	•	•	•	•
SW-9	WQA-8	Temporary BMPs will be used to control erosion and sediment at staging areas (equipment storage yards, fly yards, lay down areas) and substations.		•	•	•	•	•
SW-10	WQA-9	The construction schedule may be modified to minimize construction activities in rain-soaked or muddy conditions.		•	•	•	•	•
SW-11	WQA-10	Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP.		•	•	•	•	•
SW-12	WQA-11	Upon completion of construction, permanent erosion and sediment BMPs will be installed along the transmission line within the ROW, at substations, and at related facilities in accordance with the SWPPPs.		•	•	•	•	•
SW-13	WQA-12	In areas of droughty soils, the soil surfaces will be mulched and stabilized to minimize wind erosion and to conserve soil moisture in accordance with the SWPPPs.		•		•	•	•
SPC-1	WQA-13	Construction industry standard practices and BMPs will be used for spill prevention and containment.		•		•	•	•
SPC-2	WQA-14	Construction spills will be promptly cleaned up and contaminated materials hauled to a disposal site that meets local jurisdictional requirements.		•		•	•	•
SPC-3	WQA-15	All staging areas will contain fueling areas with containment. Where fueling must be conducted along the ROW, the plan will specify BMPs.		•		•	•	•
SPC-4	WQA-16	If an upland spill occurs during construction, berms will be constructed with available equipment to physically contain the spill. Absorbent materials will be applied to the spill area. Contaminated materials will be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 feet away from any wetland or waterbody, until proper disposal is arranged.		•		•	•	•
SPC-5	WQA-17	If a spill occurs which is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor will be identified and available to further contain and clean up the spill.		•		•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
SPC-6	WQA-18	For spills in standing water, floating booms, skimmer pumps, and holding tanks will be used as appropriate by the contractor to recover and contain released materials on the surface of the water.		•		•	•	•
SPC-7	WQA-19	If pre-existing contamination is encountered during operations, work will be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination; the responsible party; and local, state, and federal regulations will determine the appropriate cleanup method(s) for these areas.		•		•	•	•
SPC-8	WQA-20	The SPCC Plan will include details on the types and quantities of absorbent and protective materials (e.g., visqueen, booms) that must be readily available to construction personnel and requirements for the restocking of materials.		•		•	•	•
SPC-9	WQA-21	Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in upland areas at least 500 feet away from streams, 400 feet for public wells, and 200 feet from private wells.		•		•	•	•
SPC-10	WQA-22	Pumps and temporary fuel tanks for the pumps will be stored in secondary containment. Containment will provide a minimum volume equal to 110 percent of the volume of the largest storage vessel located in the yard.		•		•	•	•
WQA-1	WQA-23	Avoid placement of road bed material in channels (perennial, intermittent or ephemeral). Road bed material contains considerable fines that would create sedimentation in coarse cobble dominated stream channels. Even in seasonally dry reaches those fines could be transported during flow periods and negatively impact fish spawning reaches below.	•	•	•	•	•	•
WQA-2	WQA-24	On federal lands, consult with appropriate land management agency staff prior to siting and design for stream crossings (location, alignment, and approach for culvert, drive-through, and ford crossings). This may include a hydrologist, engineer and, for perennial and many intermittent streams, an aquatic biologist.	•			•		
WQA-3	WQA-25	All culverts on NFS lands, both permanent and temporary, shall be designed and installed to meet desired conditions for riparian and aquatic species as identified in the applicable Forest Plan. Culverts should not be hydraulically controlled. Hydraulically controlled culverts create passage problems for aquatic organisms. Culvert slope should not exceed stream gradient and should be designed and implemented (typically by partial burial in the streambed) to maintain streambed material in the culvert.	•	•	•	•		
WQA-4	WQA-26	Culvert sizing on NFS lands should also comply with Guidance for Aquatic Species	•	•	•	•		

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

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DEIS Number	New EPM Number for FEIS Submittal	Environmental Protection Measures	Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
		Passage Design, Forest Service Northern Region & Intermountain Region (Forest Service 2003f).						
WQA-5	WQA-27	On non-federal lands, culvert placement should comply with state BMPs.		•	•		•	•
SW-6	WQA-28	Migration of construction-related sediment to all adjacent surface waterbodies will be prevented.				•	•	•
TR-3	WQA-29	If the Project proposes to obtain water from wells or surface water sources to suppress dust, written approval from the landowner or regulatory agency will be obtained prior to appropriation.		•				•
LAND USE								
TR-7	TR-5	(See description under Transportation)						
LU-1	LU-1	Signs shall be posted at access points to access roads where public access is restricted by a land use plan, and on private, state, and Tribal lands at the request of the landowner, agency, or Tribal government. Signs shall indicate the restriction or regulation, location, penalty for violation, and appropriate contact information for reporting violations. Signage shall be maintained and replaced as part of the routine maintenance.			•	•	•	•
AGRICULTURE								
AGRI-18	AGRI-1	Consult with the Farm Service Agency and landowners to determine how construction may affect the CRP status of the land currently enrolled in CRP.	•					•
TRANSPORTATION								
TR-1	TRANS-1	A Traffic and Transportation Management Plan will be developed and implemented to provide site-specific details showing how the Project will comply with the EPMs listed in this attachment. This plan will be submitted to and approved by the appropriate federal, state, and local agencies with authority to regulate use of public roads, and approved, prior to the issuance of a Notice to Proceed with construction.	•			•	•	•
TR-4	TRANS-2	If a construction method requires the closure of a state- or county-maintained road for more than 1 hour, a plan will be developed to accommodate traffic as required by a county or state permit.	•	•			•	•
TR-5	TRANS-3	On county- and state-maintained roads, caution signs will be posted on roads, where appropriate, to alert motorists of construction and warn them of slow traffic. Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction to ensure safety and to minimize traffic congestion.	•	•			•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

1	2	3	4-6			7-9		
			Application Phase			Applicable to Land Ownership[1/]		
DEIS Number	**New EPM Number for FEIS Submittal**	**Environmental Protection Measures**	**Design and Engineering**	**Construction**	**Operations and Maintenance**	**Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9**	**State Land in Idaho**	**Private Land in Idaho Segments 4, 5, 7, and 10**
TR-6	TRANS-4	To reduce traffic congestion and roadside parking hazards, an equipment yard will be provided for primary parking for employee personal vehicles.	•	•		•	•	•
TR-7	TRANS-5	Unauthorized vehicles will not be allowed within the construction ROW or along roadsides near the ROW.		•		•	•	•
TR-8	TRANS-6	Construction vehicles will follow a 25 mph speed limit on unposted project roads.		•		•	•	•
TR-10	TRANS-7	Landowners will be notified at least 48 hours prior to the start of construction within 0.25 mile of a residence.		•		•	•	•
TR-11	TRANS-8	Emergency vehicle access to private property will be maintained.		•				•
TR-12	TRANS-9	Roads in residential areas will be restored as soon as possible, and construction areas near residences will be fenced off at the end of the construction day.		•				•
TR-13	TRANS-10	Roads negatively affected by construction and as identified by the agencies will be returned to pre-construction condition.		•		•	•	•
TR-14	TRANS-11	Roads developed specifically for this project that are identified by the Proponents as no longer necessary will be reclaimed as specified in the Final Reclamation, Plan. Culverts will be removed.		•		•	•	•
TRANS-1	TRANS-12	The Proponents will attempt to identify existing two-track trails as preferred access roads for construction.	•	•		•	•	•
TRANS-2	TRANS-13	Roads will be designed so proper drainage is not impaired and roads will be built to minimize soil erosion. Consult with appropriate Agencies during design stage.	•	•	•	•	•	•
TRANS-3	TRANS-14	Access roads built for the Project on federal lands shall be closed to the public unless otherwise agreed upon with the land management agency. Signs shall indicate the restriction or regulation, location, penalty for violation, and appropriate contact information for reporting violations. Signage and road closure measures shall be evaluated during routine visits and maintained or replaced as necessary as part of routine maintenance. Access roads constructed solely for use by the Proponents will be maintained by the Proponents as needed for Proponents use in accordance with the ROW grant/special use permits.	•	•	•	•		
TRANS-4	TRANS-15	Roads to be abandoned may be left intact through mutual agreement of the land management agency, landowner, the tenant, and the Proponents, unless located in flood areas or drainage hazard areas or otherwise restricted by federal, state, or local regulations.	•	•	•	•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

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AIR QUALITY								
AIR-1	AIR-1	Minimize idling time for diesel equipment whenever possible.		•		•	•	•
AIR-2	AIR-2	Ensure that diesel-powered construction equipment is properly tuned and maintained, and shut off when not in direct use.		•		•	•	•
AIR-3	AIR-3	Prohibit engine tampering to increase horsepower.		•		•	•	•
AIR-4	AIR-4	Reduce construction-related trips as feasible for workers and equipment, including trucks.		•		•	•	•
TR-2	AIR-5	Dust suppression techniques will be applied, such as watering construction areas or removing dirt tracked onto a paved road as necessary to prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates.		•		•	•	•
ELECTRICAL ENVIRONMENT								
–	EE-1	During final design, limit the conductor surface gradient in order to meet the IEEE Radio Noise Guideline.		•	•		•	•
–	EE-2	During construction, identify objects such as fences, metal buildings, pipelines, and other metal objects within or near the proposed ROW that have the possibility for induced potentials and currents and implement electrical grounding of these objects according to the utility's and National Electric Code standards.			•	•	•	•
–	EE-3	During final design and construction, identify areas where large equipment is anticipated and provide sufficient conductor clearance to ground to meet the NESC 5 mA rule or limit size or access of large equipment.		•	•		•	•
PUBLIC SAFETY (Blasting, Fire, Contamination)								
BLA-1	BLA-1	The Blasting Plan will identify blasting procedures including safety, use, storage, and transportation of explosives that will be employed where blasting is needed, and will specify the locations of needed blasting.		•		•	•	•
BLA-2	BLA-2	All blasting will be performed by registered licensed blasters who will be required to secure all necessary permits and comply with regulatory requirements in connection with the transportation, storage, and use of explosives, and blast vibration limits for nearby structures, utilities, wildlife, and fish (where blasting is conducted in waterbodies).		•		•	•	•
–	BLA-3	Appropriate flags, barricades, and warning signals will be used to ensure safety during blasting operations. Blast mats will be used when needed to prevent damage and injury		•		•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

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		from fly rock.						
–	BLA-4	Blasting in the vicinity of pipelines will be coordinated with the pipeline operator, and will follow operator-specific procedures, as necessary.		•		•	•	•
–	BLA-5	Damages that result from blasting will be repaired or the owner fairly compensated.		•		•	•	•
FIRE-1	FIRE-1	Train all personnel about the measures to take in the event of a fire including fire dangers, locations of extinguishers and equipment, and individual responsibilities for fire prevention and suppression.		•	•	•	•	•
FIRE-2	FIRE-2	Equip all construction equipment operating with internal combustion engines with spark arresters.		•	•	•	•	•
FIRE-3	FIRE-3	Restrict motorized equipment, including worker transportation vehicles, to the designated and approved work limits.		•	•	•	•	•
FIRE-5	FIRE-4	Require all motor vehicles and equipment to carry, and individuals using handheld power equipment to have, specified fire prevention equipment.		•	•	•	•	•
FIRE-6	FIRE-5	Provide a list of equipment capable of being adapted to fighting fires to local fire protection agencies.		•	•	•	•	•
FIRE-7	FIRE-6	Notify the appropriate fire suppression agencies of scheduled road closures.		•	•	•	•	•
FIRE-8	FIRE-7	Prohibit burning of slash, brush, stumps, trash, explosives storage boxes, or other Project-generated debris unless authorized by the applicable land management agency.		•	•	•	•	•
FIRE-9	FIRE-8	Designate a Fire Guard on each construction crew prior to the start of construction activities each day and provide a communications system for maintaining contact with fire control agencies.		•	•	•	•	•
FIRE-10	FIRE-9	The Proponents shall comply with fire restrictions and/or waivers as applicable.		•	•	•	•	•
ENV-2	CON-1	All construction staff will be trained on the types of contamination that could be encountered and how to respond if contamination is encountered.		•		•		
NOISE								
NOISE-2	NOISE-1	Identify and provide a public liaison person before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance.		•	•	•	•	•
NOISE-3	NOISE-2	Establish a toll-free telephone number for receiving questions or complaints during construction and develop procedures for responding to callers.		•		•	•	•
NOISE-4	NOISE-3	Implement and maintain a noise complaint review process to deal with residents' or other		•		•	•	•

Table Z-1. Companies' Proposed Environmental Protection Measures

GATEWAY WEST TRANSMISSION LINE PROJECT

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		potential queries and complaints as they arise. Such complaints would be logged and investigated on an individual basis to facilitate resolution of the issue of concern.						

1/ In Wyoming and Idaho Segments 6, 8, and 9, the EPMs will be applied to the entire segment (i.e., including the private and state land) except as follows:

- Proposed substation and regeneration sites located on private land unless they are standard EPMs of the Companies;
- EPMs that are only applicable to a specific BLM Field Office;
- EPMs that are only applicable to National Forest System lands; and
- Different practices will be followed on private property that are at the request of the property owner and don't violate the law.

In Idaho, Segments 4, 5, 7, and 10 are predominantly private ownership in agriculture and other development, and for the most part, the Federal land in these segments is clustered. In these segments, EPMs will be applied based on ownership except as follows:

- Proposed transmission line substation and regeneration sites located on private land unless they are standard EPMs of the Companies; and
- Different practices will be followed on private property that are at the request of the property owner and don't violate the law.

Appendix C

Mitigation Plans

- Appendix C-1 – Historic Properties Treatment Plan
- Appendix C-2 – Draft Framework for Compensatory Mitigation for and Monitoring of Unavoidable Impacts to Waters of the U.S.
- Appendix C-3 – Greater Sage-grouse Avoidance, Minimization, and Mitigation Measures

Appendix C-1

Historic Properties Treatment Plan

DRAFT
HISTORIC PROPERTIES TREATMENT PLAN

for the

GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

Prepared by:

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December 2012

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ABBREVIATIONS AND ACRONYMS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CRM	Cultural Resources Monitor
CRS	Cultural Resources Specialist
EIS	Environmental Impact Statement
FAR	fire-affected rock
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
HPTP	Historic Properties Treatment Plan
kV	kilovolt
NAGPRA	Native American Graves Protection and Repatriation Act
NHPA	National Historic Preservation Act of 1966
NHT	National Historic Trail
NPS	National Park Service
NRHP	National Register of Historic Places
NTP	Notice to Proceed
PA	Programmatic Agreement
Project	Gateway West Transmission Line Project
Companies	PacifiCorp (Rocky Mountain Power) and Idaho Power Company
ROW	right-of-way
SHPO	State Historic Preservation Office
Segment Plan	Segment Historic Properties Treatment Plan
THPO	Tribal Historic Preservation Office
USFS	United States Forest Service
VCR	visual contrast rating form
VRM	Visual Resources Management

1.0 INTRODUCTION

This Project-wide Historic Properties Treatment Plan (HPTP) is the first step in preparing mitigation measures for properties eligible for or listed on the National Register of Historic Places (NRHP) that would be adversely affected during construction of the Gateway West Transmission Line Project (Project). It is required by the Programmatic Agreement (PA) for the Project and will be approved by the signatories and invited signatories of that PA in consultation with the Concurring Parties. This first draft was prepared by PacifiCorp (doing business as Rocky Mountain Power) and Idaho Power Company, collectively known as the Companies, as specified in the PA. It has not been reviewed or approved by any agency or the Parties to the PA. It will be considered final after review and approval by the Bureau of Land Management (BLM) and the Idaho and Wyoming State Historic Preservation Offices (SHPOs).

The purposes of this HPTP are to be applicable Project-wide and to:

- Serve as the framework document for subsequent site-specific treatment plans, prepared as a series of Segment Historic Properties Treatment Plans (Segment Plans, to be appended to this HPTP as each is approved)(appended to Attachment D);
- Provide a summary and overview of the Project itself, the Area of Potential Effects (APE), and previous research conducted in the area;
- Summarize methods for determination and documentation of effects that have been used on this Project and will be used in the event of additional discoveries;
- Document the measures that the Companies have already taken or will take to avoid and minimize impacts to properties eligible for or listed on the NRHP;
- Provide treatment guidelines for certain categories of adversely affected Historic Properties;
- Present a Monitoring Plan (Attachment A) including guidelines for how avoidance and minimization measures will be employed in the field during construction and operation, how their success will be documented, procedures for halting construction, including agency notification in the event of unanticipated discoveries during construction and under what circumstances cultural resources monitors will be present where previously undetected cultural resources may be found;
- Present an Inadvertent Discovery Plan (Attachment B), which specifies the procedures to follow in the event that cultural resources are found during construction or operation which were not detected during the various surveys conducted prior to ground-disturbing activities;

- Present a plan for compliance with the Native American Graves Protection and Repatriation Act (NAGPRA) (Attachment C) and how its terms will be employed on federally managed lands

1.1 HPTP and the Programmatic Agreement

In consultation and with the active participation of the Advisory Council on Historic Preservation (ACHP), the BLM developed a PA for the Project to guide Project compliance with the National Historic Preservation Act (NHPA) (BLM 2012). The PA Stipulation V.A. requires the Companies to prepare this document. The Companies will submit this HPTP to the BLM for review and comment. When the BLM has approved the HPTP they will distribute the document to the signatories, invited signatories, and consulting parties for a 20-day review period. They will revise the document and its appendices based on review comments and submit a revised HPTP to the same reviewers for a final 10-day review. The HPTP will be revised if needed and the BLM will submit the final HPTP with comments to the SHPO for review and comment for 30 days. The BLM will incorporate any changes and provided to the SHPO for final approval.

The Companies will develop a site-specific treatment plan for each work element for which they wish a separate Notice to Proceed (NTP) from the BLM (PA Stipulation X.B). The schedule and details for Segment Plan preparation are found in Section 4.4 of this document. As each is prepared and approved, it will be appended to this document.

If there appears to be a discrepancy between the stipulations in the PA which have been summarized, described, or interpreted in this Plan, the conditions and stipulations, as written in the PA, supersede interpretations in this Plan.

1.2 Organization of the HPTP

Section 1 of this HPTP is the Introduction. Section 2 is the project history and description. Section 3 presents the previous research and site types within the Project analysis area. Section 4 presents the methods, roles and responsibilities, and schedule for the determination of effects. Section 5 outlines the sequence of project-related tasks. Section 6 outlines the proposed mitigation for classes of affected Properties. Section 7 is a list of references cited in this HPTP.

2.0 PROJECT AND APE DESCRIPTION

This section provides a brief project description and history of the Project and defines the Area of Potential Effects.

2.1 Project Description

The Companies are proposing to develop approximately 1000 miles of new 230-kilovolt (kV) and 500-kV alternating current electric transmission system consisting of 10 segments between Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The Companies applied to the BLM for a right-of-way (ROW) grant to use the National System of Public Lands for portions of the Project. See Figures 1a and b for Project Maps.

2.2 Area of Potential Effect (APE)

The Area of Potential Effects (APE) is the geographic area, regardless of land ownership, within which an Undertaking (in this case, the Project) may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist. The BLM, in consultation with appropriate Signatories, Invited Signatories and Concurring parties, has defined and documented the APE based on direct, indirect, and cumulative effects from the Project. The APE includes federal, state, tribal, and private lands that may be affected by the Project's transmission line corridor, and staging areas, access roads, borrow areas, transmission substations, and other related transmission infrastructure. The APE, as defined and documented, is a baseline for survey and inventory. If BLM determines that unforeseen changes to the Undertaking may cause direct, indirect, or cumulative effects to historic properties beyond the extent of the established APE, then BLM shall adjust the APE using the process set forth in the PA (Stipulation I.B.3).

2.2.1 Direct Effects

The APE for direct effects is the area within which historic properties may sustain physical alteration or destruction as a result of the Project. The following APEs take into account ground-disturbing activities associated with the Project:

- For transmission lines, the APE will be 500 feet (250 feet on either side of centerline for the right-of-way).
- The APE for access roads, except for existing crowned and ditched or paved roads and service roads, will be 100 feet on either side of the centerline for a total width of 200 feet.
- The APE for staging areas, borrow areas, substations, and other transmission infrastructure will include the footprint of the facility and a buffer of 200 feet around the footprint of the proposed activity.
- The APE for pulling/tensioning sites that fall outside the right-of-way will be the footprint of the site plus a 250-foot radius around these points.

- The APE for boreholes is a five acre area centered on the borehole.

2.2.2 Indirect Effects

The APE for indirect effects on historic properties considers visual, audible, and atmospheric elements that could diminish the integrity of the properties for which setting, feeling and/or association are qualifying characteristics of NRHP eligibility. The indirect APE for the Project extends for five miles, or to the visual horizon, whichever is closer, on either side of the proposed routes and alternatives. The indirect APE may extend beyond the five-mile convention to encompass properties that have traditional religious and cultural importance or other historic properties when effects have been determined to extend beyond this distance. The assessment of visual effects will incorporate a Geographic Information System viewshed assessment as well as BLM Visual Resource Management (also referred to as VRM) concepts (discussed in the PA, Stipulation II.C.2).

Figure 1a Regional Location Map and Transmission Line Routes and Alternatives – Wyoming

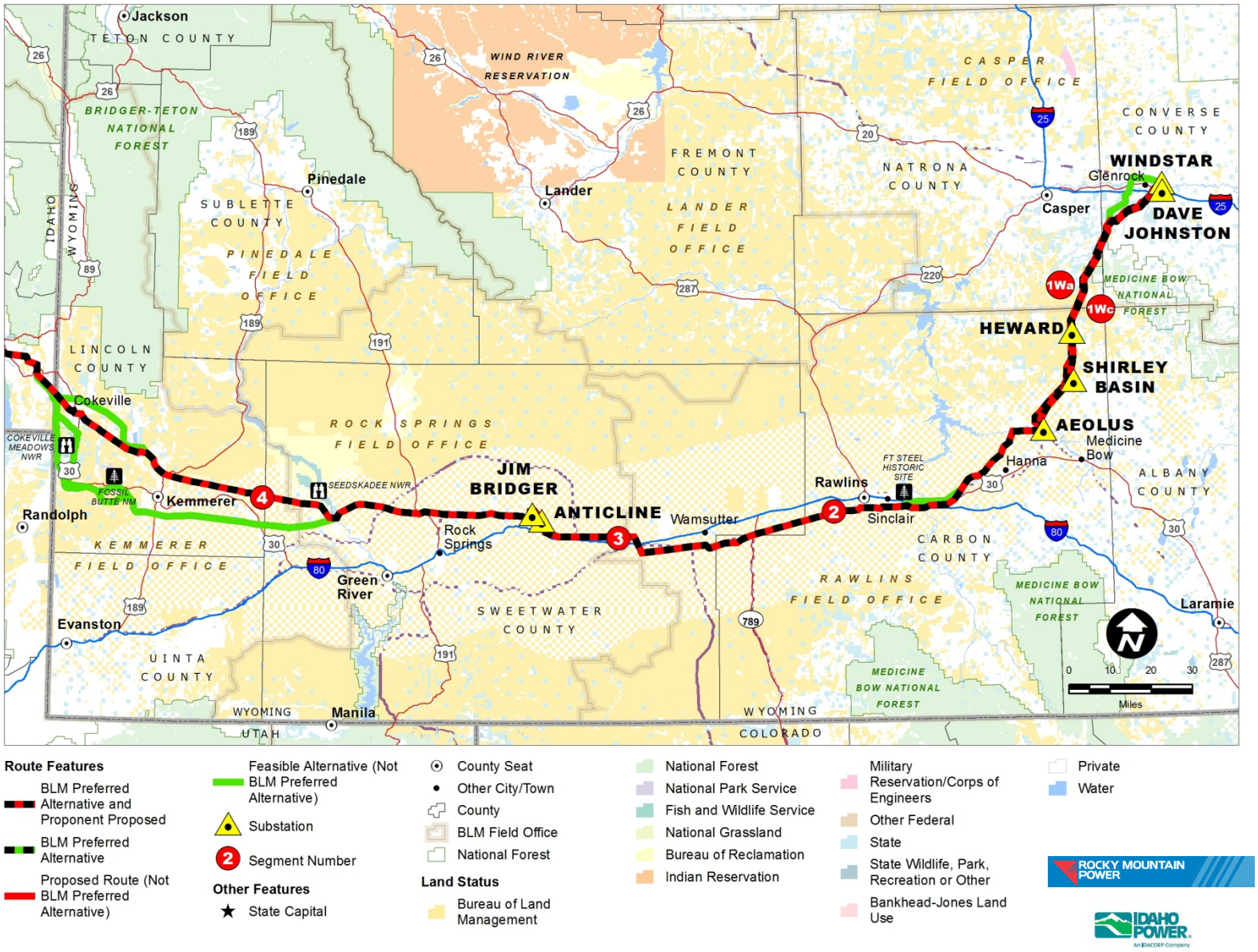
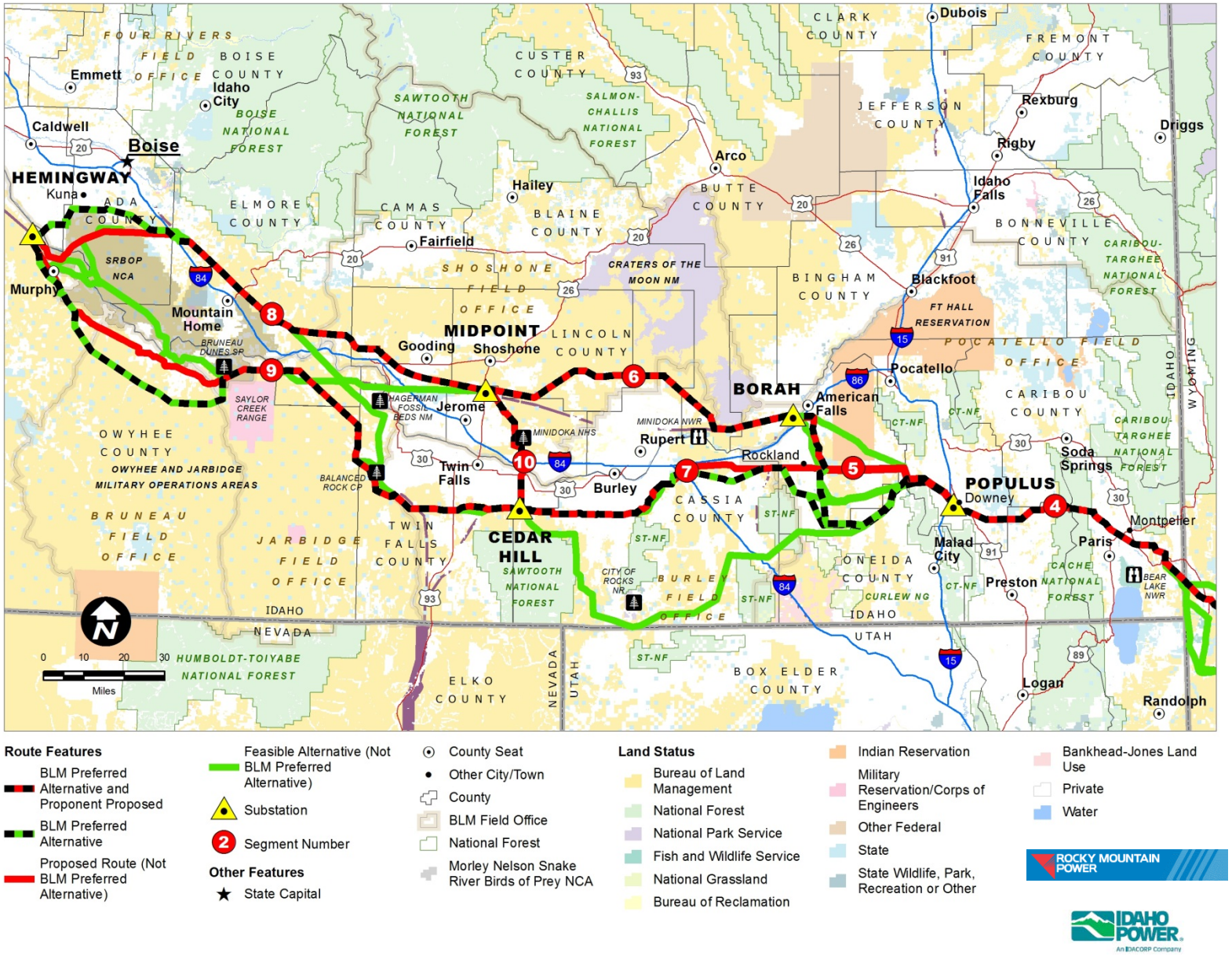


Figure 1b Regional Location Map and Transmission Line Routes and Alternatives – Idaho



3.0 PREVIOUS RESEARCH AND CULTURAL RESOURCES TYPES IDENTIFIED WITHIN THE PROJECT AREA

This section discusses the identification of resources and briefly discusses previous literature review, pedestrian field survey, and research conducted for the Project. It also identifies cultural resources types within the project area. Because of the phased nature of the Project, surveys will be conducted up to construction, and where changes in Project footprint occur, surveys will be conducted during construction. The agreed methods for conducting these surveys, reporting on them, documenting sites, determining eligibility, determining effects, and finally determining needed mitigation or treatment where impacts cannot be avoided, is provided in Section 4 and requires the context of previous research and cultural resource types identified in this section.

3.1 Identification and Evaluation of Historic Properties

This HPTP is based on the results of cultural resource inventories, consisting of background records and literature research and intensive pedestrian surveys for the Project. Similarly, the Segment Plans will also rely upon previous surveys (see Section 4.4). The PA outlines six phases in which the Companies have and will continue to conduct cultural resources inventory and identification of Historic Properties for this Project. The BLM will ensure that all work undertaken for this project will: satisfy the terms of the PA; meet the Secretary of Interior's Standards for Archeology and Historic Preservation (48 FR 44716); meet the requirements outlined in BLM Manual 8110; meet state SHPO standards, including guidance and standards found in respective BLM and SHPO state protocols; and meet the individual state BLM permitting requirements. The six phases are outlined in the PA and can be found in Section II.C.1-6.

3.2 Archival Research and Results

The Companies' team of archaeological consultants preformed a literature and records review encompassing 0.5 mile area on either side of the Proposed and Alternative Project Routes. Available existing records of previously recorded sites and studies/inventories were gathered by an official file records request to each state SHPO. In addition, other data sources included published and unpublished literature, chronologies, cultural and historical contexts, and information provided by the BLM, United States Forest Service (USFS), and the National Park Service (NPS) Trails Office. The literature and records review (Phase I) was analyzed and developed into a comprehensive cultural narrative overview and synthesis of data on prehistoric and historic resources for a management focused technical report. The technical report of this analysis is filed as a confidential document in the Idaho and Wyoming BLM Field Offices that the Proposed Route crosses (Henderson et al. 2009; Nilsson et al. 2009). Table 1, below, summarizes the record search results for the Project analysis area.

Table 1. Literature Review Results for the Project Analysis Area

State	Previous Inventories	Total Sites	Prehistoric	Historic	Multicomponent
Wyoming	1,200	3,000	2850	150	<10%
Idaho	1,550	600	480	120	<10%
Nevada[1]	2	200	200	0	0

3.3 Field Survey Methods and Results

The Companies' team of archaeological sub-consultants conducted an intensive pedestrian survey of 15 percent of the length of the Proposed and Alternative Project routes located on federal land in 2008, 2009, and 2010. This survey consisted of randomly selected 500-foot-wide by 1-mile long sample segments (areas previously surveyed in the last 5 years, 25 percent slopes, or exhibited recent disturbance were excluded) (BLM 2011). The consultant used 30-meter interval pedestrian linear survey transects across each sample. In addition, a Class III inventory was completed for the geotechnical locations (5-acre blocks centered on the borehole location). The inventory report is filed as a confidential document at the appropriate Idaho and Wyoming BLM Field Offices. Table 2, below, provides inventory results reported in the Gateway Project Draft Environmental Impact Statement (EIS):

Table 2. Field Survey Results reported in the Draft EIS 2011

State	Acres Surveyed	Total Archaeological Sites
Wyoming -15% Sample	5,818	40
Idaho-15% Sample	11,514	131

Each Segment Plan will contain a table listing archaeological sites that will be avoided and sites that require a prescribed treatment within that segment.

3.4 Ethnographic Studies

In an effort to identify and protect Tribal contemporary and ongoing use of culturally significant areas and/or sites and to assist the BLM with their Tribal consultation requirements by law, the Shoshone-Paiute, Shoshone-Bannock, Eastern Shoshone, and Northern Ute Indian Tribes requested ethnographic studies be conducted for the Project analysis area. The ethnographic studies will combine cultural resource literature review results and ethnographic interviews to identify any culturally sensitive resources. The BLM will treat all information confidentially and the Tribes will control the distribution of their respective reports. One study has been completed

[1] The Nevada routes have been dropped from consideration. This information reflects work conducted prior to the elimination of these alternatives.

for the Shoshone-Paiute Tribes and another is in progress. No traditional cultural properties have been identified as of December 2012.

3.5 Trails Report

A study of visual impacts to historic trails and trail-related historic properties was conducted for the Project analysis area and discusses impacts to visual resources on Public lands and specifically analyzes the impacts of the Project on the setting of these historic properties where appropriate. The report is on file with the Idaho and Wyoming state BLM field offices.

3.6 Definition of Cultural Resources Site Types

The following is a summary of the different cultural resource site types found in Wyoming and Idaho. This list is included in the draft Project EIS and was derived from the state SHPO databases and literature review.

3.6.1 Prehistoric Resources

Prehistoric resources found in the Project analysis area include**:**

Open Camps are minimally defined by the presence of one or more hearth features. The resource type includes open camps, stone circle sites, ceramic sties, and bone beds/kill sites.

- Stone Circle Sites—Although evidence suggests that many of these sites are habitation sites, the function of stone circles cannot often be inferred from the available archaeological data and is often determined through Native American consultation.
- Ceramic Sites—open camps that exhibit the presence of prehistoric pottery. Such temporally diagnostic artifacts are useful in determining not only the age of an occupation, but the cultural affiliation of the occupants.
- Bone Beds/Kill Sites/Impoundments—are location where large and medium-sized animals were killed and butchered. Sites typically consist of a large scatter of animal bones in association with lithic scatters.

Ritual Sites are places where formalized ceremonies took place or are natural features on the landscape that have religious significance. In the Project area, stone alignments and cairns are the most visible remnants of ritual localities. The most dramatic example of such sites is the “medicine wheel,” which consists of concentric circles of stones, radiating lines or spokes, and an altar stone or cairn in the center (BLM 2011).

Sheltered Camps generally consist of a rock overhang or cave, with evidence of human occupancy such as smoke-stained ceilings, artifact scatters, or other features.

Rock Art Sites include pictographs or petroglyphs, which are respectively drawn or inscribed on rock faces. The images often depict events such as battles, spiritual visions, environmental observations, hunting activities, deaths and burials, geometric shapes, or simply the visitation of an individual or group at that location.

Mortuary Sites are locations where a body has been interred or is related to burial practices.

Limited Activity Sites are short-term camps where a specialized activity took place. They include lithic scatters, lithic landscapes, quarry sites, and vegetal processing sites.

- Lithic Scatters—consist of stone materials that remain from lithic procurement activities or stone tool manufacture, and may include bifaces, unifaces, and flaking debris.
- Lithic Landscapes—cover many miles and are areas or regions where aboriginal peoples habitually tested and procured tool stone and lithic materials. The result is a cultural landscape created by thousands of years of repeated use.
- Quarry Sites—are lithic procurement locations where prehistoric peoples extracted lithic materials from primary or secondary geological contexts.
- Vegetal Processing Sites—are locations where diagnostic artifacts indicate the collection of processing of floral remains without evidence of occupation. They are often separated from other sites because they identify a specific type of resource extraction activity.

3.6.2 Historic Resources

Historic Resources identified within the Project analysis area include:

Trails—the Native Americans had developed extensive trail networks for travel and trade prior to the Euro-American westward migration. Many Native American trails were used by emigrants and are now more widely recognized as historic trails such as the Oregon National Historic Trail and the California National Historic Trail (NHT).

- Historic Trails—includes historic trails, stage roads, and freight roads, such as, Emigrant Trails and National Historic Trails. Trails can range from faint swales to ruts, two-tracks, or modern roads.

Agricultural/Animal Husbandry Sites are locations, features, or structures associated with cultivating land, raising crops, feeding, breeding, or tending to domestic animals and raising livestock.

Exploration/Resource Extraction—the growing number of westward migrating emigrants in the 19th century began to actively explore for, prospect, and exploit natural resources within the Project analysis area. Resources for this site type include:

- Lumbering Sites—are buildings, structures, objects, sites, or districts associated with cutting or preparing lumber.
- Mining Sites—include any buildings, structures, objects, sites, or districts associated with natural resources extraction, such as oil, gas, coal, or other mineral. Mining sites are identified by single and multi-family houses (made out of milled wood, brick, stone, or logs), bunk and boarding houses, concrete and stone foundations, commercial buildings (saloons, stores, and warehouses), industrial buildings (machine shops and warehouses),

mining-related buildings (pump and fan houses, elevator and hoist houses, changing rooms, tool storage houses), cisterns, wells, privies, and railroad features (trestles, spurs, switching equipment, lights, and yards). Mining-related features include adits, shafts, air shafts, hoist frames, and trestles. Artifacts include domestic materials (glass, clothing items, ceramics, food and beverage containers, and tools), machinery (pumps, fans, hoist and elevator equipment), and miscellaneous items such as head lamps, lunch pails, pipes, and other personal items.

- Power Transmission Sites—are locations, features, or structures involved with the movement of energy from one place to another. Until recently, transmission lines have not been widely recorded as historic sites. The historic context statement written for the Bonneville Power Administration (BLM 2011), and a report prepared for the Western Area Power Administration that was submitted to the Colorado and Wyoming SHPOs (BLM 2011), contain detailed historic context on the design and construction of electrical transmission systems in the western U.S.

Transportation Sites include buildings, structures, objects, sites, or districts that are associated with the movement of people and their belongings from one place to another. These sites can be related to air, rail, water, road, or pedestrian travel (BLM 2011). Resources within this category include historic roads, bridges, railroads, and airfield features.

Waterworks Sites consist of buildings, structures, objects, sites, or districts that that store and supply water to its point of use.

Other Historic Sites – This category comprises the remaining resource types that do not share a related socioeconomic theme. These resource types include inscriptions, military sites, and urban and rural sites:

- Inscriptions—sites where historical, religious, or other records are cut, impressed, painted, or written on stone, brick, metal, or other hard surface.
- Military—sites can include buildings, structures, objects, sites, or districts that are associated with any activity that occurred to support military action or where military activities have taken place. Sites can include, but are not limited to, arms storage, fortification, facilities, battle sites, and roads (BLM 2011).
- Urban—sites are locations, features, or structures associated with human settlement in a town or city.
- Rural—sites include buildings, structures, objects, sites, or districts associated with human settlement in the non-urban setting.

4.0 METHODS FOR DETERMINATION AND DOCUMENTATION OF ELIGIBILITY, AND EFFECTS

This section discusses the methods to be used to determine effects and presents the review and revision requirements as specified in the PA.

4.1 Determination of Eligibility

The NHPA is the principal federal law guiding BLM action with respect to the treatment of cultural, archaeological, and historic resources. Section 106 (16 United States Code [U.S.C.] 470f) of the NHPA requires that federal agencies take into account the effects of their undertakings on historic properties listed or eligible for listing on the NRHP, and give the ACHP and SHPO a reasonable opportunity to comment on the undertaking. Historic properties are "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places" (16 U.S.C. 470w [5]). The criteria used to evaluate NRHP eligibility of properties affected by federal agency undertakings are contained in 36 Code of Federal Regulations (CFR) Part 60.4.

The Companies' Project archeologist(s) will include recommendations of eligibility for cultural resources identified within the Project APE as a result of Phase 2-6 reporting. The BLM, in consultation with the signatories, invited signatories, and concurring parties, will determine the NRHP eligibility pursuant to 36 CFR 800.4(c)(1) for each property identified within the APE of the Project (see PA, Section II, D, a and b).

For each site, the determination of eligibility will be completed prior to an assessment of effects.

4.2 Determination of Effects

Each site that meets the NRHP eligibility will be evaluated to determine if the project will adversely affect it. An effect occurs if there is a potential to alter the site's attributes that contribute to its NRHP eligibility status. The BLM, in consultation with the signatories of the PA, makes determinations of effect consistent with 36 CFR 800.4(d); identifies any adverse effects for each historic property within the APE in accordance with the criteria established in 36 CFR 800.5(a)(1) and (a)(2)(i)-(ivv); and provides appropriate Signatories, Invited Signatories and Concurring parties with the results of the findings following CFR 800.11(e)(4)-(6).

These determinations of effects will serve as the basis for the development of the HPTP Segment Plans. The BLM will also utilize the Visual Contrast Rating (also referred to as VCR) system assessment to determine the indirect visual effects of the proposed Project on historic properties. In addition, The BLM will, in consultation with the signatories to the PA, broadly assess cumulative effects under Section 106 in order to identify reasonably foreseeable, potentially adverse effects as a result of the proposed Project (PA Section II[E][1-3]).

4.3 Site Recording and Evaluation Methods

Several efforts have been made to avoid cultural resources. If previously unidentified archaeological resources are discovered within the project APE during construction, the procedures outlined in the Monitoring Plan (Attachment A) will be followed. In general, the Cultural Resource Specialist (CRS), or Cultural Resource Monitor (CRM)[2] will halt construction within 200 feet of the find, notify the BLM and/or SHPO, and record and map the isolated find or archaeological site to the appropriate state standards for submittal to the agencies. Construction can resume when the BLM approves the CRS evaluation of the find as ineligible or mitigation measures are approved by the relevant BLM and SHPO offices.

Additional archaeological field staff (e.g. field director, crew chief, etc.) may be required to assist and complete archaeological site recording, testing, and data recovery for large complex sites, if the CRS and/or CRM(s) are needed in other areas were construction is continuing and ongoing, and/or in an effort to complete the work within a scheduled amount of time (as not to delay construction for too long). All archaeological field crews will work under the supervision of the CRS. The roles and responsibilities of all cultural resource's personnel are detailed in Attachment A, Monitoring Plan.

4.3.1 Site Recording Methods

The CRS or CRM will record cultural resources on the appropriate state archaeological site form (Attachment A, Monitoring Plan, Attachment 2). The site area will be recorded and evaluated to determine whether it requires further testing or other mitigation measures. A tape measure and compass or Global Positioning System (GPS) will be used to record the distance and bearing of surface artifacts from the site datum and to prepare a detailed scale map of prominent site features. This map will show landmarks, artifacts, and test unit (as appropriate) locations. The site will also be plotted on a United States Geological Survey 7.5' topographic map. All activities will be confined to the Project APE.

The CRS, CRM, or archaeological field crew (if additional staff other than the CRS/CRM are needed to assist with recording) will also photograph the site and record standard site information about the topography, physiography, vegetation, location, and artifacts and features (mapped in plan view and/or profile, as appropriate), and produce stratigraphic profiles of selected trench walls (if find is located during construction trenching of linear line) in which cultural materials are exposed for the archaeological site form. Soil colors will be recorded using the Munsell soil color charts. No artifacts will be collected for curation unless at the request of the BLM Archaeologist or the Native American Monitor. An eligibility recommendation will be made for the resource on the form. A permanent site number will be obtained from the appropriate state SHPO. The draft site form, along with maps and photos, will be submitted to

[2] The roles and responsibilities of cultural resources personnel are detailed in Attachment A, Monitoring Plan

the BLM for review and approval. Any potential human remains must be treated as described in the NAGPRA Plan (see Attachment C).

4.3.2 Site Evaluation Methods

Site avoidance will be the preferred method of dealing with cultural resources during construction of the Project. However, if a newly discovered resource is potentially significant and if avoiding the resource proves infeasible (as determined though consultation between the CRS, BLM, SHPO, and Companies), then site evaluation will proceed.

Evaluation methods for a site will consist of assessing the integrity of the site, inventorying and identifying surface artifacts for analysis (non-collection of artifacts is preferred, if possible analysis of surface artifacts will be conducted in the field) and determining whether or not sub-surface deposits exist, conducting any necessary test investigations to determine whether the site has a subsurface artifact component, and conducting data recovery excavations if necessary.

Site investigations under this plan will take place in two stages. The first stage, test investigations, will help determine the extent, depth, and contents of the site. The purpose of the test investigation phase will be to recover information about the site and whether or not it would meet NRHP criteria for eligibility. Test units consist of shovel test units (STUs) and test excavation units (TEUs). If the archaeological site is exposed within a construction trench, then test units may consist of column samples.

Based on the results of the test excavation, the CRS in consultation with the BLM and SHPO, will determine either that full-scale data recovery is necessary, or that test investigation has exhausted the research potential of the site. If data recovery excavations are warranted, the structure of this HPTP and information gathered during the test investigations will be used to develop a Treatment/Data Recovery Plan. In addition, the plan will be completed in consultation and agreement among the signatories of the PA.

The general evaluation procedures that would be used to examine newly discovered sites, including surface investigations, test investigations, and data recovery, are briefly described as follows. The Wyoming BLM Field Guide for Evaluative Testing of Archaeological Sites is also provided in Attachment E as a reference for sites within the state of Wyoming. The Project Archaeologist will consult with the BLM and SHPO regarding appropriate procedures for testing.

Remote Sensing—Remote sensing techniques include magnetometry, gradiometry, soil resistivity, and ground penetrating radar. Remote sensing is most useful on specific site type deposits that contain more than one burred feature such as buried hearths, pit houses, or burials. If remote sensing would be useful in evaluating the site, the project Team would prepare a research and work plan which contains strategies for grid coverage and anomaly evaluation and testing. Remote sensing is the least site disturbing technique and may be the quickest way to obtain archaeological evidence.

Surface collection—The project team would first attempt to gather as much information as possible without formal excavation. Non-collection of artifacts is preferred, and when possible and/or feasible, analysis of surface artifacts will be conducted in the field. Surface sample collection often provides considerable information about the site's artifactual constituents. Soil augering can provide stratigraphic information, particularly when coupled with phosphate analysis of soil samples taken at various depths in the auger cores. A 3-inch diameter soil core or larger bucket auger will be used (BLM 2003). Soil phosphate analysis assesses the quantity of phosphate chemicals in soils, which is a strong correlate, under most conditions, of artifact density. The use of these techniques must be considered in relation to their potential benefits and cost.

Shovel test units—The field crew will excavate STUs to determine the depth and artifact density of the deposit. STUs are systematic units excavated in discrete, arbitrary levels. The STUs will be 30-35 cm in diameter and will be evenly distributed at major points on a square grid pattern where the squares are 5 or 10 meters (depending on site type) on a side so that the intervals between STUs will be 5 or 10 meters. Some STUs will be placed near the perceived center of the site, and others near the probable site boundaries. STUs will be placed farther out from the center of the site until no debitage/cultural material is recovered. Shorter intervals, both along and between transects, may be necessary to confirm the subsurface site boundary. STUs will be excavated in levels 10-cm or 20-cm thick, to a depth at least 20 cm below surface for STUs that do not contain subsurface artifacts, or to a depth one level (10-20 cm) below the last level in which artifacts are found for STUs that contain subsurface artifacts. If the site deposits are sufficiently deep that excavation in an STU becomes impractical, the excavators will use a bucket auger from the lower limit of feasible excavation to gauge the deposit's depth. All excavations will be restricted within the Project APE.

All excavated materials will be screened using 1/8-inch mesh or 1/4-inch mesh. They Wyoming site testing protocol request 1/8-inch mesh be used for sand and loose soils and where small artifacts (e.g. seeds, charcoal, retouched flakes, small animal bones) are expected. The Wyoming protocol also suggest ¼-inch mesh in instances where soils consists of heavy and wet clays and/or the mesh size can recover the types of artifacts the site is likely to contain (BLM 2003). Material will be sorted into cultural classes (e.g., flaked stone, ground stone, bone, shell, charcoal, etc.) and for historics (e.g., glass, metal, ceramic, etc.). The material will be collected and cataloged by level. The field crew will record the soil, stratigraphy, site disturbances, and artifact contents of the STU levels on standard STU level forms. They will describe soil color using the Munsell Soil Color Chart and will describe soil texture using standard U.S. Department of Agriculture Natural Resource Conservation Service terminology.

Test excavation units—TEUs will be excavated if the site exhibits subsurface midden or concentrations of material. The stratigraphy will be assessed to evaluate the integrity of the deposit, and a profile will be drawn if stratigraphy is apparent. For the preliminary excavation phase, the field crew would first establish a grid of Cartesian coordinates relative to the site's

permanent datum so that crew members can accurately describe any location on the site in terms of metric units east and north of the grid's off-site origin (relative to the site's baseline). Next, they will choose TEUs from within the areas greatest concentration, placing the units in relatively undisturbed areas. The number of units will depend upon site size, following the formula of 1 unit per 2,000 square meters of site. The units would be 50 x 50 centimeters or 1 x 1 meter units, excavated in 10-cm levels.

The field crew will excavate, keeping detailed notes on each level's contents, and collecting each level's artifacts and materials separately. The notes will be taken on standard level-note forms, printed on acid-free paper. The CRS and or Archaeological Field Director will also keep a notebook for recording general observations and impressions about the site and excavation. Excavation will proceed using sharpened shovels and masonry trowels. The crew will screen all dirt through ⅛-inch mesh and will collect all artifacts and possible ecofacts such as animal bones, shell, and charcoal, and bagging each material type separately, with a separate catalog number. The crew will photograph each excavation and draw a scale map of each level's floor. If fire-affected rock (FAR) is encountered, the crew will count and weigh the FAR from each level, but will discard in the tailings and returned to the excavated unit upon completion of work and upon backfilling. Excavation will continue to and beyond the boundary with the culturally sterile site soil matrix (confined within the Project APE). Each unit will be backfilled after completion.

Column sampling instead of a complete excavation unit may be appropriate if an archaeological deposit is exposed in a construction trench where access is restricted. The field crew would first use trowels and other implements to smooth the trench profile and reveal the natural and cultural stratigraphy. The crew would then lay out an excavation unit on the surface, 1 m wide (or the width of the trench if less than 100 cm) and 50 cm deep. Any non-cultural overburden would be visible in the trench profile and would be removed without screening. The remaining cultural stratigraphy would be removed from the profile by natural levels, if apparent, and screened through ⅛-inch mesh. This sample would be analyzed to determine the density, contents, and integrity of the deposits.

For sites of the historic era, test excavation would be most appropriate within ruined structures, refuse pits, and privy types. Otherwise, test excavation methods used would be similar to those used for prehistoric sites, except that ¼-inch screen would be more appropriate.

Data recovery excavation—Planning for full-scale data recovery excavation to mitigate the loss of substantial and significant archaeological deposits will be guided by data gathered during the test investigations and by the research design (site specific treatment plan or HPTP Segment Plan). The CRS will consult with the BLM, SHPO, and concerned regional Native Americans, regarding data recovery excavations. In addition, design and execution of data recovery would be done in consultation and agreement among the signatories of the PA for cultural resources.

Sampling for data recovery excavations will follow standard statistical sampling methods, but will be confined to the direct impact area (facility site, access road, spur road, tower location,

laydown area, etc.). The CRS may choose the units for excavation by consulting a table of random numbers, or the first unit may be chosen at random and the remainder located at some regular interval in relation to this unit (systematic sample). If structural features are present or are found, additional units will be placed non-randomly to expose the features. Depending on the site, the site-specific research design, and data needs to address specific research questions, different sampling techniques might be appropriate.

Excavation, collection, and cataloging methods will be similar to those used for the TEUs. All structural features discovered during excavation will be carefully excavated. After profiling the feature (excavating one-half of it), the feature will be drawn and photographed. If the feature is a hearth, storage pit, or ash dump, the field crew will collect its contents for flotation to recover floral samples.

The field crew will make every attempt to locate and collect datable carbon. Charcoal features will be carefully excavated to preserve and document the association of separate pieces so that the laboratory can use the standard method of radiocarbon assay. Very small pieces will also be collected, so that these can be submitted for dating using the accelerator mass spectroscopy (AMS) method, if necessary, for prehistoric sites.

For sites of the historic era, very similar techniques would apply, except that large-scale excavations would take place in and around ruined structures and refuse deposits within the Project APE.

4.3.3 Preliminary Data Analysis Methods

This analysis will all be conducted in accordance with BLM and state protocols and guidelines. Preliminary descriptive analyses of artifacts will begin once the collection has been catalogued and prepared for storage. The laboratory director and crew will then count and weigh all cataloged items in the collection. They will enter this basic information into a computerized database (such as Microsoft Access) by site, grid unit, and level. They will take the counts and weights for FAR from the unit level forms.

For prehistoric sites, the laboratory director and crew will also conduct preliminary analyses of raw material type and stone tool waste category for lithic debris.

For ground stone, the preliminary analysis will include a count of raw material type and descriptions of the shapes of ground stone surfaces and the patterns of wear found on them. Preliminary bone and/or shellfish analyses will include sorting into bird, mammal, shell, and fish bone, and counting and weighing by these categories.

The preliminary analysis of manufactured items such as shell beads, chipped stone tools, and cores and core choppers will be more detailed. The laboratory director and crew will weigh these and measure each major dimension for recording in the computerized database. The illustrator will prepare a scale drawing of all diagnostic stone tools, or a reasonable and representative sample if these are numerous.

Analysis of historic period artifacts will begin with separation into major artifact categories, including glass, ceramics, cans, nails, metal, buttons, coins, leather, cloth, other materials, and other metal artifacts.

4.3.4 Specialized Data Analysis Methods

The preliminary analysis phase will complete the basic inventory of artifacts and materials collected so that the CRS can begin to prepare a basic summary of the excavation and its results. Also, by examining the preliminary descriptive results of the excavations, the CRS can begin to discern patterns in the occurrence of the artifacts and materials that will guide additional analyses and help in interpreting the site. Specialized analyses will follow these preliminary and descriptive analyses. These analyses may involve both the application of very specialized techniques by specially trained experts and the execution of analyses designed to answer specific research questions regarding a particular site.

4.3.4.1 Lithic Analysis

The goal of the extended lithic analysis will in most cases be to infer from the stone tool waste present on a site the kinds of tool manufacture or maintenance activities undertaken at a site and the relative importance or frequency of different activities. This, combined with other information, might lead to an interpretation of the role of a site in a settlement-subsistence system.

Lithic analysis will be conducted by the field crew (under the supervision of the CRS) and will include identification of raw material and reduction stage for debitage, and functional and wear patterns analysis for tools. An attempt will be made to identify the sources of lithics used; if obsidians are found, they will be submitted for source identification through x-ray fluorescence, and dated through obsidian hydration analysis.

4.3.4.2 Sedimentology

Samples of sediment will be subjected to textural analysis at a commercial laboratory and the results used along with stratigraphic descriptions to interpret the sedimentary history of the site.

4.3.4.3 Blood and Plant Residue Analysis

Blood and plant residues on stone artifacts can be used to determine how manos, metates, and other plant processing tools might have been used or to determine the species of animal that was butchered or killed using a particular projectile point, knife, or utilized flake. This analysis requires that the artifacts not be washed and that control samples of soil and unutilized cobbles are collected with the artifact to be analyzed.

4.3.4.4 Bead and Ornament Analysis

Shell, steatite, or schist beads or ornaments can be analyzed for stylistic type and variation within type. Beads are sometimes sensitive time indicators and can also provide information about long distance trade networks in prehistory.

4.3.4.5 Faunal Analysis

The faunal collection (bones and shells) may be sent to a zooarchaeological specialist for identification and quantification. Wherever possible, the faunal analyst identifies the age, sex, and season of death of the specimen. The analyst counts the number of identifiable specimens per taxon, minimum number of individuals per taxon (based on the fact a single individual may be represented by several bone or shell specimens), and weight per taxon by unit and level. According to these procedures, the minimum number of individuals is calculated for each stratigraphic unit or feature, not for the entire site.

The faunal analyst also examines each specimen for evidence of cultural modification, such as butchering marks, burning, staining, painting, and unusual breakage (such as spiral fracture for bone marrow extraction). Deer teeth and fish otoliths are sectioned to assess seasonality of death and gather evidence for the seasonality of site use.

4.3.4.6 Floral Analysis

The heavy and light fraction flotation samples may be sent to an archaeobotanical specialist for the identification of charred seeds. This analysis is a simple count of the various taxa represented by unit and level or feature. Large pieces of wood charcoal may also be sent to the archaeobotanist for identification. These data, which must be interpreted in light of the modern vegetation surrounding the site, can be used to address significant research questions regarding patterns of foraging for wild plant foods, seasonality of site use, changes in land use, and changes in the prehistoric environment over time.

4.3.4.7 Radiocarbon Assay

Radiocarbon dating will be performed by an outside laboratory, to determine site age and age of stratigraphically associated artifacts, where appropriate. Charcoal or soil from hearths or dense midden areas may be analyzed. Single samples producing at least 10 grams of datable carbon will be analyzed using the standard method. If samples this large are not available, very small samples of charcoal will be analyzed using the AMS method.

4.3.4.8 Historic Artifacts

Specialized analyses for historic artifacts will include background research on ceramic makers marks, buttons, and other trade marks on tin cans and other items to determine age of manufacture, and analysis of materials and manufacturing techniques to determine age and use. Other specialized analyses could include analysis of ethnic artifact origin or use and analysis of social class and income, based on artifact quality and relative cost when new.

4.3.4.9 Ceramic Analysis

Special analyses for prehistoric ceramics will include categorization of the sherds into established typologies, thin sectioning, and neutron activation to determine clay sources and

chemical constituents. Vessel form and function may be determined through morphological analyses.

4.3.5 Field Equipment

Supplies for site mapping available to the CRS include GPS equipment, surveyor's transit, and compass for preparing archaeological site maps, digital and conventional film cameras for photography, and standard archaeological excavation tools such as shovels, screens, masonry trowels, and line levels.

Other standard supplies include archival quality (4-mil) locking plastic bags to hold artifacts, acid-free paper, and acid-free boxes for long-term artifact storage.

4.4 Cultural Resources Report Preparation and Documentation and Review

All cultural resource reports prepared for this Project whether during the planning process, as a result of monitoring, or as a result of mitigation work prescribed by a Segment Plan, will be consistent with the appropriate current state and BLM guidelines, requirements, and formats including determination of eligibility and effect. At the conclusion of each Phase of work, the Companies will submit copies of the draft report to the lead BLM office for distribution to the appropriate BLM District or Field office in each state and PA signatories (see PA Section III for reporting and review).

4.5 Segment Historic Properties Treatment Plans

As specified in Section 1.1, above, the PA for this Project calls for site-specific treatment plans to be developed prior to the initiation of any construction phase of the Project. The intent of this HPTP is to specify the general terms of avoidance, monitoring, and a framework for mitigation planning. The purpose of each Segment Plan is to supplement this HPTP with site-specific information, including treatment plans for unavoidable direct and indirect effects. The HPTP will cover, with its project-wide trails mitigation plan, indirect effects to trails and trail-related resources. The Companies will develop a Segment Plan for each work element for which they wish a separate NTP from the BLM (PA Section X.B). Note that while the project is divided into linear Segments 1-10 for the purposes of project description and permitting, the Companies may request that one or more segments be combined into a single NTP, or may request an NTP for one or more portions of segments. For the purposes of this HPTP and the subsequent Segment Plans, "segment" means the portion of the project for which the Companies request an NTP.

Each Segment Plan will contain at least the following (PA, Section V.C.):

- A description of the Segment or element action, including maps
- A table of Historic Properties that have been identified within each Segment, including those avoided, by land ownership and by state (if the requested NTP covers more than one state).
- An assessment of effects and how adverse effects to the specific characteristics of the Historic Properties that make it eligible for the NRHP will be resolved.

- Documentation of the measures that the Companies have already taken or will take to avoid and minimize impacts to properties eligible for or listed on the NRHP
- A clear definition of the specific mitigation strategies proposed to address the direct, indirect, and cumulative effects of the Segment/element for individual Historic Properties
- Preparation of a site-specific Monitoring Plan to supplement the general Monitoring Plan (Attachment A of this HPTP).
- Property-specific treatment method documentation and proposed mitigation reporting
- Identification of the responsible parties involved in the mitigation and their roles.
- Adherence to ACHP guidance, Secretary of Interior's Professional Standards, Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER)/Historic American Landscapes Survey (HALS) guidance, and appropriate state guidelines.

Upon final approval by the SHPOs and acceptance by the BLM, each Segment Plan will be attached as an Attachment to the HPTP.

5.0 PROPOSED MITIGATION PLAN

This HPTP presents the general framework for resolution of adverse effects from the Project on cultural resources eligible for or listed on the NRHP (historic properties). It first deals with avoidance as the preferred strategy for resolution and then outlines the Project approach to mitigation where adverse effects cannot be avoided. It also provides a specific project-wide plan for Historic Trails and trail-related resources.

5.1 Avoidance

The Companies have designed the Project to avoid historic properties to the extent feasible. Cultural resources were identified within or near the project area early in Project planning phase through literature reviews, documentation of previous surveys, and Project-specific pedestrian surveys. The Project design was altered where feasible to avoid effects to known significant cultural resources. For example, if a proposed access road would affect a prehistoric site, the road was redesigned to avoid the site boundaries. The Companies made numerous revisions to the proposed transmission line routes to avoid effects to known historic properties.

In many cases direct effects to historic properties will be avoided by relocating a Project facility, but the proposed facility may be installed near the site. In order to avoid physical damage to the site, the site would be flagged, fenced, or staked, including a buffer (established on a site-by-site basis) determined by the BLM and appropriate state SHPO, and marked for avoidance on maps and on the ground. In some cases with large sites or complexes of sites, only that part of the site near the construction activities would need to be marked for avoidance.

Each Segment Plan will include a table that lists Historic Properties that have been identified within the APE of the specific segment. The table will list Historic Properties that need to be flagged and avoided and those that require specific treatment.

Construction monitoring to assure planned site avoidance is successful and to watch for subsurface discoveries during grading, blading, excavation, and other initial mechanical ground-disturbing activities, will be conducted as detailed in the Monitoring Plan, Attachment A.

During construction it is possible that surface and/or subsurface resources, not identified during 100% pedestrian surveys in the various phases prior to construction could be discovered. Attachment B, Inadvertent Discovery Plan, details the required response of the cultural monitoring team and the contractor to such a discovery.

5.2 General Mitigation Measures for Historic Properties

Adverse effects to historic properties cannot be entirely avoided by this Project. Even if the Project could be redesigned to avoid all direct effects through ground disturbance, the substantial change in the setting of some important resources where setting is an aspect of integrity, including National Historic Trails, due to the construction and operation of the Project, cannot be

entirely avoided. In addition, there may be surface resources that due to their critical location or size cannot be entirely avoided.

5.2.1 Mitigation for Direct Effects to Surface or Subsurface Historic Properties

The Project has been designed to avoid direct effects to trails eligible for or listed on the NRHP, to trail-related resources, and to historic buildings, including fences, corrals, and outbuildings. Therefore, the only historic properties that would likely be adversely directly affected by the Project are prehistoric or historic era resources whose surface or subsurface features or artifacts cannot be entirely avoided. For sites determined eligible under 36 CFR 60.4(d), significant data could be recovered through excavation, research, and analysis, as summarized in Table 3, below:

Table 3. Treatment Classes for Unavoidable Direct Impacts

Historic Property Category	**Example Site Types** (not a complete list)	**Treatment Classes for impacts to sites without a subsurface component (i.e. surficial sites)**	**Treatment Classes for impacts to sites with subsurface features or artifacts**
Prehistoric	Surface lithic and ceramic scatters, campsites, hearth and features, quarry, rock alignments, petroglyphs	Data Recovery that includes: • Surface Collection or in-field artifact analysis and recording • Detailed Surface mapping • Geomorphological studies • Photo documentation • Curation	Data Recovery that includes: • Surface Collection or in-field artifact analysis and recording • Detailed Surface mapping • Geomorphological studies • Controlled scientific excavation • Laboratory analysis • Photo documentation • Curation
Historic Era	Trash scatters, structural debris, rock cairn, rock alignment	Data Recovery that includes: • Recording • Surface Collection or in-field artifact analysis • Detailed surface mapping • Photo documentation	Data Recovery that includes: • Recording • Surface Collection or in-field artifact analysis • Detailed surface mapping • Controlled scientific excavation • Laboratory analysis • Photo documentation

5.2.2 General Mitigation for Indirect Effects to Historic Properties

Although the Project's construction and operation will avoid direct effects to trails and historic buildings, the indirect effect on properties that would be eligible under 36 CFR 60.4 criteria a, b, or c, would be treated differently from direct effects. For these properties, data recovery may also include historic documentation, photographic documentation, collection of oral histories,

architectural, landscape, or engineering documentation. Table 4 lists treatment classes for unavoidable indirect effects to historic properties.

Table 4. Treatment Classes for Unavoidable Indirect Effects

Historic Property Category	**Example Site Types** (not a complete list)	**Treatment Classes for Indirect Effects**
Trails (NHT, stage trails, freight roads, etc.)	Stations Corrals Trail traces Burial Burial Inscriptions	• Recording—including HABS/HAER/HALS • Additional literature or archival review (e.g. historic maps, local papers). • Metal detector surveys
Historic Structures	Farms and ranch sites, buildings, utility lines, water conveyance systems, mining, bridges, etc.	• Photo documentation and scale drawings • HABS/HAER/HALS documentation Additional archival and literature review • Restoration of historic structure • Relocation of historic structure
Traditional Cultural Properties	Types could include ceremonial areas, vision quest or gathering areas	• Additional literature/archival review • Ethnographic documentation • Oral histories

Additional treatment measures for direct, indirect, and cumulative effects can include (but are not limited to) the following (per PA, Section V.B):

- Completion of NRHP nomination forms.
- Conservation easements.
- Historic American Landscape Survey (HALS) documentation.
- Historic American Building Survey (HABS) documentation.
- Historic America Engineering Record (HAER) documentation.
- Purchase of land containing NHT segments or other historic properties for transfer to public ownership.
- Partnership and funding for pubic archaeology projects.
- Print publication (brochure/book).
- Video media publication (website/podcast/video).

5.2.3 Proposed Project-Wide Historic Trails Mitigation Program

The Companies, in consultation with the Wyoming SHPO and BLM, are actively pursuing a conservation easement with interested Wyoming landowners with important emigrant trail resources on parcels they own. A Memorandum of Agreement is being negotiated to allow public disclosure of the location. The Companies anticipate that this conservation easement

would be held and managed by the Wyoming Stockgrowers Land Trust and would adequately compensate for all project indirect effects on historic roads and trails. The Companies will continue to work closely with the BLM and the Wyoming and Idaho SHPOs to complete a compensatory mitigation package satisfactory to those parties and proportional to the Project's adverse effects on those historic properties.

6.0 SEQUENCE OF PROJECT-RELATED TASKS

There are a series of tasks that should be completed to assure that historic properties eligible for or listed on the NRHP are avoided during construction or, if avoidance is not feasible, fully treated as specified in each Segment Plan. These tasks are conveniently identified as those that must take place before construction, the signing and monitoring activities conducted during construction, and those post construction tasks needed to complete reporting and curation, if needed.

The Monitoring Plan (Attachment A) defines procedures that will be followed during Project construction activities to avoid and minimize impacts to known cultural resources. The objectives of monitoring are to protect extant significant historic buildings, structures, sites, or objects from construction impacts, to identify at the time of discovery any archaeological materials exposed during ground disturbance, and to protect such resources from damage while recommendations of eligibility for the NRHP are made by the CRS and provided to the BLM archaeologist for review and approval.

6.1 Pre-Construction Tasks

Pre-construction tasks include completion, submittal, and approval of the project-wide HPTP (this document) and Segment Plans for each work element the Companies identify as agreed in the PA. The BLM may issue NTP(s) to the Companies for individual construction phases as defined by the Companies in their construction plans, under the following conditions identified in the PA, Section X.B.1-4:

- If the BLM, in consultation with the SHPO/THPO, determines that no historic properties are present within the APE for that segment; or
- If the BLM, in consultation with SHPO/THPO, determines that historic properties are present but will not be affected within the APE for that segment; or
- The Segment Plan mitigation has been implemented for that construction phase or if incomplete, a 300-foot construction buffer for avoidance is clearly marked in the field until completion, and cultural resources monitoring, if required, is in place as outlined in the HPTP.

Additional pre-construction tasks include the selection of the CRS and needed CRMs and NAMs where indicated as part of the third-party environmental compliance team. The Companies must also provide the CRS and BLM, with maps and/or drawings of the project APE. As specified in the monitoring plan, the CRS and the CRMs are responsible for ensuring avoidance measures (e.g. sensitive resource flagging, complete avoidance) are in place where needed. Sites will be only flagged or staked as exclusion areas or “Environmentally Sensitive Area (ESA)” and will not be identified as to content or type to avoid vandalism or theft of site objects. In addition, a

cultural resource training program will be incorporated into the overall environmental training program for all Gateway West project construction staff.

6.2 Construction Phase Tasks

Construction phase tasks include providing ongoing environmental training to construction staff, keeping current with the project schedule and monitoring activities for cultural resources, ensuring and documenting that avoidance measures for specific sites have been maintained. Monitoring tasks are described in the Monitoring Plan, Attachment A, and mitigation tasks are generally described in Section 6 and will be further detailed in the Segment Plans. Additional construction phase tasks include maintaining daily monitoring logs and providing weekly summaries and monthly compliance reports of cultural resources monitoring and mitigation activities within each NTP area of the Project.

6.3 Post-Construction Phase Tasks

Post-construction phase tasks include preparing the final reports, completing test investigation or data recovery analysis and reports if buried sites are discovered during construction, preparing artifacts and other cultural materials for curation, and transferring these materials to the approved curation facility.

7.0 REFERENCES CITED

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ATTACHMENT A

MONITORING PLAN

ATTACHMENT A
DRAFT
MONITORING PLAN

of the

DRAFT HISTORIC PROPERTIES TREATMENT PLAN
for the
GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

Prepared by

Rocky Mountain Power

and

Idaho Power Company

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Attachment 1 Daily Cultural Resource Monitoring Log

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1.0 INTRODUCTION

This initial Draft Monitoring Plan (Plan) specifically addresses monitoring for cultural resources (including but not limited to historic properties determined to be eligible for the NRHP) during construction of the Gateway West Transmission Line Project (Project). This Plan provides details regarding roles and responsibilities of various personnel in the field in coordination with the Project-wide environmental Compliance Plan, itself a part of the Project's Plan of Development (POD). The Programmatic Agreement (PA) developed by the Bureau of Land Management (BLM) as lead agency under National Historic Preservation Act (NHPA) in close cooperation with the Advisory Council on Historic Preservation, tribes, other federal agencies, and other interested parties, requires the development of this Plan as part of the Historic Properties Treatment Plan (HPTP). This plan, prepared by PacifiCorp (doing business as Rocky Mountain Power) and Idaho Power Company (Companies), has not been reviewed or approved by agencies or the Parties to the PA. When it is reviewed, revised as needed, and approved by the BLM and the State Historic Preservation Offices (SHPOs) it will be attached to the approved HPTP.

The purpose of this Plan is to specify:

- how avoidance of known resources will be assured and documented during construction,
- how monitors will interact with other environmental compliance staff as well as with the construction personnel, and
- how monitors will employ the Unanticipated Discovery Plan and, if necessary, the Plan of Action for compliance with Native American Graves Protection Act (NAGPRA).

This Plan, as part of the Project-wide HPTP, will be supplemented with a set of confidential maps and site-specific resource avoidance details for each segment Plan. This Plan presents the roles and responsibilities of the cultural resource team as well as specifies the procedures to be followed during construction activities.

Any discussion, summary, or paraphrasing of the BLM's PA measures in this Plan is intended as general guidance and as an aid to the user in understanding the stipulations and their implementation. If there appears to be a discrepancy between the stipulations in the PA which have been summarized, described, or interpreted in this Plan, the conditions and stipulations, as written in the PA, supersede interpretations in this Plan.

2.0 CULTURAL RESOURCES TEAM

The Cultural Resources Team is a part of the Construction Contractor's environmental inspection/monitoring team and will report to the Construction Contractor's Lead Environmental Inspector as outlined in the Environmental Compliance Monitoring Plan (ECMP). The ECMP is provided as Appendix C to the Plan of Development submitted by the Companies to the BLM, itself Appendix B of the EIS for the Project. The Construction Contractor's Cultural Resource Team will conduct cultural resource field monitoring, ensure compliance with requirements within the HPTP and implement treatment as prescribed within the Segment Plans. Such activities will be monitored and observed by the Compliance Inspection Contractor (CIC) as identified in the ECMP. The following sections describe the qualifications, roles, and responsibilities of each member of the Cultural Resources Team.

2.1 Cultural Resources Specialist (Principal Investigator)

Qualifications—The Cultural Resource specialist (CRS) must meet, at a minimum, the Secretary of the Interior's Professional Qualifications Standards for archaeology, history, or architectural history as published in Title 36 CFR part 61, and in addition must have:

- At least 5 years of archaeological resource mitigation and field experience and
- At least 3 years of experience in a decision-making capacity on cultural resources projects, and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

In addition, the CRS must hold a current (or be able to obtain) the appropriate state BLM Cultural Use Permit and Field Authorizations. If an alternate CRS is considered that person must also meet the same requirements as the originally-named CRS.

The Companies will confirm to the BLM in writing the availability of the CRS and provide his or her qualifications no less than 75 days prior to the start of ground disturbance. At least 15 days prior to ground disturbance, the CRS will provide a letter naming anticipated Cultural Resource Monitors (CRMs), including sufficient alternates to account for absences, for the project and demonstrating that the identified CRMs meet the minimum qualifications for cultural resource monitoring.

Responsibilities—The CRS will be the primary point of contact between the Companies' Project Manager(s), Construction Contractor's Project Manager, the CIC, and the BLM Project Manager and Archaeologist. The CRS will also be responsible for the analysis and the overall quality of the monitoring reports and discovery reports, if any. The CRS is responsible for the planning, execution, completion, and quality of the cultural resources monitoring tasks undertaken just prior to and during the Project construction.

The CRS, as a member of the Construction Contractor's Cultural Resources Team, will be responsible for obtaining construction plans and schedules from the Construction Contractor(s) for tasking field personnel to monitor construction and evaluate or conduct data recovery excavations for any archaeological sites discovered during construction. The CRS will be responsible for notification of the Companies' Project Manager(s), Construction Contractor's Project Manager, the CIC, and the BLM Project Manager and Archaeologist regarding cultural resources related issues.

The CRS will direct the preparations for and execution of day-to-day construction monitoring activities:

- Present the cultural resources section of the environmental training program (an employee training program for all construction personnel prior to ground disturbing activities). Cultural resource training will include the proper procedures to follow in the event that cultural resources are encountered during project ground disturbance. The environmental training program may include a BLM-approved video, training pamphlets, or other media resources.
- Direct the CRM(s) regarding where and when to monitor Project construction activities.
- Daily, review of the CRM's daily monitoring log(s).
- Prepare a monthly summary report during active construction on the progress or status of cultural resources-related activities and submit to the Companies' Project Manager, the CIC, and the BLM Archaeologist. The summary will include any new archaeological site forms (appropriate state form) for any finds identified under the monitoring program (see Attachment 2 for state isolate and/or archaeological site forms).
- Notify the Companies' Project Manager, the CIC, and the BLM Archaeologist, by telephone or e-mail of any unanticipated discoveries of any cultural resources within 24 hours of becoming aware of the situation.
- Notify the Companies' Project Manager, the CIC, and BLM Archaeologist by telephone or e-mail, of any incidents of noncompliance with any cultural resources within 24 hours of becoming aware of the situation, and recommend corrective action to resolve the problem or achieve compliance with the conditions of certification.
- Where indicated, make a good-faith effort to obtain Native American Monitors (NAMs).
- Obtain additional technical specialists or additional monitors, if warranted or required.
- Obtain appropriate specialist (e.g. qualified backhoe operator, Project Prehistoric Archaeologist, Historical Archaeologist, Geoarchaeologist), as needed, to guide and conduct the evaluation of cultural resources that are discovered if needed.
- Oversee curation required for the Project.
- If an archaeological site is discovered within the Project Area of Potential Effect (APE) during construction, the CRS will:

    - Halt construction within 200 feet of the discovery.
    - Notify the CIC, the Companies' Project Manager, and the BLM Archaeologist as soon as feasible.
    - Conduct a non-invasive preliminary field assessment of the find.
    - Evaluate any cultural resources that are newly discovered for eligibility in the NRHP.
    - Submit a recommendation to the BLM Archaeologist regarding NRHP eligibility of the discovered site.
- The CRS will oversee the completion of site form and other appropriate documentation of the discovery.
- If the site is determined eligible for the NRHP, the CRS will consult with the Companies' Project Manager, the CIC, and the BLM Archaeologist, to develop a treatment plan for the resource(s) if it is not covered by the HPTP or relevant Segment Plan.
- Determine the scope, methods, and techniques to be used for test investigations or data recovery and analysis of artifacts and other materials.
- Oversee the completion of any necessary test excavations or data recovery excavations.
- Oversee the completion of reports of tests excavations or data recovery excavations and ensure that the reports meet PA requirements and the appropriate state Office of Historic Preservation standards for completeness and quality.

2.2 Cultural Resource Monitors

CRMs will conduct the daily archaeological construction monitoring (as needed and/or specified by specific land owners). Preference will be given to monitors that are familiar with the types of historic and prehistoric resources in the area. The qualifications and responsibilities of the CRM are as follows.

Qualifications—CRM will either:

- Have a Bachelor of Science (BS) or Bachelor of Arts (BA) degree in anthropology, archaeology, historic archaeology, or a related field, at least 2 years of experience conducting archaeological fieldwork under direction of a professional archaeologist with at least 3 months of archaeological construction monitoring experience;
- Have an Associates of Arts (AA) or Associates of Science (AS) degree in anthropology, archaeology, historic archaeology, or related field and at least 4 years of experience conducting archaeological fieldwork under the direction of a professional archaeologist with 3 months of archaeological construction monitoring experience;
- Be enrolled in upper division classes pursuing a degree in the field of anthropology, archaeology, or historic archaeology and 2 years of archaeological construction monitoring experience.

Responsibilities—The CRM will be present full time at the Project construction site, as directed by the CRS, to watch ground-disturbing construction activities and inspect cleared ground and excavation trenches for signs of previously undiscovered archaeological resources during construction as indicated in the Segment Plan or until monitoring reduction has been approved by the BLM.

The CRM will provide daily documentation of construction activity and any findings. The monitor will prepare a daily monitoring log, briefly describing the field conditions, construction progress and activities, non-compliance activities, and record any finds of archaeological material. This daily log will include a report of the presence and activity of any NAM teaming with the CRM where one or more NAMs are assigned.

The CRM will be responsible for implementing the requirements of the environmental training program. If the CRM or other construction personnel discover archaeological finds during construction, the monitor will have authority to halt construction in the vicinity of the find and will notify the CRS.

2.3 Native American Monitors

Native American Monitors (NAMs) will be obtained to monitor ground disturbance (if applicable and specified in the Segment Plan). All reasonable efforts will be made to contact and schedule NAMs. If NAMs are not available, construction may proceed after notification of the CIC and the BLM. Each NAM will be assigned to work closely with a CRM as a team. NAMs shall have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow for the evaluation of prehistoric resources (i.e. unanticipated discoveries) through coordination with the onsite CRM.

Qualifications—Native American Monitors will be selected for the Project to monitor ground disturbance in areas where ground disturbing activities occur. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the Project area. The monitor will be selected based on the BLM's recommendations. Preferred qualifications for NAM(s) include:

- Knowledge of village sites, cultural, religion, ceremony, and burial practices within the project region, traditional ties, and familiarity with the Project area
- Knowledge and understanding of the Native American Graves Protection Act (NAGPRA) and ability to communicate the meaning of these laws and codes to project personnel
- Ability to work with local law enforcement officials and the BLM to ensure compliance with NAGPRA
- Ability to travel to Project sites within traditional tribal territory

- Familiarity and/or knowledge of and understanding of Section 106 of the NHPA, as amended.
- Ability to read a topographical map and be able to locate sites
- Knowledge and understanding of archaeological practices, including the phases of archaeological investigation (formal education in an appropriate field, such as anthropology, archaeology, or ethnology may be substituted for experience).
- Experience as a tribal cultural resources monitor on similar projects.

Responsibilities—The designated NAM(s) will participate in the evaluation of Native American artifacts. In addition, the NAM(s) will be invited to be on site at prehistoric site locations when construction is taking place and will be invited to assist with excavation and recording of any find of prehistoric cultural resources. In the event that data recovery excavation is necessary, the NAM will be invited to assist in excavation and site recording.

2.4 Management of Unanticipated Discoveries

If a discovery is made in the field, additional archaeological field staff (e.g. field director, crew chief, etc.) may be required to assist and complete archaeological site recording, testing, data recovery, and analysis depending on the mitigation plan as an amendment to the relevant Segment Plan, for large complex sites, if the CRS and/or CRM(s) are needed in other areas were construction is continuing and ongoing, and/or in an effort to complete the work within a scheduled amount of time. All archaeological field crews will work under the supervision of the CRS.

2.4.1 Field Director

Qualifications—The Field Director will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field and meet the Secretary of the Interior's Qualification Standards for Archaeologists and/or be listed on the state BLM Cultural Use Permit as a Principal Investigator and/or Field Director (as approved by the BLM State Office).

Responsibilities—The Field Director, under the supervision of the CRS, will be responsible for the day-to-day activities of the testing and data recovery investigations, including management of field personnel and coordination of crews. The Field Director will also be responsible for compiling and ensuring the quality of the field data on a daily basis. Additionally, the Field Director will coordinate the work of sub-consultants or other contractors participating in the archaeological field investigations, and will be responsible for implementing the requirements of the environmental training, including daily safety briefings.

2.4.2 Crew Chiefs

Qualifications—The Crew Chief will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field and at least 2 years of experience as an archaeological crew chief.

Responsibilities—The Crew Chiefs will, in consultation with the Field Director, be responsible for implementing the field strategies at individual sites. The Crew Chief will direct field crew, lay out excavations, and compile collections and field documentation on a daily basis. Additionally, the Crew Chief will be responsible for implementing on-site safety procedures and/or environmental training.

2.4.3 Field Crew

Qualifications—The field crew for any field recording or excavation activities will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field, and field school experience; or an AA or AS degree in anthropology, archaeology, historic archaeology, or related field, and archaeological field school experience.

Responsibilities—Field crew members will conduct surface examinations and hand excavations, and monitor mechanical test investigation excavations. Each crew member will operate under the direct supervision of the Crew Chief and will conduct basic documentation of field operations, including completing excavation-level records, bag labeling, and trench monitoring forms.

2.4.4 Laboratory Director

Qualifications—The laboratory director will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field and field school experience; or an AA or AS degree in anthropology, archaeology, historic archaeology, or related field, archaeological field school experience, and have previous experience managing a laboratory for a data recovery project.

Responsibilities—The Laboratory Director will be responsible for directing all phases of laboratory processing of the data recovery collections, including check-in, cleaning, sorting, cataloguing, analyzing, distributing special samples, and preparing for curation. The Laboratory Director will coordinate closely with the CRS to ensure that the appropriate data are documented and compiled.

3.0 MONITORING AND AVOIDANCE PROCEDURES

This section describes the monitoring procedures that will apply project-wide. Where warranted, the Segment Plans will include additional site-specific monitoring requirements. The objectives of monitoring are to assure and document avoidance of extant significant historic buildings, structures, sites, or objects during Project construction, to identify at the time of discovery any archaeological materials exposed during ground disturbance, and to protect such resources from damage while recommendations of eligibility for the NRHP are made by the CRS and provided to the BLM Archaeologist for review and approval.

3.1 Cultural Resource Construction Monitoring

Cultural resource monitoring for the Project will be conducted Project-wide, unless otherwise specified by the landowner, land management agency or in the Segment Plans. For the purposes of this HPTP Monitoring Plan, archaeological construction monitoring is defined as on-the-ground, close-up observation by a CRS or CRM, meeting the qualifications prescribed in Section 2.0 – Cultural Resources Team.

The CRS and/or CRM will observe the ground during mechanical scraping, grading, excavating, and similar activities for archaeological remains that might be exposed by these activities. Cultural resource monitoring will not be required once initial ground disturbance is completed or if equipment or vehicles are traveling over previously disturbed surfaces. Routine travel on existing or disturbed roads or across disturbed transmission structure pads will not be monitored for cultural resources. However, new ground disturbance by additional blading or excavating will be monitored for cultural resources, even on previously-graded or bladed areas. Activities that do not require motorized equipment will not be monitored for cultural resources. These activities may include but are not limited to installing fencing, silt fencing, or barriers to protect sensitive resources.

The CRM will maintain daily monitoring logs (Attachment 1) of Project-related construction monitoring activities. Logs will reflect the daily monitoring activities and will include:

- Date, time of work, and amount of time spent at a construction monitoring location
- Area of work
- Type of work, equipment present, and name of crew being monitored
- Construction activities being performed
- Documentation of successful resource avoidance
- Activities in which there are cultural resource problems, non-compliances, or other concerns

- Identification of an unanticipated discovery
- Name of NAM(s), if present
- Color digital photographs shall be taken (as appropriate) to document construction and monitoring activities and submitted as attachments to the daily log.
- CRMs will provide their monitoring logs daily to the CRS. The CRS will maintain weekly and monthly summary reports of construction progress, monitoring (monitor name, dates worked, finds, issues, etc.), and status of cultural resource related issues. The CRS will direct the preparation and distribution of a Cultural Monitoring Results report and an archaeological report to BLM project Manager and archaeologist and state standards of findings for any archaeological test excavation or data recovery program that takes place.
- If the CRS determines that full-time monitoring is not necessary in certain construction locations and that monitoring will be conducted on an "as needed" intermittent schedule, the CRS will provide a detailed letter or email to the BLM archaeologist (at least 24 hours prior to implementing any change) explaining the decision to reduce the level of monitoring.
- The CRS shall review each CRM's daily monitoring log. If no unanticipated discoveries were identified that day, provide the appropriate state BLM archaeologist a statement, via email or other acceptable form of communication, to that effect. The CRS will notify the BLM archaeologist at least 24 hours prior to reducing or ending the daily reporting.
- If a discovery was made, the notification procedures found in the **Inadvertent Discovery Plan** (HPTP Attachment B) shall be followed.
- If human remains are discovered on federal land the **Native American Graves Protection and Reparation Act Plan of Action** will be adhered to (HPTP Attachment C).
- The CRS shall prepare a monthly summary report (while monitoring is on-going) on the progress or status of cultural resources-related activities and supply this to the CIC and BLM Archaeologist. In addition, the summary shall include any new archaeological site forms for finds for which such forms are required by the relevant State Historic Preservation Office policy and identified under the monitoring program.
- If requested by a Native American group/tribe, the CRS shall send the appropriate Native American representative a notification (via letter or email) following the discovery of Native American cultural materials other than those considered isolates. If such notification is transmitted, the CRS shall copy the CIC and the BLM. If any comments are received from the Native American representative regarding the

discovery, the CRS shall submit copies of all received comments within 15 days of receipt to the CIC and the BLM archaeologist.

- The CRS and/or CRMs will maintain the flagging and staking of sensitive resources (e.g. archaeological sites) to ensure that they are avoided, unless otherwise directed by BLM.

3.2 Authority to Halt Construction

The CR and the CRM(s) will have the authority to temporarily halt construction operations within 200 feet (60 meters) of a find or exposed resource to determine if significant or potentially significant cultural resources are present and if they will be adversely affected by continuing construction operations. The NAM(s), if present, may also coordinate with the CRS or the CRM to temporarily halt construction. The CRS or CRM will be responsible for delineating the area within which construction will halt using flagging tape, rope, or some other means as necessary. The CRS will notify the Companies' Project Manager, the CIC, the BLM Project Manger and archaeologist, and interested Native American (groups that have expressed an interest to be notified of such a discovery) of the find and work stoppage within 24 hours of the find. Construction will not take place within the delineated find area until the CRS has completed field notes, measurements, and photography for a site record (unless the find can be treated prescriptively), and the CRS, in consultation with the CIC and BLM Archaeologist, can inspect and evaluate the find and determine whether or not further mitigation is required, and the BLM has agreed to the recommended evaluation and treatment.

3.3 Flagging, Fencing, and Signage Measures

For Project construction activities, the CRM will flag or provide signage for previously recorded and newly identified sensitive areas that are within 30 meters of Project construction, to assure such resources are avoided and that ground disturbing construction activities do not impact flagged site boundaries or unanticipated discoveries. The use of "Environmentally Sensitive Area" signage will be used for culturally and biologically sensitive areas during construction. The signage will be posted around (immediately outside) the cultural resource sensitive area by the cultural resource monitor 1 day prior (as practical) to construction in the area (to avoid drawing attention to the area prior to construction).

The CRS and/or a CRM will field check and maintain signage and assure that it remains in place while construction activities in the vicinity are active. The CRS or CRM will remove the signs following the completion of Project-related construction activities in the vicinity.

3.4 Monitoring Locations and Schedule

The CRS and/or a CRM will observe ground disturbance as specified in Section 3.1 – Cultural Resource Construction Monitoring.

As part of the Construction Contractor's Cultural Resource Team, the CRS will obtain a construction schedule prior to the start of ground disturbing activities (preferably a two week look ahead to ensure proper staffing). The CRS will then establish a schedule for the CRM(s) and NAM(s) teamed with each CRM, as appropriate, to follow and a protocol for communication with the CIC and the Construction Contractor(s) who will confer with the CRS on any changes to construction dates. Daily updates or changes to the construction schedule will be provided by the Construction Contractor to the CRS and the CIC as appropriate.

The CRS shall ensure that adequate monitors (including NAMs where applicable) are available as work load fluctuates during construction.

As described in Section 2.3 – Native American Monitors, a NAM or NAMs will be obtained (as applicable) and be present to monitor ground disturbing activities Project-wide, unless otherwise specified by the landowner, land management agency or in the Segment Plans. In general, a NAM will be teamed with a CRM in the field. The intent is to have an adequate number of NAMs on contract, where NAMs are indicated, to allow for rotation to ensure the interests of various tribes are represented and to allow for substitute NAMs should particular individuals become unable to fulfill those responsibilities at particular point in time.

3.5 Construction Compliance

The CRS and CRM(s) will coordinate with the CIC to monitor and report problem areas and non-compliances. The CRS will then notify the Companies' Project Manager(s), Construction Contractor's Project Manager, the CIC, and the BLM Project Manager and Archaeologist.

Procedures as specified in the ECMP will be followed. If the noncompliance includes unauthorized or unmonitored ground disturbance, cultural resource surveys to determine presence of or damage to cultural resources will be required, and effects determinations and mitigation also completed if indicated, before construction could be allowed to continue in the noncompliance area.

3.6 Construction Change Management

During construction, unforeseen or unavoidable site conditions can result in the need for changes from approved mitigation measures and construction procedures. Additionally, the need for route realignments, extra workspaces, or access roads outside of the previously approved construction work area may arise (e.g. to avoid an inadvertent discovery), resulting in the need to prepare a variance request. The CIC will consult with the CRS for any variances requested by the Construction Contractor to assure cultural resource avoidance. All applicable procedures as specified in the ECMP will be followed.

If a new area outside the previously-surveyed APE is proposed for ground disturbance, a pedestrian survey (Phase 6, PA Section II.C.6) for cultural resources must be conducted and a report documenting lack of surface resources submitted as part of the variance approval process. If cultural resources are found, effects determinations and mitigation must be completed before ground disturbance could be permitted.

ATTACHMENT 1

DAILY CULTURAL RESOURCE MONITORING LOG

Gateway West Transmission Line Project

Cultural Resource Monitor Daily Report Date ____ /____ /____

Monitor: _____	Start Time: _____ Stop Time: _____
Transmission Line Segment/MP#_____	Attachments:_____
Weather Conditions.: _____	Photographs: Yes No (if yes, see page 2)

Construction Areas and Activities Monitored

Area#: _____ Time :_____ Construction Crew: _____Construction Supervisor: _____

Activity : _____

Monitor Checklist

General	Yes	No	N/A	Comments Attach Supplemental Report if needed
Native American Monitor present?				Name:
Biological Monitor present?				Name:
Workspace limits verified and properly marked?				
All activities within approved workspace limits?				
Only approved access roads utilized for ingress and egress?				
Environmental signs in place? (e.g. access roads, sensitive area)				
Trash and debris contained and disposed of in proper manner?				

Work Site Conditions

Visibility (circle one)	Excellent	Good	Fair	Poor	Explain, if necessary:

Soils:	Desert Pavement	Aeolian Sand	Dunes	Other, explain:	

ATTACHMENT 2

STATE ARCHAEOLOGICAL SITE FORMS

ARCHAEOLOGICAL SURVEY OF IDAHO
SITE INVENTORY FORM

Part A – Administrative Data

1. State No._____
2. Agency No._____
3. Temporary No._____

4. Site name(s)_____ **5. County**_____

6. Class:
❑ Prehistoric ❑ Historic ❑ Traditional Cultural Property ❑ Undetermined

7. Land owner_____ **8. Federal admin. unit**_____

9. Project_____ **10. Report No.**_____

11. Recorder(s)_____

12. Organization_____ **13. Date**_____

14. Attachments and associated records:
- ❑ Topographic map (required)
- ❑ Site map (required)
- ❑ Photos with labels/log (required)
- ❑ Artifact illustrations
- ❑ Feature drawings
- ❑ Stratigraphic profiles
- ❑ Rock art attachment
- ❑ Historical records
- ❑ Assoc. IHSI forms_____
- ❑ Other_____

15. Elevation (site datum)_____**(ft)**

16. Site dimensions:_____**m X** _____**m** **Area**_____**m^2**

17. UTM at site datum: Zone____ _____**m Easting** _____**m Northing using NAD 1983.**

18. UTM source:
❑ Corrected GPS/rectified survey (<5m error) ❑ Uncorrected GPS ❑ Map template ❑ Other explained under comments

19. Township_____**, Range**_____**, Section**_____**;** _____**1/4 of** _____**1/4 of** _____**1/4**
Additional legals listed on an attachment. ☐

20. USGS 7.5' map reference_____
Additional maps listed on an attachment. ☐

21. Access_____
_____
_____
_____

22. Site description_____
_____
_____
_____
_____
_____
_____
_____
_____

23. Site type:

- ❑ Historic building*
- ❑ Historic structure*
- ❑ Historic object*
- ❑ Prehistoric residential
- ❑ Rockshelter/cave
- ❑ Stacked/placed rocks
- ❑ Quarry/lithic source
- ❑ Linear
- ❑ Mortuary
- ❑ Rock art
- ❑ Feature(s)
- ❑ Artifact(s)
- ❑ Faunal
- ❑ Culturally modified trees
- ❑ Other_____

*Following definition for the National Register of Historic Places.

24. Specify themes and time periods:

Themes

- ❑ Prehistoric archaeology
- ❑ Agriculture
- ❑ Architecture
- ❑ Civilian Conservation Corps
- ❑ Commerce
- ❑ Communication
- ❑ Culture and society
- ❑ Ethnic heritage
- ❑ Exploration/fur trapping
- ❑ Industry
- ❑ Military
- ❑ Mining industry
- ❑ Native Americans
- ❑ Politics/government
- ❑ Public land management
- ❑ Recreation/tourism
- ❑ Settlement
- ❑ Timber industry
- ❑ Transportation
- ❑ Other _____

Time Periods

- ❑ Prehistoric-general
- ❑ Paleoindian
- ❑ Archaic-general
- ❑ Early Archaic
- ❑ Middle Archaic
- ❑ Late Archaic
- ❑ Late Prehistoric-general
- ❑ Protohistoric/Contact
- ❑ Historic Native American
- ❑ Exploration: 1805-1860
- ❑ Settlement: 1855-1890
- ❑ Phase 1 statehood: 1890-1904
- ❑ Phase 2 statehood: 1904-1920
- ❑ Interwar: 1920-1940
- ❑ Premodern: 1940-1958
- ❑ Modern: 1958-present
- ❑ Historic/Modern-general
- ❑ Unknown

25. National Register of Historic Places (NRHP) evaluation: *

❑ Individually eligible ❑ Contributing in a district ❑ Not eligible ❑ Insufficient information to evaluate

*Evaluation subject to review by SHPO.

26. NRHP criteria used:

❑ A: Event ❑ B: Person ❑ C: Design and construction ❑ D: Information potential

27. Comments on significance_____

_____

_____

28. If not eligible, explain why_____

_____

_____

29. Condition (prehistoric component):

❑ Excellent ❑ Good ❑ Fair ❑ Poor

Condition (historic component):

❑ Excellent ❑ Good ❑ Fair ❑ Poor

30. Impact agents:

- ❑ Agricultural use
- ❑ Building alteration
- ❑ Deflation
- ❑ Demolished
- ❑ Development project
- ❑ Erosion
- ❑ Grazing
- ❑ Looting
- ❑ Mining/quarrying
- ❑ No information
- ❑ Recreation use
- ❑ Research excavation
- ❑ Road/highway
- ❑ Rodent damage
- ❑ Structural decay
- ❑ Timber harvest
- ❑ Vandalism
- ❑ Other_____

Comments on impact agents_____

31. Surface collection:

❑ None ❑ Previously collected ❑ Grab sample ❑ Designed sample ❑ Complete

32. Sediments:

❑ Absent ❑ 0-20 cm ❑ 21-100 cm ❑ >100 cm ❑ Suspected but not tested

Explain how this was determined_____

33. Excavation status:

❑ Unexcavated ❑ Auger/probe ❑ Test unit ❑ Backhoe, etc.
❑ Surface scrape ❑ Shovel test ❑ Block excavation

Describe collection/testing/excavation_____

_____

_____

34. Excavation volume (indicate liters or cubic meters) _____ **Screen mesh**_____

35. Additional comments_____

_____

_____

_____

_____

_____

_____

Part B – Environmental Data

36. Distance to permanent water_____m

37. Water source:

❑ Spring, seep ❑ River/stream ❑ Lake ❑ Other_____

38. On-site vegetation (estimate percentage of total vegetation for each class and identify species):

Trees: _____% Species:_____

Shrubs: _____% Species:_____

Forbs: _____% Species:_____

Grasses: _____% Species:_____

Lichens/mosses: _____% Species:_____

Describe_____

_____

39. Visible surface area:

❑ 0% ❑ 1-25% ❑ 26-50% ❑ 51-75% ❑ 76-100%

40. Landform (Describe, including lithology, form, and soil, using locally or regionally appropriate terms, eg. arroyo, playa, moraine, etc.)_____

_____

_____

_____

_____

_____

_____

Part C – Prehistoric Sites

41. Phase/period_____

42. How classified_____

43. Maximum artifact density_____m^2

44. Individual artifacts:

Count	Category	Description

45. Lithic Debitage – Estimated Quantity:

❑ None ❑ 1-9 ❑ 10-25 ❑ 25-100 ❑ 100-500 ❑ 500+

Flaking Stages (not present, rare, common, or dominant):

Decortication_____ Secondary_____ Tertiary_____ Shatter_____

46. Material types_____

_____

_____

47. Additional description_____

_____

_____

_____

_____

_____

_____

_____

_____

48. Features:

Count	Category	Description

49. Additional description_____

_____

_____

_____

_____

Part D – Historic Sites

50. Cultural affiliation_____

51. Oldest date_____ **Recent Date**_____

52. How determined_____

53. Maximum artifact density_____**m^2**

54. Individual artifacts:

Count	Category	Description

55. Additional description_____

_____

_____

_____

_____

_____

_____

56. Features:

Count	Category	Description

57. Additional description_____

_____

_____

_____

_____

_____

8A . ARTIFACTS AND DEBRIS ASSOCIATED WITH PREHISTORIC COMPONENTS

Component age* and identifier:_____

*Time Periods – Unknown Prehistoric, Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Archaic (general), Late Prehistoric, Protohistoric;

Instructions: Check to indicate artifacts present. Preferably, put in an estimated count for each artifact class in parentheses where appropriate. Keywords for types or forms are used in the data system to enhance finding specific sorts of artifacts (e.g., "drill", "preform", "Duncan", "Folsom"). Artifacts diagnostic of time period or cultural affiliation should be listed in the table. Describe artifacts in the site narrative (7) or below. As appropriate, diagnostics should be illustrated or photographed with scale and labeled as to type identification. Additional sheets and analytical data may be attached.

GENERAL
___ Time diagnostics
___ Affiliation diagnostics

CHIPPED STONE
___ Lithic sources
___ Debitage
___ Cores (____)
___ Projectile points (____)
___ Bifaces (____)
___ Scrapers (____)
___ Other formal tools (____)
___ Modified flakes (____)
___ Core tools (____)
___ Hammerstones (____)

___ **OBSIDIAN**

___ **FIRE-ALTERED ROCK**

DEBITAGE FREQUENCY
(check only one)
___ unknown
___ none
___ 1-10
___ 11-100
___ 101 –1000
___ 1001-10,000
___ >10,000

DEBITAGE COMPOSITION
___ % Primary
___ % Secondary
___ % Tertiary

GROUND STONE
___ Manos (____)
___ Metates (____)
___ Unk. ground stone (___)
___ Other ground stone (____)

CERAMICS/STEATITE
___ Ceramics (___)
___ Steatite (___)

BONE AND ORGANIC
___ Bone (unknown size/type)
___ Large mammal
___ Medium mammal
___ Small mammal
___ Amphibian, bird, or reptile
___ Fish
___ Egg shell
___ Mollusc shell
___ Organic debris
___ Other (describe below)

OTHER ARTIFACTS
___ Shaped bone/bone tool(___)
___ Cordage(___)
___ Metal Points/Items(___)
___ Basketry(___)
___ Beads(___)

__bone__shell__glass__other
___ Other Decorative Items(___) (describe)
___ Other (describe)

HUMAN REMAINS
___ Human remains
___ Artifacts associated w/remains

Estimated total assemblage size: ___ 0-10, ___ 11-100, ___101-1000, ___1001-10,000, ___>10,000

ARTIFACT KEYWORDS:

DIAGNOSTIC ARTIFACT INVENTORY (diagnostic artifacts should be plotted on site sketch map): List temporal-cultural diagnostic artifacts below. Use general ages from site age matrix, and list specific diagnostic type. (e.g., Middle Archaic for general age, "Duncan" for type, "McKean" for complex). General ages are: Paleoindian, Early, Middle, and Late Archaic, Archaic (undifferentiated); Late Prehistoric; Protohistoric; unknown age. See "Users Guide" for definitions and examples of technological-cultural complex. Expand table as necessary.

General Age	Type name	Materials (if known)	Count	Collected y/n	Technological or cultural complex	Description

__ Check here if artifacts are described in site narrative. Otherwise, describe in table above.

8B. FEATURES ASSOCIATED WITH PREHISTORIC COMPONENT

Component age* and identifier:_____
*Time Periods – Unknown Prehistoric, Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Archaic (general), Late Prehistoric, Protohistoric

Instructions: Check to indicate features present. Preferably, also put in an estimated count for each feature class where appropriate. Features should be listed and described in the feature inventory table below. Keywords are used in the database to aid in searching for specific feature types – enter as appropriate (e.g., "slab-lined hearth", "wickiup", "antelope trap"). Describe features in the site narrative or below. NOTE that agency reporting requirements may require specific feature enumerations. Additional sheets and analytical data may be attached.

___ Hearths (___)
___ Fire-altered rock concentrations (___)
___ Localized fire-related stain (___)
___ Roasting pit (___)
___ Storage pit (___)
___ Pit (___)
___ Post hole (___)

___ Pit house/House pit (___)
___ Stone circle (___)
___ Cairn (___)
___ Bonebed (___)
___ Alignment (___)
___ Quarry feature (___)
___ Rock art panel (___)

___ Organic structure(___)
(e.g. lean-to, wickiup, corral - describe)
___ Other (describe)

FEATURE KEYWORDS:

FEATURE INVENTORY (feature # should key to site sketch map):

Feat. #	Feature Description	Check if more info attached
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___

___ check here if this list is continued on a continuation form (expand on word processor as needed)

___ check here if features are described in site narrative, otherwise describe in table above.

8C. ARTIFACTS ASSOCIATED WITH HISTORIC COMPONENT

Component age* and identifier:_____

*Periods – Protohistoric (1720-1800) Early Historic (1801-1842) Pre-territorial (1843-1867) Territorial (1868-1889); Expansion (1890-1919); Depression (1920-1939) ; WWII-era (1940 to 1946); Post-WWII (1947 to 1955); Modern (1956-present); use exact dates if known

Presence/Absence of common time-diagnostics:

___purple glass (UV altered)
___aqua glass
___clear glass
___auto machine bottles
___hand applied finish bottles
___makers' marks
___solder dot cans
___hole-in-top cans
___sanitary cans
___cut nails
___wire nails
___ceramic trademarks
___other (describe)

Presence/Absence of common artifact classes:

___plate glass
___bottle glass
___ceramics
___metal
___nails
___tin cans
___tobacco tins
___bottle caps
___wire
___furniture hardware
___silverware/cutlery
___lamp parts
___corrugated metal
___stove parts
___wood
___furniture
___leather
___sawn lumber
___wagon parts
___car parts
___bone
___toys
___building hardware
___firearm-related
___clothing-related
___other (describe)

Estimated total assemblage size: ___ 0-10, ___ 11-100, ___101-1000, ___1001-10,000, ___>10,000

ARTIFACT KEYWORDS:

HISTORIC ARTIFACTS

Instructions: Use lines below to list artifacts associated with this component. The IMACs user's guide provides a fairly comprehensive list of artifact types but its use is optional. Alternatively, you may attach a substitute format, so long as it tallies the artifact content adequately.

Artifact Type	Count

__ check here if this list is continued on a continuation form (expand with word processor as needed) or provided in an alternate format

__ check here if artifacts are described in site narrative section, otherwise use space below for general notes on historic artifacts

8D. FEATURES ASSOCIATED WITH HISTORIC COMPONENT

Component age* and identifier:_____

* Periods – Protohistoric (1720-1800) Early Historic (1801-1842) Pre-territorial (1843-1867) Territorial (1868-1889); Expansion (1890-1919); Depression (1920-1939) ; WWII-era (1940 to 1946); Post-WWII (1947 to 1955); Modern (1956-present); use exact dates if known

Instructions: Plot features, labeled by number, on site sketch map. Attach photographs, images, drawings, notes, other recording materials as appropriate, labeling each with feature number.

Human Remains:

___ Human remains (describe – include presence/absence of marker)
___ Suspected grave
___ Artifacts associated with human remains

FEATURE KEYWORDS:

FEATURE INVENTORY (feature # should key to site sketch map):

Feat. #	Feature Description	Check if more info attached
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___

___ check here if this list is continued on a continuation form (expand on word processor as needed)

___ check here if features are described in site narrative, otherwise describe in table above.

Comments and Continuation (note any relevant historic documentation searches performed)

WYOMING ISOLATED RESOURCE FORM (WYIRF)

Consultant Project No.	Agency No.
Review/Compliance No.	WYCRO No.

1) Resource Type: _____ 2) Field No.: _____

3) Project Name: _____

4) Name of Recorder: _____ Date: _____

Company/Institution: _____

5) Landowner: (specify agency, if private give name and address):

6) Collections? [ ] Yes [ ] No Repository: _____

7) Catalog No(s): _____

8) LOCATION:
County _____ USGS Map Code (7.5') _____

USGS 7.5' Map Name, Date _____

Township _____.___ Range _____.___ Section _____ 1/4 _____

Elevation (ft) _____

UTM: Zone _____ E _____m N _____m
Datum used to calculate: _____NAD27 _____NAD 83

UTM source: ____ corrected GPS/rectified survey (<5m error)
____ uncorrected GPS ____ map template
____ other: _____

9) Environmental Description (Discuss topography, vegetation, soils, slope, hydrology, on-site depositional environment):

10) Resource Description (Describe and discuss artifact type(s), observed raw material(s), dimensions, function, time period):

11) Optional attachments may include drawings or photographs with scale of representative diagnostic artifacts, sketch map, and/or a setting photograph.
12) Required attachments are 7.5’ USGS map showing resource location, and photographs or illustrations of collected artifacts.

ATTACHMENT B

INADVERTENT DISCOVERY PLAN

ATTACHMENT B
DRAFT
INADVERTENT DISCOVERY PLAN

of the

DRAFT HISTORIC PROPERTIES TREATMENT PLAN
for the
GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

Prepared by

Rocky Mountain Power

and

Idaho Power Company, Inc.

.

December 2012

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Attachment 1. State Laws for the Discovery of Human Remains

1.0 INTRODUCTION

This initial Draft Plan for Inadvertent Discovery of historic properties describes the measures that Rocky Mountain Power and Idaho Power Company (Companies) will take to ensure the protection of historic properties, in the event that historic properties are discovered during construction of the Gateway West Transmission Line Project (Project). The Companies have developed this initial draft as required by the Programmatic Agreement (PA), Section V.A and VIII. Although cultural inventories of the Project were completed, it is possible that previously unknown archaeological resources could be discovered during Project construction activities. This document details protocols and outlines procedures that will be followed in the event that previously unknown historic properties are inadvertently discovered or if unanticipated effects occur to known historic properties as a result of any construction activities associated with the Project. This Plan, together with the Project-wide Historic Properties Treatment Plan (HPTP), will be reviewed by the Interested Parties of the PA. The Companies will revise the document at and a final Plan will be made a part of the approved Project-wide HPTP.

1.1 Inadvertent Discovery Plan and the Programmatic Agreement

The Bureau of Land Management (BLM) is the lead federal agency for National Historic Preservation Act (NHPA) compliance. In consultation and with the active participation of the Advisory Council on Historic Preservation (ACHP), the BLM developed a PA for the Project to guide Project compliance with the NHPA.

This Inadvertent Discovery Plan was developed as required by the Project PA, Section V.A. and VIII. Upon final approval by the BLM, this Plan will be appended as Attachment B to the HPTP. PA Section V.C. and PA, Section 7 states:

> *The BLM will implement the Inadvertent Discovery Plan if potential historic properties are discovered or if unanticipated effects occur to known historic properties.*

If there appears to be a discrepancy between the stipulations in the PA which have been summarized, described, or interpreted in this Plan, the conditions and stipulations, as written in the PA, supersede interpretations in this Plan.

2.0 INADVERTENT DISCOVERY DEFINITIONS AND PROCEDURES

This section addresses procedures and mitigation for resources discovered during Project construction. Since it is not possible to predict which kinds of sites might be found during construction monitoring, the mitigation measures described in this section are necessarily generic. The mitigation strategy may vary depending on the type of adverse effect.

The Project will avoid and protect historic properties assumed eligible for, or listed on the National Register of Historic Places (NRHP) by monitoring, fencing, and other measures. Subsequent HPTP Segment Plan(s) will provide tables that identify historic properties within each segment of the Project and outline mitigation procedures to be followed for specific sites within each segment. Avoidance is the preferred strategy and may involve redesign or relocation of specific components of the project.

In the event that historic properties are inadvertently discovered or affected during construction, data recovery may be considered as one of several possible means to mitigate those effects. Site evaluation, and the design and execution of data recovery or other mitigation measures (treatment) will be completed in consultation with the Construction Contractor's Cultural Resource Specialist (CRS), the Companies, the Compliance Inspection Contractor (CIC), BLM, and SHPO, and if applicable and appropriate, the Native American Monitor[1] (NAM).

In the case of inadvertent discovery of cultural items on federally managed lands, the BLM will notify and consult with culturally affiliated tribes regarding the treatment and/ or mitigation of effects to historic properties, or sites of traditional religious and cultural importance.

All activities conducted for the Project under the PA, project-wide HPTP, and HPTP Segment Plans will be in accordance with the protocols, contexts, and guidelines of the relevant state BLM office and relevant state SHPO.

2.1 Definition of Inadvertent or Unanticipated Discoveries

For the purpose of this Plan, an inadvertent or unanticipated discovery is a discovery of historic properties where they had not been previously documented and that occurs during construction. Examples of inadvertent or unanticipated discoveries are:

- Artifacts or cultural material discovered on the surface or in a subsurface context as the direct result of project excavation, grading, auguring or other soil disturbance.

[1] Acronyms are introduced and indexed in the HPTP.

- A single artifact or lithic scatters, prehistoric habitation sites, refuse scatters, military related activities, etc.
- Additional distinct artifacts or cultural materials that have the potential to provide additional data for an archaeological site that was previously determined to be ineligible for further treatment.
- Artifacts or cultural materials within archaeological sites previously determined to be eligible for further treatment, which are qualitatively different from artifacts and cultural materials previously identified and/or investigated in the impacted portion of the site and which indicate that the impacted portion of the site has the potential to contribute to the eligibility of the site based on its potential to provide data relevant to the sorts of research issues defined in the project research design.
- Any evidence of human remains regardless of context of discovery. All discoveries of bone are to be treated by construction personnel as potential human remains until a determination can be made by a qualified CRS, CRM, or osteologist (if required) as described below.

Inadvertent discoveries may be prehistoric, historic, or both prehistoric and historic. Typical indicators of these sites follow.

PREHISTORIC: Indicators of prehistoric cultural occupation by Native Americans include artifacts and human bone, as well as soil discoloration, shell, animal bone, cobbles, rock features, ashy areas, and baked or vitrified clays. Prehistoric materials may include:

- **Human Bone**—either intact burials or isolated bones, including teeth or fragmentary pieces of bone.
- **Habitation**—occupation sites as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
- **Artifacts**—such as chipped stone objects, projectile points, bifaces, and debitage; ground stone artifacts such as manos, metates, mortars, pestles, grinding stones, and hammerstones; ceramics; and bone artifacts including ornaments and beads (ornaments and beads were often interred with the deceased, and are considered indicative of potential human remains).
- **Features—**such as a hearth (fire-affected rock; baked and vitrified clay, ash), artifact caches, midden deposits, rock rings, rock cairns, hunting blinds, petroglyphs, faunal remains, and distinctive changes in soil stratigraphy indicative of prehistoric activities.
- **Trails—**Native American trails/footpaths, including trail markers (e.g. ceramic fragments, pot drops)
- **Ceremonial Structures**—rock cairns or medicine wheels, including large circular stone formations, sometimes with “spokes” or linear alignment of stones that radiate from the center.

HISTORIC: Within the Project area, an inadvertent discovery of historic cultural materials may potentially require data recovery or avoidance if those finds include sites that are greater than 50 years old. Historic materials may include:

- **Structural—**remnants or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.)
- **Refuse Scatters—**including trash pits and associated artifacts
- **Military—**related activities (e.g. ration can scatters, gun shell casings, fox holes. etc.)
- **Historic Trails—**evidence of trails and/or related activities.
- **Human Remains—**bone and associated burial objects (e.g. coffin hardware)

2.2 Definition of Finds

2.2.1 Definition of Isolated Finds

The definition of an isolated find varies by state. For the purposes of the Project, the definitions used by the SHPOs in each state will be employed in that state. They are:

- IDAHO: the presence of one artifact where no buried materials or features are thought to exist (two artifacts would be considered a site).This excludes isolated features with or without artifacts, such as, peeled trees, cache pits, hearths, housepits, rockshelters, cairns, historic mining ditches, petroglyphs, or dendroglyphs. A statement of why the isolate is considered non-significant should be included on the ID isolate form (Idaho SHPO).
- WYOMING: the presence of fewer than 14 prehistoric artifacts where no buried cultural materials or features are thought to exist and fewer than 49 historic artifacts where no buried cultural material or features exist (Wyoming SHPO).

Isolated finds are *a priori* considered ineligible for inclusion on the NRHP, unless the artifact itself is of exceptional significance. Diagnostic and exceptional isolated prehistoric or historic finds that are unique, associated with a specific setting or environment, or may contribute to the understanding and appreciation of prehistory and history, may be eligible for the NRHP and will be considered under their own merit as historic properties. The following list includes examples of potential diagnostic isolated artifacts that could be considered eligible for the NRHP in spite of being isolated finds:

- **Prehistoric—**ceramics (decorated, rim, or basal sherds, lugs, figurines, complete vessels) and lithics (projectile points, exceptional/unusual ground stone, exceptional/unusual chipped-stone artifacts).
- **Historic—**Rare or exceptional ceramic (makers marks, complete vessels), glass (complete vessels), buttons, marbles, pipes, figurines) and identifiable metal (tools, gun parts, machine parts, buckles, flatware, wagon hardware, horse tack) that are clearly 50 years of age or older.

2.2.2 Types of Unanticipated Discoveries Where Avoidance Is Not Required—Prescribed Treatment

Unanticipated discoveries that are considered to hold no potential to be exceptional or eligible for the NRHP include:

- Isolated, non-diagnostic, unexceptional prehistoric flaked stone and ground stone artifacts, burned rock, or non-human bone clearly outside the boundaries of previously defined archaeological sites.
- Isolated, non-diagnostic and unexceptional historic artifacts clearly outside the boundaries of previously defined archaeological sites.
- Prehistoric and historic artifacts or materials within archaeological sites previously evaluated as ineligible for the NRHP, and that are qualitatively consistent with the materials previously identified at the site.

Isolates such as those listed above will be reported to the BLM and the appropriate SHPO but will be assumed ineligible for the NRHP and therefore not subject to further mitigation.

2.3 Plan of Discovery Procedures

Upon the inadvertent discovery of prehistoric cultural items not considered as categorically ineligible isolates as specified in Section 2.2, above, BLM will consult with tribes to determine if additional mitigation measures are necessary to treat the items in an appropriate manner and/or mitigate effects to the items.

The Monitoring Plan (Attachment A of the HPTP) defines the Project monitoring procedures and the roles and responsibilities of the monitoring team. The Construction Contractor's Cultural Resources Team, including CRS and/or CRM and NAM (when applicable), will be present during Project ground disturbing construction activities (e.g. mechanical scraping, grading, excavating, etc.) to ensure all known historic properties sites are protected and to monitor construction activities for unanticipated discoveries. The CIC will also observe such activities to ensure compliance as described in the Monitoring Plan. In addition, the CRS and CRM will ensure the procedures outlined in this Plan, the Monitoring Plan, the HPTP, Subsequent HPTP Segment Plan(s), and the Native American Graves Protection and Repatriation Act (NAGPRA) Plan of Action (Attachment C of the HPTP) are followed.

In the case of an inadvertent discovery, the following procedures will be followed:

- The CRS and/or CRM(s), and the NAM(s), if present through coordination with the CRS or CRM, will have the authority to temporarily halt construction operations within 200 feet (60 meters) of a find or exposed resource to determine if historic properties are present and if they will be adversely affected by continuing construction operations.
- The CRM will immediately notify the construction supervisor, CRS and CIC of the find.

- The CRS will notify the Construction Contractor's Project Manager and the Companies' Project Manager of the find and of the stop work activity.
- The CRM will inspect the area for additional resources. The CRM will use flagging tape, rope, or some other means necessary to delineate the area of the find within which construction will halt (this may also include any piles of dirt or rock spoil from that area). If a NAM is present, the NAM will accompany and observe the CRM during these procedures.
- If the find qualifies as an isolate that requires no avoidance, the CRM will record the find on an applicable archaeological isolate site form, provide a detailed description of the item, a photograph, a location map, and record the geographic location with the use of Global Positioning System (GPS). Once the isolate is recorded and no other cultural material or features are observed, the CRS will inform the construction supervisor that construction may proceed.
- The CRS will notify the appropriate lead BLM archaeologist, SHPO, and Native American Representative(s), via telephone and/or email within 24 hours of any unanticipated discovery (including isolates)
- Construction can resume when the BLM approves the CRS evaluation of the find as ineligible or mitigation measures are approved by the relevant BLM and SHPO offices.
- No invasive archaeological testing/excavation will occur and no artifacts will be collected without BLM approval.
- All finds will be documented and included in the Cultural Resources Monitoring report, monthly compliance reports, and/or within the final monitoring report for the entire project.

If the find does not qualify as an isolate as described in Section 2.2, the CRS will provide sufficient information regarding the find (e.g. type of site, description of visible surface artifacts and/or features, potential of subsurface deposits, etc.), an eligibility recommendation, and photographs of the discovery to the CIC, BLM Archaeologist, SHPO, and interested Native American Representative(s) (if requested). Construction within 200 feet of the find will be prohibited until the CRS, CIC, BLM, and SHPO have conferred and determined what, if any, data recovery or other mitigation is needed. These parties will meet or hold a conference call to discuss the find and mitigation measures within 5 working days of notifying the BLM of the find. If they agree that it is infeasible to avoid the resource, then the prohibition on construction in the vicinity of the resource will remain in force until the field work for data recovery or other mitigation is completed.

2.4 Identification of Human Remains

Although every effort has been made during the planning phase of the project to avoid sensitive resources, human remains and/or funerary objects may be discovered during Project construction activities. If human remains are discovered, construction will stop immediately within the

vicinity of the find, the remains will not endure further disturbance, and the remains will be protected in accordance with applicable local, state, and federal statutes.

If skeletal remains (e.g. bones) are inadvertently discovered during Project construction, the CRS or CRM and NAM (if applicable) will perform the following initial tasks:

- STOP CONSTRUCTION ACTIVITIES
  - Immediately halt construction within 200 feet radius of the remains and notify the Construction Contractor's Project Manager, Companies' Project Manager, CIC and BLM Archaeologist.
  - The area will be protected with flagging or by posting a monitor or construction worker to ensure that no additional disturbance occurs
  - Remains are not to be touched, moved, photographed, or further disturbed until assessed by the CRM in consultation with the BLM, the CRS, and the CIC
  - Consult with the CRS and identify whether or not the remains are human, the CRS may consult with a physical anthropologist (as appropriate).
  - If the skeletal remains are non-human and no other archaeological objects or features are associated with the find, the CRS and/or CRM will inform the construction supervisor that construction may proceed.
  - If the skeletal remains are human, the appropriate agency officials will be notified as specified by land ownership, below.
- HUMAN REMAINS NOTIFICATON PROCEDURES ON NON-FEDERAL LAND

  Idaho State Statues 18-7027 and 18-7028 makes it unlawful to decimate and/or remove graves and/or associated funerary objects and doing so is a felony punishable by imprisonment and/or fines. Wyoming State Statue 6-4-501 states that it is unlawful to disturb human remains and doing so is punishable by a fine (see Attachment 1 for full text of the laws of each state).

  If the human remains are identified on non-federal land, the CRS and/or CRM will notify the appropriate state official as follows: in Idaho, the local county sheriff, and in Wyoming the local coroner. They will also notify the landowner, the appropriate SHPO archeologist, and the nearest Federal agency archeologist

  The appropriate state official will report non-forensic finds to the appropriate SHPO and State Physical Anthropologist. The SHPO will then handle all notifications, consultation with affected parties, and will authorize work resumption.
- HUMAN REMAINS NOTIFICATON PROCEDURES ON FEDERAL LAND

  The NAGPRA Plan of Action will be followed for remains found on federally managed lands.

Phone numbers for the key contacts in the event of an emergency discovery will be provided in the segment HPTPs and will be included in the proposed employee-training brochure.

2.5 Site Recording and Evaluation Methods

If a site containing historic properties, other than an isolated find, is discovered within the Project APE during construction, the CRS or CRM will record and map the site to the appropriate state standards. The site form will be immediately submitted to the BLM for review and approval following its completion. The BLM will determine whether the site requires further testing or other mitigation measures. If the site is in danger of being destroyed and cannot remain in situ and data recovery is the chosen method for mitigation, site-specific field methods (e.g. type and number of excavation units, in-field analysis, etc.) will be developed in consultation with the Companies' Project Manager, Construction Contractor's Project Manager, CRS, CIC, BLM, SHPO, and consulting Tribes in accordance with the HPTP and/or Segment Plan.

2.5.1 Site Recording Methods

The CRS or CRM will record cultural resources on the appropriate state archaeological site form. The site area will be recorded and evaluated as to whether it requires further testing or if mitigation measures are required. The site recording will include the completed archaeological site form. GPS will be used to record the location of surface artifacts and to prepare a detailed scale map of prominent site features. This map will show landmarks and artifact and locations. The site will also be plotted on a United States Geological Survey 7.5' topographic map. Where the site boundaries appear to extend beyond 1320 feet (400 meters) of the APE, the site description will be limited to that within 1320 feet of the APE, in consultation with the BLM and SHPO.

The field crew will photograph the site and record standard site information about the topography, physiography, vegetation, location, and artifacts and features (mapped in plan view and/or profile, as appropriate), and produce stratigraphic profiles of selected trench walls (if find is located during construction trenching) in which cultural materials are exposed. Soil colors will be recorded using Munsell soil color charts. No artifacts will be collected for curation except as instructed by the BLM. An eligibility recommendation will be made for the resource on the form. A permanent site number will be obtained from the appropriate state SHPO. The draft site form, along with maps and photos, will be submitted upon completion to the BLM for review and approval. Potential human remains will be treated as described in the NAGPRA Plan.

2.6 Confidentiality of Historic Property Information

Historic properties confidentiality is subject to the provisions of Section 304 of the NHPA relating to the nondisclosure of information about the location, character, and ownership of a historic property, including historic properties of traditional religious and cultural importance to Indian tribes. All sensitive cultural resource information (e.g. site records, inventory reports, maps with site location data) is confidential and not for public distribution. Where data sharing agreements are in place between the BLM and the Companies, the terms of those agreements

will be upheld by the CRS and CRM. In the field during construction, the CRM(s) will have copies of all the site records and maps for known historic properties within the vicinity of the Project area being monitored. The CRM will ensure all data is kept confidential.

ATTACHMENT 1

STATE LAWS FOR THE DISCOVERY OF HUMAN REMAINS

Attachment 1

Wyoming State Statue 6-4-501

ARTICLE 5 - DESECRATING GRAVES AND BODIES

6-4-501. Opening graves and removing bodies; penalty; exception.

(a)A person who opens a grave or tomb and removes a body or remains of a deceased person for any purpose without the knowledge and consent of near relations of the deceased commits a misdemeanor punishable by a fine of not more than seven hundred fifty dollars ($750.00).

(b)This section does not prohibit exhumation if ordered by a court of competent jurisdiction.

Idaho State Statutes

18-7027. DESECRATION OF GRAVE, CEMETERY, HEADSTONE OR PLACE OF BURIAL PROHIBITED.

It shall be unlawful for any person, not acting in full compliance with all the terms of the law to desecrate or molest in any way any portion of any grave, cemetery, headstone, grave marker, mausoleum, crypt, or any other place of burial, whether of whole bodies, or ashes, or other evidence of remains of a deceased human body.

Any person convicted or found guilty of violating the provisions of this section is guilty of a misdemeanor.

18-7028. UNLAWFUL REMOVAL OF HUMAN REMAINS--MALICE--INTENT TO SELL.

Every person who removes any part of any human remains from any place where it has been interred, or from any place where it is deposited while awaiting interment, with intent to sell it or to dissect it, without authority of law, or from malice or wantonness is guilty of a felony punishable by imprisonment in the state penitentiary for not more than five (5) years, by a fine not greater than ten thousand dollars ($10,000) or by both such fine and imprisonment.

27-501. DEFINITIONS.

For the purpose of sections 27-501 through 27-504, Idaho Code:

(1) "Cairn" means a heap of stones or other material piled up as a memorial or monument to the dead.

(2) "Grave" means an excavation for burial of a human body.

(3) "Indian tribe" means any Idaho Indian tribe recognized by the Secretary of the Interior.

(4) "Professional archaeologist" means a person who has extensive formal training and experience in systematic, scientific archaeology.

27-502. PROHIBITED ACTS.

(1) Except as provided in Section 27-503, Idaho Code, no person shall willfully remove, mutilate, deface, injure or destroy any cairn or grave.

Persons disturbing graves through inadvertence, including by construction, mining, or logging, shall cause the human remains to be reinterred. The expense for such reinternment shall be at least partially borne by the State Historical Society.

(2) No person shall:

(a) Possess any artifacts or human remains taken from a cairn or grave on or after January 1, 1984, in a manner other than that authorized under Section 27-503, Idaho Code.
(b) Publicly display or exhibit any human remains.
(c) Sell any human artifacts or human remains taken from a cairn or grave.

(3) The provisions of this section do not apply to:

(a) The possession or sale of artifacts discovered in or taken from locations other than cairns or graves or artifacts that were removed from cairns or graves by other than human action; or
(b) Actions taken in the performance of official law enforcement duties.

27-503. PERMITTED ACTS--NOTICE.

(1) If action is necessary to protect the burial site from foreseeable destruction and upon prior notification to the director of the State Historical Society and to the appropriate Indian tribe in the vicinity of the intended action if the cairn or grave contains remains of an Indian, a professional archaeologist may excavate a cairn or grave and remove material objects and human remains for subsequent reinternment following scientific study.

Reinternment shall be under the supervision of the appropriate Indian tribe if the cairn or grave contained remains of an Indian.

(2) Except as provided in subsection (1) of this section, any proposed excavation by a professional archaeologist of a native Indian cairn or grave shall be initialed only after prior written notification to the director of the State Historical Society and with prior written consent of the appropriate Indian tribe in the vicinity of the intended action. Failure of a tribe to respond to a request for permission within sixty (60) days of its mailing by certified mail, return receipt requested, shall be deemed consent. All material objects and human remains removed during such an excavation shall, following scientific study, be reinterred at the archaeologist's expense under the supervision of the Indian tribe.

(3) In order to determine the appropriate Indian tribe under this section and Section 27-502, Idaho Code, a professional archaeologist or other person shall consult with the director of the State Historical Society who shall designate the appropriate tribe.

27-504. CIVIL ACTION--TIME FOR COMMENCING ACTIONS--VENUE--DAMAGES--ATTORNEY FEES.

(1) Apart from any criminal prosecution, any person shall have a cause of action to secure an injunction, damages or other appropriate relief against any person who is alleged to have violated the provisions of Section 27-502, Idaho Code. The action shall be brought within two (2) years of the discovery of the violation by the plaintiff. The action may be filed in the district court of the county in which the subject grave or cairn, remains or artifacts are located, or within which the defendant resides.

ATTACHMENT C

NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (NAGPRA) PLAN OF ACTION

ATTACHMENT C
DRAFT
NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT PLAN OF ACTION

of the

DRAFT HISTORIC PROPERTIES TREATMENT PLAN
for the
GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

Prepared by

Rocky Mountain Power

and

Idaho Power Company, Inc.

.

December 2012

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Attachment 1. Discovery of Human Remains Flow Chart

1.0 INTRODUCTION

This Draft Plan of Action (POA) provides an initial framework for the procedures for the treatment and disposition of Native American human skeletal remains, associated funerary objects, objects of cultural patrimony, and sacred objects (hereinafter, cultural items) for inadvertent discoveries during construction of the Gateway West Transmission Line Project (Gateway West or the Project) on Public Lands administered by the Bureau of Land Management (BLM) in Wyoming and Idaho, on lands managed by the USDA Forest Service in Wyoming and Idaho, on lands managed by the US Army Corps of Engineers, and on lands managed by the USDI Bureau of Reclamation. This POA, when completed and approved, will comply with the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S. Code (USC) 3001 et seq. and its implementing regulations as set forth in 43 Code of Federal Regulations (CFR) Part 10 (Specifically § 10.5[e]), and the Archaeological Resources Protection Act (ARPA), 16 USC 470aa-mm, with its implementing regulations (43 CFR Part 7). The BLM, as lead federal agency, will develop and manage the final NAGPRA POA in collaboration and consultation with affected Tribes. As specified in the PA, the final Plan will be reviewed by the Interested Parties of the PA.

1.1 Project Description

Rocky Mountain Power and Idaho Power Company, collectively known as the Companies, are proposing to develop approximately 1000 miles of new 230-kilovolt (kV), 345-kV, and 500-kV alternating current electric transmission system consisting of 10 segments between Windstar Substation near Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho.

1.2 Native American Consultation

The BLM is the lead federal agency for government-to-government consultation with identified Indian tribal governments, tribal individuals, and tribal organizations, pursuant to 36 CFR 800.2(c)(2). The following Tribes have been contacted to review and comment on the Project: the Northern Arapaho, the Northern Cheyenne, the Eastern Shoshone, the Shoshone-Bannock, the Northern Ute, the Shoshone-Paiute, the Northwest Shoshone Band, the Southern Arapaho, the Southern Cheyenne, and the Oglala Sioux.

BLM initiated consultation with the tribes for this Project in 2008. The BLM has continued Tribal consultation to date with letters, phone calls, and meetings to or with each of the parties listed above. The BLM will continue consultation throughout the planning and execution of the Project and specifically will consult with affected tribes on protocols for carrying out the BLM's obligations under NAGPRA.

2.0 PLAN OF ACTION

This section discusses the NAGPRA Plan of Action. This initial draft was prepared by the Companies as specified in the PA for the Gateway West Project. The BLM, as lead federal agency, will develop and manage the final plan in collaboration and consultation with affected Tribes and will be reviewed by the Interested Parties of the PA.

2.1 Applicability of this Plan of Action

NAGPRA applies on federally managed and tribal lands. Human remains, funerary objects, sacred objects, and objects of cultural patrimony located on state and privately held lands will be managed according to the laws of the state in which they are found. In addition to NAGPRA, the BLM and other federal agencies are required under the laws of each of the states crossed by the Project to notify law enforcement if human remains of any description are found.

Upon discovery of human remains, the Cultural Resource Specialist (CRS), the Cultural Resource Monitor (CRM), or construction staff must immediately notify the appropriate state law enforcement officer: in Idaho, the local county sheriff and in Wyoming, the local county coroner. The full text of the laws of each state is found in Attachment 1 of the Inadvertent Discovery Plan. The names and contact information for the appropriate law enforcement contacts will be listed in Table 1 of each segment Historic Properties Treatment Plan (HPTP). The notification of law enforcement will occur at the same time as the activation of this POA. The decision of the law enforcement official regarding whether the remains fall under the jurisdiction of law enforcement or NAGPRA will determine the subsequent management of the remains. Only after the appropriate law enforcement decision has been rendered may the terms of this POA take effect.

2.2 Objects to be Considered as Cultural Items

For the purpose of this plan, the objects considered as cultural items are defined in 43 CFR 10.2 (d) and are as follows:

1. *Human Remains:* means the physical remains of a human body of a person of Native American ancestry. The term does not include remains or portions of remains that may reasonably be determined to have been freely given or naturally shed by the individual from whose body they were obtained, such as hair made into ropes or nets or individual teeth. For the purposes of determining cultural affiliation, human remains incorporated into a funerary object, sacred object, or object of cultural patrimony, as defined below, must be considered as part of that item (43 CFR 10.2[d][1]).
2. *Funerary Objects:* means items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally, at the time of death or later, with or near individual human remains. Funerary objects must be identified by a preponderance of evidence as having been removed from a specific burial site of an individual affiliated with a particular Indian tribe or Native Hawaiian organization, or as

being related to specific individuals or families or to known human remains. The term *burial site* means any natural or prepared physical location, whether originally below, on, or above the ground into which, as part of the death rite or ceremony of a culture, individual human remains were deposited, and includes rock cairns or pyres that do not fall within the ordinary definition of a gravesite. For purposes of completing the summary requirements in §10.8 and the inventory requirements of §10.9 (43 CFR 10.2[d][2]), funerary objects can be further defined as follows:

a. Associated funerary objects means those funerary objects for which the human remains with which they were placed intentionally are also in the possession or control of a museum or Federal agency. Associated funerary objects also mean those funerary objects that were made exclusively for burial purposes or to contain human remains.

b. Unassociated funerary objects mean those funerary objects for which the human remains with which they were placed intentionally are not in the possession or control of a museum or Federal agency. Objects that were displayed with individual human remains as part of a death rite or ceremony of a culture and subsequently returned or disturbed according to traditional custom to living descendants or other individuals are not considered unassociated funerary objects.

Funerary objects found in prehistoric burials include, but are not limited to: projectile points, shell beads, pendants, ceramic pots, and arrow shaft straighteners.

3. *Sacred Objects:* means items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. While many items, from ancient pottery shreds to arrowheads, might be imbued with sacredness in the eyes of an individual, these regulations are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and that have religious significance or function in the continued observance or renewal of such ceremony. Traditional religious leader means a person who is recognized by members of an Indian tribe or Native Hawaiian organization (43 CFR 10.2[d][3]) as follows:

a. Being responsible for performing cultural duties relating to the ceremonial or religious traditions of that Indian tribe or organization , or

b. Exercising a leadership role in an Indian tribe or Native Hawaiian organization based on the tribe or organization's cultural ceremonial or religious practices.

4. *Objects of cultural patrimony:* means items having ongoing historical, traditional, or cultural importance central to the Indian tribe itself, rather than property owned by an individual tribe or organization member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by an individual tribal or organization member. Such objects must have been considered inalienable by the culturally affiliated Indian tribe or native Hawaiian organization at the time the object was separated from the group (43 CFR 10.2 [d][4]).

2.3 Specific Information to Determine Custody

BLM will specify in the final version of the NAGPRA plan, in collaborative consultation with affected tribes, how the requirements of NAGPRA regarding custody determination will be

developed for this Project. The following points are the elements of NAGPRA requiring consideration for custody determination:

1. Information provided by a lineal descendant(s) that can trace his or her direct relationship, without interruption, between themselves and the deceased by means of the traditional kinship system of the appropriate Indian tribe (43 CFR 10.2[b] and 43 CFR 10.14[b]).
2. Information provided by a Native American tribe, people, or culture that is indigenous to the United Sates, and that can establish cultural affiliation by means of a relationship of shared group identity that can reasonably be traced historically or prehistorically between members of a present day Indian tribe and an identifiable earlier group (25 USC 3001[9], 43 CRF 10.2[e] and 43 CFR 10.14[c]).
3. The Federal agency official will determine cultural affiliation between a present-day individual or Indian tribe by a preponderance of evidence based on geographical, kinship, biological, archaeological, anthropological, linguistic, folkloric, oral traditional, historical, or other relevant information or expert opinion (25 USC 3005 [a][4], 43 CFR 10.2[e], and 43 CFR 10.14[e]).
4. Priority order of custody of the cultural materials will be consistent with 43 CFR 10.6 (a) as follows:
    a. In the case of human remains and associated funerary objects, in the lineal descendant of the deceased individual as determined pursuant to Sec. 10.14 (b);
    b. In cases where a lineal descendant cannot be ascertained or no claim is made, and with respect to unassociated funerary objects, sacred objects, and objects of cultural patrimony:
        i. In the Indian tribe on whose tribal land the cultural items were excavated;
        ii. In the Indian tribe that has the closest cultural affiliation with the cultural items as determined pursuant to Sec. 10.14 (c); or
        iii. In circumstances in which the cultural affiliation of the cultural items cannot be ascertained, BLM is unable to prove a right of possession as defined at 43 CFR 10.10(a)(2), and the materials were excavated or removed from Federal land that is recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims as the aboriginal land of an Indian tribe:
            1. In the Indian tribe aboriginally occupying the Federal land on which the cultural items were excavated, or
            2. If it can be shown by a preponderance of the evidence that a different Indian tribe has a stronger cultural relationship with the cultural items, in the Indian tribe that has the strongest demonstrated relationship with the objects.

BLM intends to repatriate human remains and associated funerary objects when cultural affiliation can be determined. If human remains and associated funerary objects whose cultural affiliation cannot be determined [43 CRF 10.9 (d)] are discovered, the BLM will consult with the

Review Committee created by NAGPRA. The Review Committee is authorized under 25 USC 3006(c)(5) to make recommendations, "in consultation with Indian tribes, Native Hawaiian organizations, agency, and/or appropriate scientific and museum groups", as to how these remains and objects will be handled.

2.4 Planned Treatment, Care, and Handling of Human Remains

If human skeletal remains are discovered on federal or tribal land as a result of the Gateway West project construction or archaeological investigations, the CRS, CRM, or other project personnel will halt all activities within 200 feet of the remains and associated objects, protect them from further disturbance by placing exclusionary fencing in a 50-foot radius around the discovery, and provide immediate notification to local law enforcement and to the BLM of the discovery.

All discovered remains will be treated with respect and dignity. Specific steps for managing remains will be developed by the BLM in collaboration and consultation with affected tribes.

1. The Companies are responsible for ensuring the security of in situ cultural items from vandalism or other disturbance through employment of security personnel, fencing, and other appropriate measures, as needed. Additional measures, where needed, will be specified by the BLM
2. The Project will not resume construction in the buffer area surrounding the discovery until it has received written authorization to proceed based on procedures established in the final NAGPRA plan and the PA.

2.5 Planned Archaeological Recording and Reporting of the Human Remains and Cultural Materials

BLM will specify in the final version of the NAGPRA plan, the terms for recordation and reporting of any remains or cultural objects through collaboration and consultation with the affected tribes.

2.6 Analysis Planned for the Human Remains and Cultural Materials

BLM will specify in the final version of the NAGPRA plan, in consultation with affected tribes, any analyses of human remains and cultural materials including consultation regarding removal.

2.7 Planned Disposition of Human Remains Pursuant to 43 CFR 10.6

BLM will specify details on planned disposition of human remains in the final version of the NAGPRA plan, in consultation with affected tribes.

2.8 Native American Monitor Role

If Native American Monitors (NAMs) are used for a particular segment, then they may notify the approved CRS about items they feel are funerary objects, sacred objects, and/or objects of cultural patrimony. The CRS will notify BLM within 24 hours that monitors identified funerary

objects, sacred objects, and/or objects of cultural patrimony. The report will include a description of the find(s), photograph(s) or drawing(s) were applicable, artifact(s) numbers or identification were applicable, and a description of the tribal monitor's opinion(s).

2.9 Federal Personnel and Tribal Representatives Involved in this POA

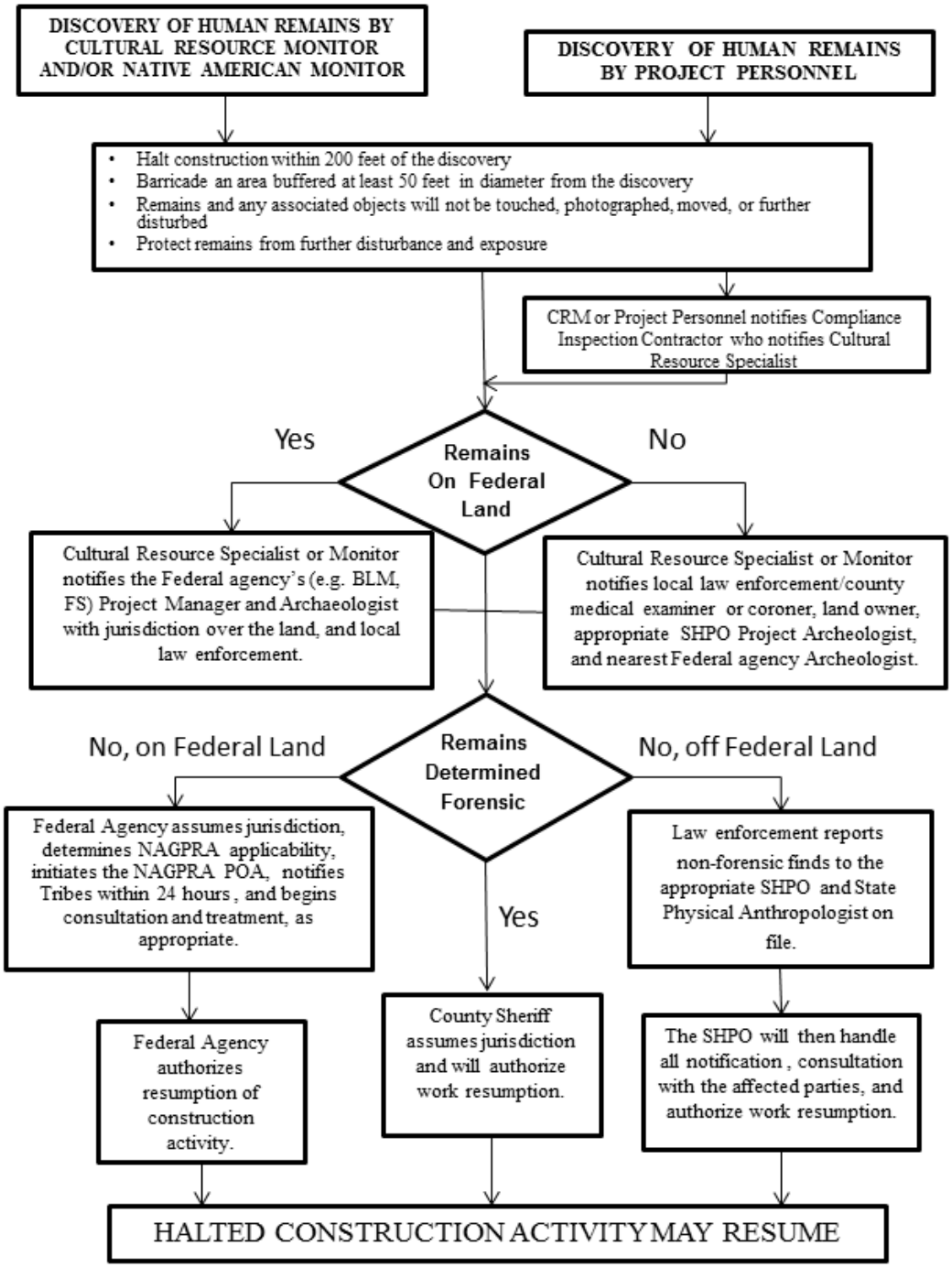
Each Segment HPTP will list federal agency and tribal contacts and will include the names and contact information for the CRS, CRMs, and NAMs where appropriate.

ATTACHMENT 1

DISCOVERY OF HUMAN REMAINS FLOW CHART

ATTACHMENT 1

INADVERTENT DISCOVERY OF HUMAN REMAINS



ATTACHMENT D

SEGMENT HISTORIC PROPERTIES TREATMENT PLAN (PLACE HOLDER)

ATTACHMENT E

THE WYOMING BUREAU OF LAND MANAGEMENT FIELD GUIDE FOR EVALUATIVE TESTING OF ARCHAEOLOGICAL SITES

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A Supplement to the Wyoming Bureau of Land Management Cultural Resources Handbook

September 2003

BUREAU OF LAND MANAGEMENT
FIELD GUIDE FOR EVALUATIVE TESTING OF ARCHEOLOGICAL SITES

Introduction
Field archeologists should be prepared to test sites where insufficient surface evidence exists to determine the presence of information important to prehistory. Limited subsurface testing may be required for the following purposes:

1. Testing to evaluate significance, usually under Criterion D.
2. Testing to assess the effects of an undertaking on an eligible site.
3. Testing to look for buried cultural remains when there is reason to expect a great potential for significant cultural resources where surface evidence is absent.
4. Testing to develop a data recovery plan for an affected National Register eligible site.

Methods used for all four purposes may be the same or in some situations may differ. It may be possible to conduct two or more kinds of testing at the same time or part of the testing may be useful for two or more goals, while additional testing may be needed to meet a second goal. The archeologist should clearly specify the reasons for testing and which methods and procedures were used.

Poor testing may lead to inaccurate evaluations of eligibility and effect. This in turn may lead to discoveries that result in costly project delays and extra work and expense to mitigate sites that might have been avoided if properly identified. Damaging a site because of an inadequate identification effort is contrary to the intent of historic preservation laws and regulations.

I. Evaluating sites for National Register eligibility.

Evaluating sites for National Register eligibility requires assessing the potential of the site to contain data that contribute to answering important research questions. The following research questions provide examples to stimulate the thinking of the site evaluator. These research questions are only a partial list of possible research values for eligible sites. Historic context (if available) should be referred to for more specific research questions.

Site evaluations must specify what kinds of evidence the site contains and what research questions those data will help answer. Without this information, the archaeologist has not completed a site evaluation. Sites cannot be evaluated without the archeologist interpreting the surface and testing data collected.

A. Research Questions

1. Does the site contribute a better understanding of cultural chronology or a particular cultural phase?

2. Does the site contribute data on subsistence strategies and practices?

3. Does the site contribute data on settlement patterns, landscape use strategies, duration of occupation, seasonal migration round, or mobility strategies?

4. Does the site contribute data on the functions of site structures, such as hearth types and their uses, house types and their uses and duration of use?

5. Does the site contribute data on lithic procurement, processing (reduction strategies), transport, role in settlement strategies and seasonal rounds, selectivity for specific tasks, and/or discard patterns?

6. Does the site contain data on paleoenvironments and adaptations to changing environments?

7. Does the site contribute information on religious concepts or practices?

Additional questions about the nature of the site can help the archeologist assess its potential for contributing data that answer important research questions, such as those above.

This checklist of questions helps the archeologist evaluate the site integrity and assess the nature of the site data. A "yes" answer to any of these questions does not constitute a site evaluation. The investigator must go on to determine what research questions may be answered with these data.

1. Is the site datable? Does the site contain carbon or charcoal or temporally diagnostic artifacts, and/or does it have associated historical records that place the site in time. If datable evidence is not present on the surface of a site, testing may be needed to explore for datable materials.

2. Is the site stratified vertically or horizontally? Does the stratigraphic context retain sufficient integrity in at least one stratum or area to produce information that is discrete to that occupation (note: only one discrete unit is necessary)?

3. Does the site have artifacts that allow interpretation of site function?

4. Does the site have definable activity areas?

5. Are there multiple components that are segregated vertically or horizontally such that relative dating is possible?

6. Does the site have artifacts or features that are unique to the area or time period?

7. Does the site have features? If so, what types and how can they contribute to understanding prehistory?

8. What is the site's environmental location in relation to other sites in the area?

9. What is the site's overall size, complexity, and artifact density, compared to other sites in the area?

10. Does the site contain complete tool kits?

11. Do features have good integrity?

12. Are floral or faunal remains preserved?

B. Site Integrity

The issue of site integrity is complex yet essential for determining site eligibility. Evaluations of National Register eligibility require an assessment of seven criteria of integrity: location, design, setting, materials, workmanship, feeling, and association. Within an archaeological context only some of these criteria may apply, however under the National Register guidelines archeologists need to be aware of all the criteria when considering the complex issue of site integrity.

Specifically, archeologists must become aware the factors that could influence the nature and condition of the cultural deposits. These could be, bioturbation, subsidence, slope wash, wind erosion and other post depositional processes. Knowledge of the local geomorphological conditions is essential in assessing site integrity.

C. Methods of Evaluative Testing

A phased approach progresses from minimal to greater impact on the site. The amount of data recovered generally also increases with greater impact methods, except for backhoe trenching. Phases need not be completed in a specified order. Environmental indicators, such as soil type, geomorphology, and topography, may suggest going immediately to a later 'phase' to maximize the most efficient and cost effective recovery of useful data, depending on professional judgment. Evaluation based on surface evidence, shovel or auger probes and to a limited extent formal excavation units can be carried out under the BLM permit for survey and limited testing. Any effort beyond this must be coordinated with the BLM Field Office archeologist and the project proponent. Testing above that specified in the BLM permit must involve consultation with SHPO.

Method 1: Evaluation from Surface Evidence

Evaluations from surface evidence should use existing exposures of profiles, such as cutbanks, zones of deflation, like blowouts or the windward side of some dunes, naturally occurring disturbances, like animal burrows/backdirt, entrenched animal trails, and ant beds, and man-made disturbances, such as roads. Frequently, an archeologist can evaluate a site based solely on surface evidence if he/she provides sufficient rationale to justify the evaluation. Often, evaluation from surface evidence leads to an ineligible evaluation because it is easier to assume that National Register

qualities are absent than to recover incontrovertible evidence of information important in prehistory. Many sites can be evaluated by surface evidence alone, given adequate knowledge of the site and its context. If the existing site conditions do not provide sufficient evidence to answer the basic research questions and information needs, however, some sort of subsurface investigation should be made using one or more or the following methods. The *assumption* that no subsurface deposits are present because the vegetation cover is sparse is not acceptable. Similarly, the assumption that no subsurface deposits are present because of dense vegetation cover, such as in a hay meadow, is not acceptable.

Method 2: Remote Sensing

Archeologists are beginning to use remote sensing techniques for evaluating locating and evaluating sites. As the technique becomes more refined it may enjoy a broader application. Remote sensing is most useful for specific kinds of site types and deposits. For example, if the archeologist thinks the site has a high probability to contain one or more buried hearth(s) or pit house(s), remote sensing would be the least site disturbing technique and may be the quickest way to obtain the evidence.

In terms of site testing and identification, remote sensing techniques may be most useful for preventing discovery situations and searching for buried cultural deposits in contexts lacking surface cultural evidence. Remote sensing techniques like magnetometry, gradiometry, soil resistivity and ground penetrating radar require a research plan which contains strategies for grid coverage and anomaly evaluation and testing. Follow-up construction monitoring to assess the reliability of the method used may be required. See Section III (Testing for buried cultural remains) for a review of remote sensing techniques.

Method 3: Shovel Testing or Auger Probing

This method is characterized by small diameter probes to identify the depth, nature, and extent of cultural deposits, and as an efficient means of determining where further testing may be conducted. This technique uses small-diameter soil cores, augers, or shovels to probe sites, resulting in the least impact while providing information about buried site potential. The method is useful for mapping depth and extent of deposits and serves as an efficient means of determining where further testing efforts will be conducted, if necessary. The method also works well for probing known buried sites to map the extent of buried cultural components for development of data recovery plans.

The degree of success in applying this technique depends on the type of tool employed and the ability of the archeologist to interpret the results. A 3" diameter soil core or larger bucket auger works well, while power screw augers do not. A method which recovers a core that can be analyzed for soil stratigraphy, inspected for depth of artifacts, and screened or troweled to recover the artifacts provides more information that a screw auger that churns up the soil and provides only an artifact count, lacking depth and context information. Shovel tests allow observations about stratigraphy and other aspects of the deposits that auger probes do not always provide. Inspecting larger amounts of soil in shovel tests than in small diameter probes increases the chances that the test will encounter cultural remains that are present in the subsurface. The spacing of the probes, the manner by which

augered sediments are examined, and the way positive results of probes are interpreted affect how decisions are made about continued testing based on those results. The spacing and pattern of probes is critical to the viability of the method, as is size of screen mesh used to sift deposits--closer interval probes produce more reliable information and smaller mesh size increases potential for positive recovery of data.

Major drawbacks for shovel and auger probing are the limited depth the archeologist can reach with shovel tests and some types of augers. Testing deeper deposits may require the archeologist to select Method 4 (controlled tests) instead. If the archeologist has a high expectation that the site is eligible, but simply needs evidence of subsurface deposits, he/she should excavate a small-sized controlled test pit because the test will recover significantly more data that a shovel of auger probe. Augering or shovel test probes frequently do not recover sufficient horizontal and vertical data on the remains. Small diameter probes or larger auger or shovel tests on large sites can by chance completely miss the subsurface evidence because the volume of soil inspected compared with the site=s total volume is extremely minimal. The most frequent error in testing is not placing the units in the best possible locations. The locations should be selected based on the site geomorphology, patterns of prehistoric land use, and other factors. The archeologist must justify the rationale chosen for the probe locations.

The type of testing pattern depends on the site. For example, sand sheets need a grid pattern, whereas sand dunes may need probes along the dune topography. Probe spacing must vary with site expectations. Activity areas produced by hearth-tethered hunter-gatherers tend to occupy about a 4 m radius around the hearth. A 10 m interval may not serve the purpose of identifying significant cultural remains, while a 5 m interval will have more likelihood of succeeding. Procedures should be discussed with the BLM archeologist during the fieldwork, to minimize discoveries and return field trips and to maximize confidence in the validity of testing results. Deposits from probes will normally be screened through 1/8 inch mesh in sand and loose soils and where small finds are expected, such as seeds, charcoal, retouch flakes, or small animal bones. A 1/4 inch mesh may be used depending on the characteristics of the deposits, such as heavy or wet clay or in contexts where larger mesh is expected to recover the type of remains the site is likely to contain.

During the testing process, investigators make decisions concerning how to proceed--whether to tighten the testing interval, dig formal test units, or terminate the effort due to sufficient information collected. Decisions on continuing or terminating a testing program should be made with attention to the area of potential effect (APE), the portion of the site containing intact deposits, and the present and future effects, direct and indirect, to that portion of the site.

The combined surface data and site probing results should be interpreted to determine what kinds of archeological evidence are present or expected and what research questions they can help answer. The probing should also be designed to provide information about the site integrity. An evaluation of site integrity is necessary to establishing the probability that the site will contribute to answering important research questions.

Method 4. Controlled Formal Test Units

Formal test units are usually more labor-intensive and impact a greater area of the site, but provide the most reliable and accurate information to answer the research questions and evaluation needs. However, use of formal test units may require a BLM testing permit. The method calls for careful excavation using archeological techniques that provide controlled data on vertical and horizontal reference points so that original locations of artifacts and features can be reconstructed. Formal testing, in which the test units are carefully located, often provides significantly more information about a site than probing. By providing more intensive data, one or a few formal tests can be used instead of a series of probes for evaluating some sites. If a few formal tests can replace a series of probes, the two methods may not vary greatly in labor intensity.

Specific circumstances may necessitate formal testing or make it the most useful method. Soil depth will often necessitate a test unit, because of the limitations of probing tools. If deposits over one meter deep are known or suspected, it may be prudent to start testing with a formal unit. If during probing, a buried component or deposit is suspected but not confirmed, a formal unit is standard procedure. Other surface indications, such as topography, geomorphology, or the presence of features may be reasons to choose formal test units instead of probing. If buried deposits are suspected, a single formal test, such as a 50 x 50 cm or 1 x 1 m unit, may be sufficient to establish the site eligibility and additional testing would be unnecessary. If auger or shovel testing identified evidence of a cultural feature like a hearth, the probe should be expanded to a formal test unit to provide information about the integrity of the old surface from which the feature emanates.

In deposits less than one meter in depth, a small-sized formal unit, such as a 50 x 50 cm or 1 m x 50 cm unit, can efficiently provide more information about a site than a series of probes because data about the horizontal and vertical locations of cultural remains and soil stratigraphy are recovered. These tests also provide data on the volume/density of cultural materials. By testing a larger volume of soil, formal units increase the chances that the test will recover artifacts, features, or contexts that indicate what kinds of data the site contains. For the portion of the site evaluation that determines whether the site contains data that may answer research questions, formal tests are often the best testing methods. Shovel/auger probes often become merely a check for presence or absence of artifacts or an artifact count with no information on depth or location of cultural remains. If the surface data already provide information about the site's potential to contribute data to research questions, then shovel/auger probing may provide all the additional information needed to complete the site evaluation. If surface data and initial probing do not provide adequate data on the nature of the site for answering research questions, then formal testing should be conducted.

Depending upon the size and nature of the site, formal testing may entail enough additional time and expense that the applicant may want a role in the decision to take that step. For most sites, four person-days may be needed to accomplish limited formal testing. If more than four person days are expected, the BLM archeologist should be consulted and may decide what further steps should be taken.

Determining how much testing is enough, whether using Method 3 or Method 4, depends upon understanding the local and regional archeological expectations for site structure. A context for site structure is consequently necessary for a reliable prediction of the amount of testing necessary for concluding that a site is eligible or not eligible. The context would need to include (1) estimated site size and shape, (2) expected density of artifacts and features, and (3) the distribution patterns of artifacts and features.

Few syntheses of such data are currently available for Wyoming although comparisons with other regions are helpful. For example, calculations based on Eastern Woodlands Archaic sites showed a density of 0.23 artifacts per square meter and 0.004 features/square meter for one site and 0.54 artifacts versus 0.005 features/square meter for another site (McMannamon 1984). The expectation of encountering a feature or high density of artifacts for either site in only a few tests would be extremely low. Because of the aggregation of artifacts and features, a hunter-gatherer site would normally have considerable empty space within the site boundary. Thomas (1986) calculated, based on excavation data and ethnoarcheological analogies, that a hunter-gatherer camp occupied by 2-7 nuclear families would have a nuclear area 5-7 meters in diameter surrounded by a peripheral activity zone which is 50% empty space. Yellen's Bushman camps had cultural debris occupying only 19 to 47.6% of the space within the site area. A sampling interval greater than 8-10 meters would generally miss the core area of an occupation and would have a high probability of producing no artifacts or a low density of artifacts.

The factors to be decided in determining how much testing is enough include (1) the volume tested (size of test pits), (2) the sampling interval, and (3) the sampling geometry. Until regional contexts of site structure are developed for Wyoming, the archeologist testing the site must provide a research design giving the rationale for the amount of testing conducted. The archeologist must conduct enough testing to insure that he/she has not examined only the empty space or low density portions of the site. The testing research design should be submitted with the application for a testing permit. In a number of states, this is called a Phase 2 survey.

Method 5. Mechanized Testing

The use of heavy machinery, such as a backhoe, is not a standard technique to evaluate a site for National Register eligibility. However, it may be appropriate for specific sites, particularly those in alluvium or deep aeolian or colluvial deposits. Mechanized testing involves considerable site disturbance which could destroy National Register qualities and will be carried out only with an approved backhoe testing and discovery plan. Backhoe trenching is always inappropriate for testing sites with a shallow stratigraphy.

Backhoe testing is most commonly used to investigate site stratigraphy or geomorphology. Backhoe trenches through cultural deposits largely destroy all data within the trench disturbance. Backhoes are useful for finding visually obvious cultural deposits such as major charcoal-stained lenses, hearth features, and bone beds. Less visually apparent remains often cannot be seen on the disturbed walls of the trench. Mechanized testing is consequently appropriate as a testing method largely where

time is limited and the site will be impacted. Most BLM projects are not of this nature. Sometimes, information about site stratigraphy and geomorphology may be important to establishing site eligibility and backhoe trenching may be used to collect or establish the presence of such data. Geoarcheologists and soils scientists may use backhoe trenches in their geomorphic work. The backhoe has useful applications in energy development projects where heavy equipment is easily available. Nonetheless, heavy equipment work on archeological sites presents real hazards to both the site and to the archeologist, so use of a backhoe should be supervised only by qualified archeologists in close coordination with the BLM.

II. Testing sites to assess the effects of an undertaking on an eligible site.

Following a determination of eligibility, it may be necessary to conduct additional testing to evaluate the potential effect of an undertaking on the site. Particularly when the site was determined to be eligible based on evidence outside the APE, it may be necessary to test for effect within the APE. Prior to assessing effects, the investigator must adequately evaluate the entire site. The portion of the site in the APE cannot be considered non-contributing if the site has not been fully evaluated.

Method 1: Evaluation from Surface Evidence

For some sites, surface evidence may be adequate to determine that subsurface deposits are not present or are too disturbed to retain adequate data to contribute to important research questions (see Examples B and C in Appendix A). An assessment based on surface evidence must be adequately justified (see I.C, Method 1).

Method 2: Shovel/Auger Probing

If the site has already been determined to be eligible, limited shovel or auger probing may establish the presence of subsurface deposits of similar nature to those identified when collecting evidence for the site eligibility. A few probes may be all that are necessary to determine an adverse effect on the site area within the APE. Establishing that the APE portion of the site does not contribute to the site's eligibility generally requires more work because a few probes can miss the areas with intact deposits. Probes should be placed where surface evidence indicates the likelihood of intact soil deposits and knowledge of settlement strategies suggests that cultural remains are likely. Placing probes in spots where they are unlikely to encounter cultural remains will not be considered sufficient for establishing the absence of significant deposits.

Method 3: Formal Test Units

In some cases, shovel/auger probes may be inconclusive in establishing the presence or absence of significant cultural remains in the APE. Particularly when probes locate a few artifacts, but do not provide sufficient information about the nature and integrity of the deposits, formal test units should be excavated. Formal test units can provide more information about site integrity because more data on soil stratigraphy and the contexts of artifacts or features are recovered. For example, if the normal soil profile on the site has horizons A1, A2, B2, and C, and the cultural remains are in the A2

horizon, but the tested APE contains only an A, C profile, the investigator may conclude that the site integrity has been destroyed. A single, well-placed formal test unit may be sufficient to establish the presence of significant deposits, whereas one or a few test units can, because of sampling error, miss the intact area(s) of a site. More test units necessary to establish the absence of significant deposits. The interpretation that significant deposits are absent must be adequately justified in the report.

The discussion of how much testing is enough in Section I.C. Method 4 applies also to determining whether a portion of the site is contributing or non-contributing. The archeologist must take into consideration the expected site size, expected artifact and feature density, and expected distribution patterns of artifacts and features. For example, on a project to modify a segment of a road, a 1 x 1 meter test unit produced 3 tools and 2 flakes in a subsurface context. The agency concluded that this portion of an extensive site was non-contributing. The sampling interval was about 100 meters to the nearest test pit. If sites in the region have expected artifact densities of, for example, 0.25 artifacts/square meter, the amount of testing conducted for the project was inadequate to determine that this portion of the site was non-contributing. Additional testing or monitoring of construction should have been conducted.

Method 4: Monitoring

If a reasonable amount of testing has been conducted in the APE, but the results are inconclusive, it may be advisable to stop testing and monitor the construction instead. The decision to monitor should be a part of the determination of effect. Monitoring may take many forms and will usually require an approved monitoring/discovery plan. For large or long linear projects, it may be more cost effective to test site areas within the APE using remote sensing, or another evaluative method prior to monitoring. Adequately evaluating the APE via techniques such as remote sensing can avoid costly discovery situations, which frequently result from poorly planned or conceived monitoring.

III. Testing to check high potential areas for buried cultural remains where surface evidence is absent.

Several geographic contexts in Wyoming are likely to contain buried sites that lack surface manifestations. Failure to identify these areas during inventory may result in unexpected discoveries and result in all the inherent problems with their management. Known geographic contexts include but are not limited to sand dune fields and extensive aeolian deposits, interior basins that lack drainage outlets, alluvium along drainages, colluvium along slopes and scarps, and forest soils under thick vegetation. If you are unfamiliar with the area you will need to contact the BLM Field Office archeologist to determine if any special evaluative treatments are needed. Each context may require a different testing methodology.

Method 1: Remote Sensing

In recent years, remote sensing techniques have been used to aid in evaluative testing efforts. Remote sensing techniques can offer a relatively nondestructive, nonintrusive and highly efficient

technology for identifying subsurface cultural materials or features threatened by development. Magnetometer or gradiometer surveys, ground penetrating radar, soil conductivity, resistivity and various forms of infrared and conventional aerial photography have found archeological evaluation applications. Remote sensing usually employs running a sensor over the surface and obtaining readings that report anomalies or irregularities in subsurface soil characteristics. These anomalies are then interpreted as being of cultural or other origin. This interpretation can, and usually does, take the form of excavation of a test unit, either a shovel probe or a formal unit. Some remote sensing techniques can be sophisticated, require technical expertise and equipment, and are of variable utility, depending on many factors.

Important factors that affect the success or failure of remote sensing applications include soil type, differences in soil strata, nature, depth, density and composition of the target cultural deposit, past disturbances to the surface and subsurface, presence of impurities or contaminants that affect anomaly identification, and other factors. Remote sensing projects frequently employ more than one technique; use of two (or more) systems is currently in vogue, e.g., use of a gradiometer survey in consort with resistivity.

A moderate amount of technical knowledge is needed to assess the utility of such technology. Generally, historic period sites can benefit from magnetometry, gradiometry, resistivity and conductivity. Voids such as are associated with burials, coffins, mine shafts and other open spaces may be detected with ground penetrating radar. Expansive surface features such as trail ruts, ditches roads and linear mounds can be enhanced using infrared or other low or high level vertical aerial photography. Magnetometer and gradiometer surveys are directly affected by certain magnetic metals, such as iron. Since historic period sites may or usually do contain metal (and iron is common), the effect of the presence of metal on-site needs to be evaluated. If the location of metal objects is desired, then magnetometry may be eminently suited as a locational technique. However, if scattered historic metal is considered to have contaminated the site, or is so omnipresent on-site (as in some mines, historic debris scatters, dumps, etc.) then the presence of metal may have severe negative effects.

Depth of penetration into the substrate is a critical element in assessing the utility of remote sensing strategies. Most modern gradiometer, magnetometer, resistivity and conductivity instruments can penetrate to a depth of 1 to 1.5 meters only. If the target stratum is buried deeper than this, then remote sensing may be inapplicable. The exception is ground penetrating radar, which can penetrate several meters below surface. Trial and error are frequently needed to properly define a successful remote sensing strategy.

Method 2: Hand Excavation

Locating buried sites that lack surface manifestations by subsurface testing depends on two factors. One is the probability of intersecting a site by a given testing methodology. The testing factors that need to be decided are test pit size, spacing, and layout (Shott 1989). Test pit size has a complex relationship with site density and other factors (Nance and Ball 1989). A rough estimate of the minimum site size likely to be discovered by a particular interval spacing of test pits can be

calculated. The formula is: site radius = interval spacing divided by the square root of 2 (Krakker, Shott, and Welch 1983; Lightfoot 1986). To intersect a site of 30 meters diameter or greater, the space between test probes would need to be 21.2 meters (Zeidler 1995). Theoretical and experimental studies of sampling layout indicate greater effectiveness of offset or hexagonal grids compared with square grids (Shott 1989).

Actually finding a site, however, depends also on the probability of detecting a site. Test pits falling in the blank spaces between artifact and feature clusters will fail to detect a site. Both the artifact density and the distribution are key factors affecting detection. As stated earlier, we need to develop regional contexts of site structure in order to design effective subsurface testing strategies.

A. Thick Vegetation Contexts

Where the surface vegetation cover is > 90%, the archeologist should consult the BLM Field Office archeologist about the need for subsurface testing and, if needed, prepare a testing research design. Such contexts include heavy timber with understory vegetation or forest floor litter and dense grasslands, whether natural grasses or cropland, such as hayfields. Archeologists who have conducted experimental and theoretical studies of subsurface testing in dense ground cover contexts are not in agreement on the effectiveness of subsurface testing, particularly in relation to the cost. Sites in forested contexts in Wyoming are usually small in size and consequently are difficult to detect. Subsurface testing to search for unexposed sites in this context should be conducted only in the areas where the greatest disturbances are expected, including logging roads, landings, slash burial pits, and other places where the subsurface will be significantly disturbed. Grassland areas with low visibility are much more limited in areal extent. If the probability of finding a site in these contexts is high, subsurface testing should be conducted to search for buried sites.

For either context, shovel tests are the most common testing method. The interval between probes should take into consideration the expected site diameter and other factors discussed above.

B. Colluvial Deposits

Colluvial deposits along slopes and in draws are one of the least easy to predict contexts. The Carter Kerr-McGee site was on a ridgeslope in a colluvial deposit that ranged up to about 85 cm deep. It contained occupations dating from Goshen, Folsom, Agate Basin/Hell Gap, and Cody times. The Hawken site is in colluvium within an arroyo. Sometimes the unexcavated portion of the bison bone beds are exposed, and at other times, fill completely obscures the deposits. Locally, one portion of a slope may be eroded, while another contains accumulated deposits. Checking soil survey maps for expected soil depth in a survey parcel should be a required first step prior to conducting a survey. More detailed information about local and regional geomorphology is also needed. Effective testing strategies require regional geoarcheology contexts. A geoarcheology study would tell us the depth and nature of colluvial deposits, but not the probability of finding archeological sites in those deposits. For the latter, regional settlement pattern contexts are needed. In particular, we need to know the regional site density and the locations of sites on the landscape. If the site densities in an area are low, the probability of finding a site in a colluvial deposit may also be low. If site densities

are high or sites are commonly located where the colluvial deposits are situated, subsurface testing to search for buried sites will be required.
Sites that are buried up to 50 cm below the surface often have some surface exposure if the landform is adequately dissected or eroded, or has blowouts. Where colluvial deposits are greater than 50 cm in depth, the survey archeologist must consult the BLM Field Office archeologist for the need to conduct subsurface testing to search for buried sites. The size of colluvial deposits often is not extensive and testing the deposits would not be cost prohibitive. The archeologist should test the full depth of the Holocene and terminal Pleistocene deposits if possible. For deposits greater than 50 cm in depth, 1 x 1 meter test units are most appropriate. Larger units may be needed for deeper deposits. For deposits greater than 1 meter in depth, other methods besides hand testing may be used, such as mechanized testing or remote sensing.

C. Alluvial Deposits

Alluvial deposits are common along creeks and rivers in Wyoming. Both flowing streams and intermittent drainages contain extensive alluvium. More geomorphological studies are available for helping predict the locations and nature of alluvial deposits than for colluvium, but not enough synthesis is available to design subsurface testing strategies. Regional geoarcheological contexts must also cover alluvial deposits.

Prior to beginning field work, the archeologist should study topographic maps and soil survey maps to determine where alluvial deposits are expected. The probability of archeological sites being located in alluvium is high. Subsurface testing should be conducted in all alluvial deposits which lack exposed manifestations of sites, unless bank or other exposures provide an adequate area of inspection and the width of the alluvial deposits is small.

Because of the depth of most alluvial deposits, hand excavated test units will generally be 1 x 1 meter or larger units. The tests should extend to the full depth of the Holocene and terminal Pleistocene deposits if feasible. The spacing between hand excavation units shall be based on the expected site size and density for the local area. The research design for the testing shall be submitted with the request for a testing permit.

Alternative methods for testing alluvial deposits can also be developed in the research design, such as remote sensing or mechanized testing. Most mechanized testing methods do a poor job of locating buried sites. Backhoe trenches generally obscure all but the most obvious cultural remains. A series of cores is an appropriate method for studying the geomorphology, but usually fails to find archeological sites.

Method 3: Mechanized Testing

The most common form of mechanized testing employs use of a backhoe. The backhoe can be a useful tool for conducting subsurface evaluations in deep soil situations, dunal and eolian contexts, and in areas lacking surface cultural material but where buried sites are suspected. The backhoe is useful when large surface areas are to be impacted such as well pads, plant sites, pipeline complexes.

Deposits such as large sand dunes, lee and falling dunes, other eolian deposits and deep alluvial or colluvial soils may be best suited for backhoe testing. An understanding of topography, and how topography affects soil buildup is necessary to effectively place test trenches where they may encounter buried deposits. Shallow soils should be excluded from backhoe testing, as less intrusive methods can probe these deposits.

A Backhoe Testing Plan is necessary and should include a project map depicting the landforms to be tested and where linear trenches will be excavated. The plan must outline methodology for evaluating any cultural materials identified. The plan must address the contingincy that if the objective of the testing is met by excavation of less that the total number of trenches proposed, the effort should be terminated. The plan must also address safety and reclamation measures. Only the area of direct effect, plus a reasonable buffer (25 to 50 ft. adjacent to larger development areas such as well pads) shall be subject to backhoe testing. Backhoe testing of linear projects like pipelines will be limited to the R/W width.

IV. Testing to develop data recovery plans.

Data recovery plans are developed with reference to specific research designs. Testing to develop a data recovery plan requires obtaining specific kinds of additional information. The nature of the site affects what kinds of archeological methods to specify in the plan. Does the site have floral or faunal remains, features, charcoal, lithic workshop debris, pollen, or phytolyths? The depth, thickness, and density of cultural deposits affects the amount of work required. It may be necessary to establish the locations and sizes of intact deposits, places where materials are most concentrated, or number and locations of features in order to determine the size and location of data recovery excavation units.

When approaching this level of testing, most sites should already have had sufficient data documented to evaluate them and assess that the undertaking will have an adverse effect on their National Register qualities. While these previously collected data may be sufficient to reach conclusions about eligibility and effect, they usually are not adequate to develop a specific data recovery plan and research design that state exactly which data will be collected from which areas and how they will answer the research questions. Further testing is usually needed to develop useful plans, and that level of testing may employ any of the methods identified above, depending on the project circumstances and site type(s).

Testing to develop an adequate data recovery plan must consider a number of factors, including:

1. The type(s) of site(s) under investigation;
2. The area(s) of potential effects within the site(s);
3. The research questions identified in the specific research design and relevant historic context;
4. The data needed to answer the questions;
5. The data recovery sample relative to total site area and the APE;
6. The ability of the identified sample to meet the goals of the plan; and

7. The manner by which data are documented in the field, analyzed, and reported in order to provide useful information that meets the goals of the plan.

Testing to develop data recovery plans will build on the information from evaluative testing and focus further efforts on areas where the National Register qualities, or significant information, are documented. Testing may proceed in the same sequence outlined for other testing programs, and terminate when sufficient data are collected. Bearing in mind the high cost of data recovery programs, the investigators should recognize that this effort will probably require much more detailed information acquired from fairly extensive test units in order to justify a valid, well defined data recovery. For example, probes or shovel tests may provide clues about the location and horizontal extent of buried cultural occupations, but controlled test units may be needed to acquire sufficient evidence to justify inclusion of the area in the data recovery plan.

In new sites that are identified through construction monitors or open trench inspections, where no surface evidence was originally identified and little information exists, testing will usually start with hand excavation of controlled test units to evaluate the exposed evidence. If the site is determined to be appropriate for further data recovery, additional testing must be conducted in undisturbed areas adjacent to the discovered evidence in the same sequence outlined for other testing programs. These discovery sites will probably require more data collection at this stage because no other information exists.

V. Site Testing Report Requirements

Inventory reports documenting site testing will contain the following information:

1. If site was not tested, state why testing was not necessary.

2. Site map showing location of tests in relation to exposed features, artifact concentrations, tools, datum, etc.; positive and negative test results must be indicated on the map.

3. A discussion of the testing strategy used with emphasis on why that particular strategy was employed.

4. A specific discussion of the results. This includes:

    a. Description of soil profiles from test units;

    b. Depth and thickness of sedimentary strata encountered;

    c. Sizes and depths of test units and why they were terminated;

    d. Total area tested and percentage of site tested;

e. Illustrated profiles and plan views from formal excavation units, and profiles of backhoe trenches;

f. Plan views and profiles of exposed cultural features (if applicable);

g. Photographs of excavated and profiled features, test units and trenches;

h. Discussion of special samples recovered and results of their analyses (radiocarbon, flotation, etc.);

i. Discussion of the relationship of the soil profile and cultural material;

j. Discussion and full report of the cultural materials recovered: their depth, densities and locations in the test units; the types of tools and debitage and their materials; bone identifications and descriptions; and description of any other evidence relevant to the cultural occupation (raw data may be presented in summary tabular format).

5. Conclusions and recommendations about site eligibility, effects and further work.

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Appendix C-2

Draft Framework for Compensatory Mitigation for and Monitoring of Unavoidable Impacts to Waters of the U.S.

DRAFT

FRAMEWORK FOR COMPENSATORY MITIGATION FOR AND MONITORING OF UNAVOIDABLE IMPACTS TO WATERS OF THE U.S.

Gateway West Transmission Line

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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
BMP	Best Management Practice
CGP	Construction General Plan
Companies	Idaho Power and Rocky Mountain Power
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
EPM	Environmental Protection Measure
EPC	Engineering, Procurement and Construction
GIS	Geographic Information Systems
HUC	Hydrologic Unit Code
IDEQ	Idaho Department of Environmental Quality
IDWR	Idaho Department of Water Resources
ILF	In-Lieu Fee Program
IRT	Interagency Review Team
IM	Instructional Memorandum
kV	Kilovolt
MW	Megawatt
NDEP	Nevada Department of Environmental Protection
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NPDES	National Pollutant Discharge Elimination System
NTP	Notice To Proceed
O&M	Operations and Maintenance
POD	Plan of Development
Project	Gateway West Project
RMP	Rocky Mountain Power
ROD	Record of Decision
ROW	Right-of-Way
SPCC	Spill Prevention, Control, and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geologic Survey
WDEQ	Wyoming Department of Environmental Quality
WECC	Western Energy Coordinating Council
WWEC	West-Wide Energy Corridor

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1.0 INTRODUCTION

This *Compensatory Mitigation Plan for Unavoidable Impacts to Waters of the U.S.* presents the next step in the process that Rocky Mountain Power and Idaho Power (Companies) have undertaken for the mitigation and compensation of impacts to waters of the U.S. due to the construction and operation of the Gateway West Transmission Line Project (Project). That process was first presented in the *Aquatic Permitting Program* (Idaho Power Company and Rocky Mountain Power, 2010, incorporated by reference) that proposes a phased approach to aquatic permitting that is appropriate for a multi-state, 1,000 plus mile long transmission line. The Program was followed by a *Framework for Compensatory Mitigation for and Monitoring of Unavoidable Impacts to Waters of the U.S. (May 2011)* submitted by the Companies to the United States Army Corps of Engineers (USACE) and to the Bureau of Land Management (BLM).

This document describes the Companies' proposed approach for mitigating impacts to waters of the U.S. that would result from the proposed Project and is intended to satisfy the mitigation requirements of the USACE[1]. The overall objective is to ensure that there would be no net loss of function or area of waters of the U.S. resulting from construction and long-term operation and maintenance (O&M) of the Project. The Project's currently estimated permanent impacts to wetlands and riparian areas are approximately 23.8 acres for the Proposed Route. Temporary impacts to wetlands and riparian areas are currently estimated at 166.5 acres for the Proposed Route. Other alternative routes, suggested by agencies, local groups, and cooperating agencies, have different and sometimes larger impacts to wetlands and riparian areas. Impact estimates are based on indicative (desktop) design and would decrease as site-specific design engineering is completed.

Other federal (e.g., Bureau of Land Management [BLM]) or state (e.g., Idaho Department of Water Resources [IDWR], Department of Environmental Quality [IDEQ]) agencies may also require additional mitigation for impacts to aquatic resources beyond those required for the Clean Water Act (CWA) Section 404 permit from the USACE. As those requirements are specified, they would be incorporated into this Framework.

This Framework represents the commitment on the part of the Companies to work with the USACE and other agencies to develop a wetland mitigation program, and provides the structure for reaching agreement on the program. This Framework, together with the other proposed environmental protection measures, other plans, and project avoidance, minimization, and mitigation measures, comprises the Companies' commitment to wetland mitigation.

1.1 Project Description, Purpose, and Need

The Companies are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV, and 500-kV alternating current electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho (**Figures 1 and 2**). The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving structures, access roads, multi-purpose areas, fly yards,

[1] 40 CFR 230; Compensatory Mitigation for Losses of Aquatic Resources; Final Rule; April 10, 2008 Federal Register

pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the BLM, the Bureau of Reclamation (BOR), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

A more detailed description of the Project is provided in the Plan of Development (POD) (Idaho Power Company and Rocky Mountain Power, 2012, incorporated herein by reference). The POD provides more detailed information on the purpose and need; proposed route; project-related facilities; details associated with construction, operation, and maintenance of the Project; and applicant-proposed environmental protection measures (EPMs). The POD is Appendix B of the Final Environmental Impact Statement (Final EIS). **Table 1** provides a brief summary of the segments and their lengths, both Proposed and BLM-Preferred, as presented in the EIS.

Table 1. Segment Summary

Segment #	Proposed Length	BLM-Preferred Length	Originating Substation	Terminating Substation
1W(a)	73.8	73.8	Windstar	Aeolus
1W(c)	73.6	73.6	Dave Johnston 230kV	Aeolus
2	91.9	91.9	Aeolus	Creston
3	45.9	45.9	Creston 1/	Anticline
3A	5.1	5.1	Anticline	Jim Bridger 345-kV
4	197.6	197.6	Anticline	Populus
5	55.7	73.3	Populus	Borah
6 2/	0.5	0.5	Borah	Midpoint
7	118.2	130.2	Populus	Cedar Hill
8	131.5	132.0	Midpoint	Hemingway
9	162.2	171.4	Cedar Hill	Hemingway
10	34.4	34.4	Cedar Hill	Midpoint
TOTALS	**990.4**	**1029.7**		

1/ Creston Substation has been eliminated from the Project but its location still serves as the terminus for Segments 2 and 3

/2 Segment 6 disturbance limited to substations and approaching structures only

The Companies have advised BLM that they intend to build this Project in phases. Phase 1 encompasses Segments 1 – 4, from Windstar near Glenrock, WY to Populus, near Downey, ID. Phase 2 encompasses the remaining segments. The Companies anticipate that construction will begin mid-2015 for Segments 1 – 4 and mid-2017 for the remaining segments. The Companies are still refining their schedule and may develop distinct work elements within Segments 1 – 4 for staged construction. The Companies will advise the USACE and the BLM of any further changes in schedule.

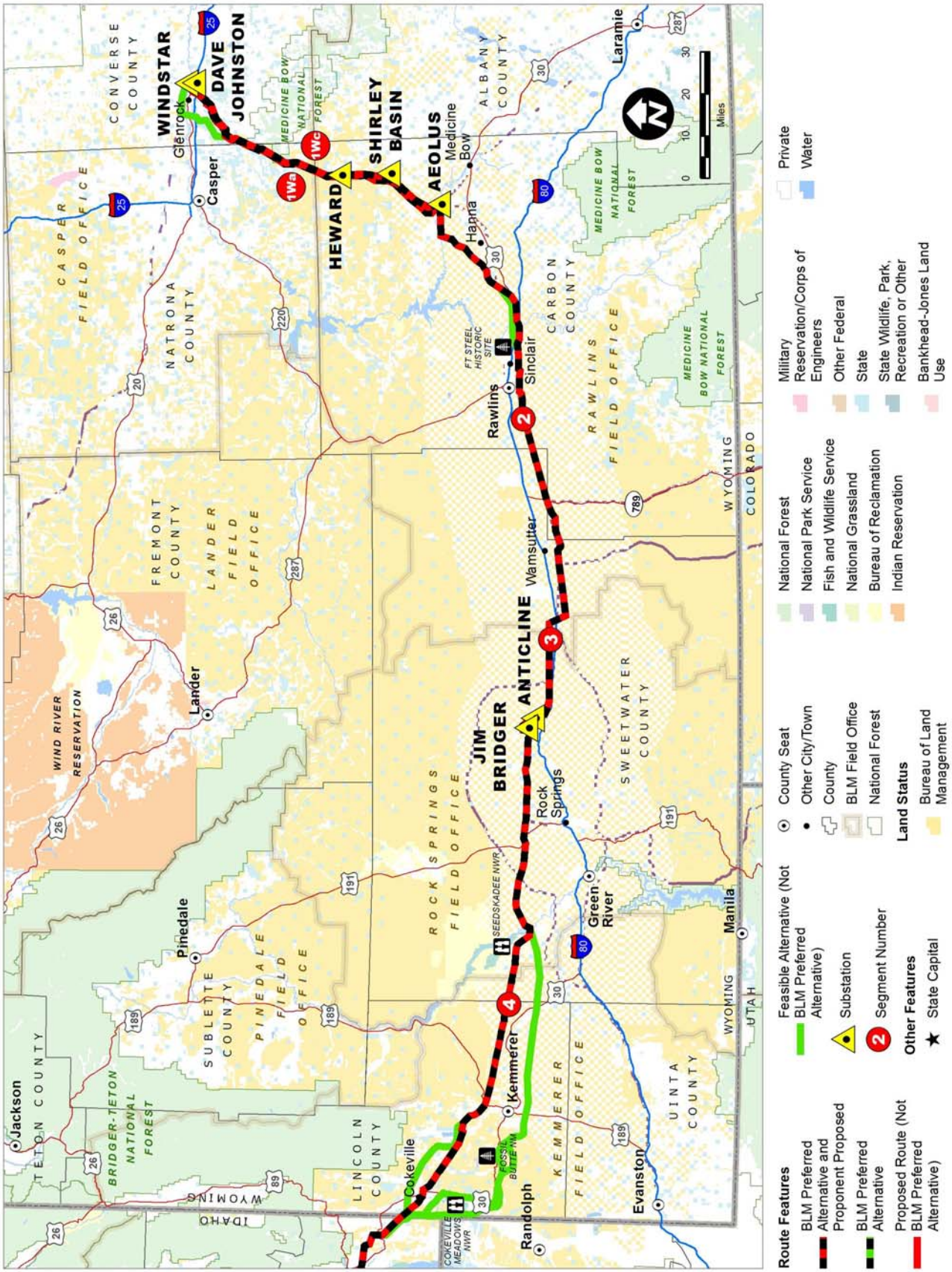

Figure 1. Wyoming Overview Map

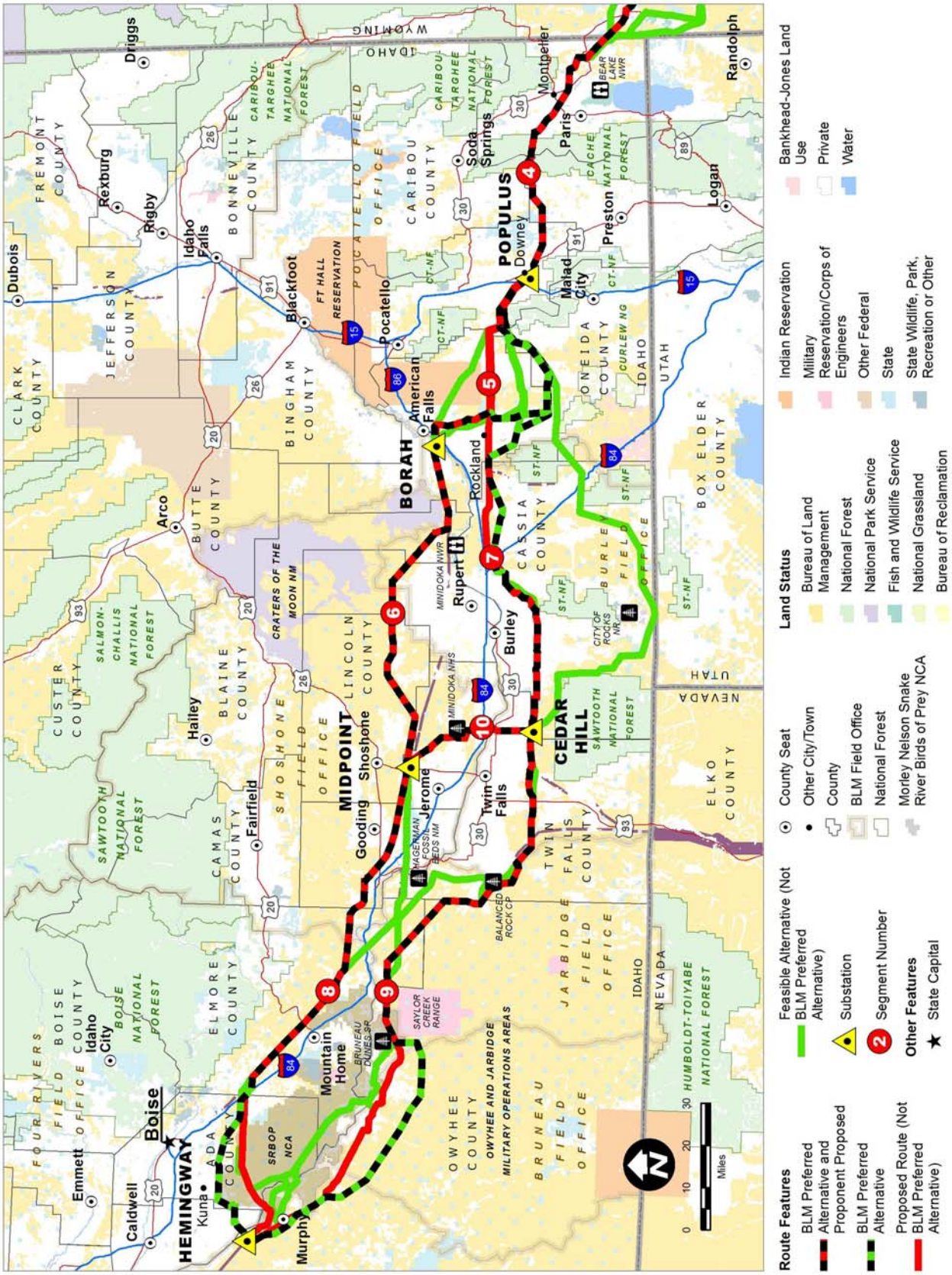

Figure 2. Idaho Overview Map

1.2 Plan Updates

This Plan is a living document. It has been updated to reflect the BLM-Preferred Alternative routes and now contains a more focused and site-specific proposal for compensatory mitigation for Segments 1 - 4. It will be updated to include the following when available and appropriate:

- Recommendations from the USACE, BLM, and state agencies on compensatory mitigation for impacts to waters of the U.S.;
- Other federal and state agency requirements when specified;
- Revised impact calculations based on avoidance and minimization measures, including changes in road or route alignment;
- Further details on the Companies' proposed compensatory mitigation for unavoidable impacts to waters of the U.S., including a package for Segments 5 – 10 when the construction for that phase is firmly scheduled.

2.0 AQUATIC RESOURCE REGULATIONS

Construction, operation, and maintenance of the Project includes ground disturbing activities that could impact aquatic resources. The following regulations and associated permits and authorizations would be required for the Project.

The Clean Water Act (CWA ((33 USC Section 1251 et seq., formerly the Federal Water Pollution Control Act of 1972)), was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. The CWA also requires the USACE to administer permits for dredge or fill in waters of the U.S. Specific sections of the CWA that apply to the Project are described below, followed by a brief description of other aquatic resource permits required for the Project.

2.1 CWA - Section 303(d) List of Impaired Waters

Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that do not meet water quality standards through current technology-based regulations and controls. A water quality standard defines the designated beneficial uses of a water segment and the water quality criteria necessary to support those uses. Currently, both IDEQ and Wyoming Department of Environmental Quality (WDEQ) are required to conduct a comprehensive analysis of their respective state's water bodies every two years to determine if they meet water quality standards and develop a list of impaired or threatened waters that require Total Maximum Daily Load (TMDLs). The Project will implement measures to avoid and / or reduce the potential that it would contribute to the listing of a water body as impaired or be inconsistent with an adopted TMDL.

2.2 CWA - Section 130.7 Total Maximum Daily Load

Section 130.7 of the CWA requires states to establish TMDL programs, which are approved by the USEPA for streams and lakes that do not meet adopted water quality standards. A TMDL includes a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect water bodies. A TMDL budget takes into account loads from point, nonpoint, and natural background sources. National Pollutant Discharge Elimination System (NPDES) permits address point-source pollution to surface

waters. Non-point source pollution is addressed by the application of Best Management Practices (BMPs), EPMs, and mitigation measures.

In compliance with the federal CWA, the IDEQ and the WDEQ have identified Section 303(d) water quality limited streams and lakes for development of TMDL criteria. TMDLs have been established for surface waters in Idaho. WDEQ has developed few TMDLS at this time as they are just beginning to implement the TMDL program; they are currently working on eight TMDLs. WDEQ projects that from the time of listing a waterbody as impaired, a TMDL for that waterbody would be developed within 1-5 years.

Stream segments within the Project Area that have been identified on 303(d) lists as impaired due to either sedimentation (sediment-impaired streams) or high temperatures (temperature-impaired streams), are listed in Attachment A for the Proposed Route. Note that there are no impaired streams in Segments 1 – 4.

2.3 CWA - Section 401 Water Quality Certification

Pursuant to section 401 of the federal CWA, any permit or license issued by a federal agency for an activity that may result in a discharge into waters of the U.S. requires certification from the state in which the discharge originates. This requirement allows each state to have input into federally approved projects that may affect its waters (rivers, streams, lakes, and wetlands) and to ensure the projects would comply with state water quality standards and any other water quality requirements of state law. State certification ensures that the project would not adversely impact impaired waters (waters that do not meet water quality standards) and that the project complies with applicable water quality improvement plans (TMDLs). The States must grant, deny, or waive section 401 certification for a project before a federal permit or license can be issued. The Departments of Environmental Quality for both Idaho and Wyoming must provide Section 401 Water Quality Certifications for the federally issued permits, including the 404 permits in both states and 402 permits issued in Wyoming. The USEPA has 402 jurisdiction in Idaho.

2.4 CWA - Section 402 NPDES Permits

The NPDES program requires facilities discharging from a point source into waters of the U.S. to obtain discharge permits. A point source is a conveyance such as a pipe, storm drain or other point. USEPA is responsible for permitting and enforcing all NPDES permits in Idaho. NPDES permits are administered by the WDEQ in Wyoming. Most storm water discharges are considered point sources and require coverage by a NPDES permit. The Project will need to obtain coverage under existing construction storm water programs in Idaho and Wyoming.

The NPDES Stormwater Program requires operators of construction sites that disturb one acre or more to obtain authorization to discharge stormwater under an NPDES construction stormwater permit. In Idaho and Wyoming, the EPA and WDEQ, respectively, have issued Construction General Permits (CGP). In order to be covered under the CGP, a site-specific Storm Water Pollution Prevention Plan (SWPPP) must be developed. The operator files a Notice of Intent which indicates the operator will comply with the CGP. The site operator must document the erosion, sediment, and pollution controls that will be used during construction and operation, inspect the controls periodically, and maintain the controls throughout the life of the project. If a TMDL has been established for the water body where a project will discharge, and the TMDL indicates that it applies to construction or stormwater discharges, then the SWPPP must be consistent with the requirements of that TMDL.

If hazardous materials, including fuels and lubricants, are used or stored in quantities exceeding certain quantities, a Spill Prevention, Control and Countermeasure (SPCC) Plan is required. Section 311(j)(1)(c) of the CWA contains the regulations preventing discharge of oil to surface water. The SWPPP also contains measures regarding the handling and storage of such materials.

2.5 CWA - Section 404 Waters of the U.S. Permits

Section 404 of the CWA authorizes the USACE to regulate the discharge of dredged or fill material to the waters of the United States. Discharges are authorized through issuance of nationwide permits or individual permits for specific activities. The USACE jurisdiction over non-tidal waters of the United States extends to the "ordinary high water mark provided the jurisdiction is not extended by the presence of wetlands" (33 CFR § 328.4); and under Title 40 CFR § 230.3 (s)(1). Waters of the United States are defined as:

> *"All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide, all interstate waters including interstate wetlands, all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which would affect interstate or foreign commerce, including such waters which are or could be used by interstate or foreign travelers for recreational or other purposes, or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce, or which are used or could be used for industrial purposes by industries in interstate commerce; all impoundment of waters otherwise defined as waters of the United States interstate commerce, tributaries of waters identified in paragraphs 1-4 of this section, the territorial seas; and wetlands adjacent to waters."*

Many wetlands are protected under the CWA as waters of the U.S. and special aquatic sites. Wetlands are defined by the USACE based on the presence of wetland vegetation, wetland hydrology, and hydric soils. In addition, Executive Order 11990, Protection of Wetlands (42 Federal Register 26961), directs all federal agencies to minimize the destruction, loss, or degradation of wetlands, and to enhance the natural and beneficial values of wetlands. Federal regulation and management of wetlands follows a "no net loss" policy. Under Section 404, the USACE issues a number of nationwide permits for different types of activities that result in minimal individual and cumulative adverse effects on the aquatic environment and individual permits for larger and more complex impacts.

Nationwide permits. A nationwide permit is a general permit that authorizes a category of activities throughout the nation by streamlining the approval process for certain types of activities that have minimal impacts to aquatic resources. These permits are valid only if the conditions applicable to the permit are met. If the conditions cannot be met, a regional or individual permit would be required Section 404 Nationwide Permit 12 (77 *Federal Register* 10271-10272 February 2012) covers construction, maintenance, and repair of utility lines in all waters of the U.S. provided that there is no change in pre-construction contours. This nationwide permit also covers related facilities including substations, structure foundations, and roads; provided that these activities do not result in the loss of greater than 0.5 acre of waters of the U.S. Nationwide Permit 12 also authorizes temporary structures, fill, and work necessary to conduct utility line activities as long as (1) appropriate measures are taken to maintain normal downstream flows and minimize flooding, (2) structures and fill consist of materials that would

not be eroded by high flows, and (3) structures and fill are removed in their entirety and the affected areas are returned to pre-construction elevations and re-vegetated as appropriate upon project completion. Impact limitations for Nationwide Permit 12 cover all disturbances at a single crossing of a wetland or stream, or multiple crossings of the same wetland or stream.

Any permanent impacts over 0.1 acre to waters of the U.S. require full mitigation, regardless of permit type. Permanent loss of more than 0.5 acres of a water of the U.S. requires an individual (General) permit rather than coverage under a Nationwide Permit.

Nationwide Permits contain general conditions that address potential impacts to the environment that could result from dredge or fill of waters of the U.S., such as adverse effects to soils, migration and spawning habitats, endangered species, or historic properties. Supplemental documentation may be required as part of a pre-construction notification package (e.g. plant and wildlife survey reports, cultural resource survey reports) to support compliance with the general conditions of the Nationwide Permit. Compliance with the National Historic Preservation Act and the Endangered Species Act is being addressed in the Environmental Impact Statement currently being prepared for this Project.

Individual Permits. Individual Permits are issued following a full public notice interest review of an individual application for a Department of Army permit. A public notice is distributed to all known interested persons. After evaluating all comments and information received, a final decision on the application is made. The final decision is made on a case-by-case evaluation and is generally based on the outcome of the public notice process and a determination of project benefits versus detriments (losses).

2.6 Rivers & Harbors Act of 1899, Sections 9 and 10

Section 9 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403; Chapter 425, March 3, 1899; 30 Stat. 1151) (Act) prohibits the construction of any bridge, dam, dike or causeway over or in navigable waterways of the U.S. without Congressional approval. Administration of section 9 has been delegated to the Coast Guard. Structures authorized by State legislatures may be built if the affected navigable waters are totally within one State, provided that the plan is approved by the Chief of Engineers and the Secretary of Army (33 U.S.C. 401).

Under section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable waters requires the approval of the Chief of Engineers. Authority of the USACE to issue permits for the discharge of refuse matter into or affecting navigable waters under section 13 of the 1899 Act (33 U.S.C. 407; 30 Stat. 1152) was modified by title IV of P.L. 92-500, October 18, 1972, the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1341-1345; 86 Stat. 877), as amended, which established the National Pollutant Discharge Elimination System Permits.

The Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; 48 Stat. 401), as amended, provides authority for the U.S. Fish and Wildlife Service (USFWS) to review and comment on the effects on fish and wildlife of activities proposed to be undertaken or permitted by the USACE. USFWS concerns include contaminated sediments associated with dredge or fill projects in navigable waters.

2.7 Other Federal Permits and Programs

Executive Order 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and

to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities."

2.8 Idaho Permit

An Idaho State Stream Alteration Permit must be obtained prior to altering any stream as defined by Idaho Administrative Code (37.03.07) which includes "… to obstruct, diminish, destroy, alter, modify, or change the natural existing shape of the channel or to change the direction of flow of water of any stream channel within or below the mean high water mark."

3.0 AVOIDANCE AND ENVIRONMENTAL PROTECTION MEASURES

To the greatest extent possible, the Project has been sited and designed to avoid and minimize, impacts to waters of the U.S., as well as other resources, including historic properties listed on the National Historic Register and species listed under the Endangered Species Act. This section describes the siting process for the Project, the environmental protection measures that the Companies will implement, and the road standards used by the Companies to minimize impacts where waterbodies must be crossed.

3.1 Siting

The identification of an initial proposed route for the Project was constrained by the purpose and need for the project, which includes interconnecting substations between Glenrock, Wyoming and the Hemingway Substation located southwest of Boise, Idaho.

The Companies originally proposed a series of segments, each of which must begin and end at a particular substation to meet the segments and Project's purpose and need. The route between substations was identified with the intent of avoiding as many environmental constraints as possible. Since the initial siting effort in 2008, reported in the Siting Study (IPC and RMP 2008, updated 2009), the Companies have been in continuous conversation with agencies and landowners and have substantially modified their initial Proposed Route to avoid important resources as knowledge of them became available, to accommodate landowner routing preferences where feasible, and to conform to a changing series of regulations and policies, including but not limited to the Wyoming Governor's Executive Order (2011-005) declaring sage-grouse core areas and permissible corridors through those areas in which transmission lines are to be sited.

Agencies and other groups identified concerns with the route proposed by the Companies and proposed partial or complete alternatives for that segment to the BLM. The BLM considered those alternatives and included them in the DEIS where the BLM determined that they met the BLM's purpose and need. The Companies worked closely with advocates of the alternative routes and conducted siting activities within the generally proposed alternative corridor to avoid known resource impacts where feasible, using the same tools and techniques used to determine the Proposed Route.

3.2 BLM Preferred Alternative

In December 2012, the BLM identified its modified Preferred Alternative for each of the segments. For Segments 1 – 4, the BLM identified the Proposed (as modified through

consultation) as the Preferred Route (with the exception of the adoption of 4G, a route proposed by the Forest Service in the Caribou-Targhee National Forest in Idaho). The routes for these four segments also represent the State of Wyoming's Preferred Route.

For Segments 6 and 10 in Idaho, the BLM also identified the Proposed as the Preferred. For Segment 5, the BLM identified Alternative 5B as its Preferred, which includes about 33 miles of the proposed route to the east and west of that alternative. For Segment 7, the BLM identified Alternatives 7B (to avoid the Deep Creek mountains), 7C (to avoid an important historic trail area, 7D, and 7G, in addition to the needed portions of the originally Proposed Route to connect the two substations. For Segment 8, the BLM identified the Proposed Route for most of its length, but preferring Alternative 8B, which avoids the Morey Nelson Snake River Birds of Prey NCA. For Segment 9, the BLM identified the Proposed Route from Cedar Hill to just south of Bruneau Dunes State Park, then selected 9E as modified, which dips south into the Owyhee foothills to avoid most of the NCA.

3.3 Environmental Protection Measures and Plans

The Companies have produced a series of framework plans and have submitted them to the BLM for inclusion as part of the Project Description for consideration during the NEPA analysis. Those plans were submitted as appendices to the Companies' POD and are incorporated herein by reference. The Companies plan that their Engineer, Procure, and Construct (EPC) contractor(s) will provide the site-specific detail needed for these plans after final engineering is complete and impacts are known. The EPC contractors will be responsible for submitting the final Plans to the BLM, USFS, and other appropriate agencies with regulatory authority for review and approval before receiving a Notice to Proceed (NTP) to begin construction. Many of these plans provide protection to wetlands either directly or indirectly. As submitted in 2012, the Plans reference the comprehensive list of Environmental Protection Measures (EPMs) found in Appendix Z of the POD. When finalized, relevant measures will be moved into each of the plans. Plans that are currently proposed and that will provide protection to waters of the U.S. are listed in Table 2, below:

Table 2. Framework Plans Contributing to the Protection of Waters of the US

Framework Plan	Preliminary Plan or Environmental Protection Measures
The Environmental Compliance Management Plan will be the primary guidance document that states how the Companies will uphold, document, and manage compliance with the right-of-way grant, the POD, landowner agreements, and all federal, state, and local permits. It is a centralized Project environmental compliance reference and is thereby intended to facilitate environmental compliance across the entire Project.	Included in POD as Appendix C.
The Framework Reclamation Plan will include site-specific construction mitigation, reclamation, and re-vegetation measures for each land management area crossed by the ROW within BLM-managed and National Forest lands. It will combine the Companies' BMPs with site-specific mitigation developed in consultation with agencies. Some measures will apply Project-wide, while others will be designed for specific areas.	Included in POD as Appendix D. Environmental protection measures (EPMs) provided in Appendix Z.
The Framework Noxious Weed Plan will provide methods to control the potential occurrence/infestation of noxious and invasive weeds during and following construction of the Project. The purpose of the plan is to ensure noxious weeds are identified and controlled during the construction of project facilities and all federal, state, county, and other local requirements are satisfied.	Included in POD as Appendix E. EPMs provided in Appendix Z.
The Framework Stormwater Pollution Prevention Plan will include 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.	Included in POD as Appendix F. EPMs provided in Appendix Z.
The Framework Spill Prevention, Containment, and Countermeasures Plan will include measures for spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response, and incident reporting, and training requirements.	Included in POD as Appendix G. EPMs provided in Appendix Z.
The Framework Plant and Wildlife Conservation Measures Plan will present the measures proposed by the Companies for avoidance and minimization of impacts to special status plant and wildlife species as related to construction activities for the Project and outlines specific conservation measures to be implemented in the event that state or Federally listed species, BLM sensitive species, or Forest Service special status species or their habitats are identified within or adjacent to the Project right-of-way.	Included in POD as Appendix H. EPMs provided in Appendix Z. Compensatory mitigation plan for impacts to sage-grouse habitat submitted to the BLM under separate cover.
The Framework Stream, Wetland, Well, and Spring Protection Plan will provide measures to protect these resources from potential impacts during construction, operation, and maintenance activities. The goals of this plan are to control Project-related erosion and sedimentation into streams and wetlands and minimize disturbance and erosion of streambeds and banks and protect springs and wells in the Project area from impacts due to blasting and hazardous materials contamination.	Included in POD as Appendix I. EPMs provided in Appendix Z.
The Framework Blasting Plan will outline methods to prevent adverse impacts to human health and safety, property, and the environment that could potentially result from the use of explosives during project construction and mitigate risks and potential impacts associated with blasting procedures that may be required for construction. The plan will provide all levels of construction personnel project-specific information concerning blasting procedures, including the safe use and storage of explosives.	Included in POD as Appendix M. EPMs provided in Appendix Z.
The Framework Hazardous Material Management Plan will reduce the risks associated with the use, storage, transportation, production, and disposal of hazardous materials (including hazardous substances and wastes). This Plan will identify Project-specific mitigation measures and other specific stipulations and methods to address spill prevention, response, and cleanup procedures for the Project.	Included in POD as Appendix P. EPMs provided in Appendix Z.
The Framework Operations, Maintenance, and Emergency Response Plan will include measures to be employed while conducting routine, corrective, and emergency operations and maintenance activities. Measures identified will be in compliance with applicable state and federal laws and policies; ensure consistency across and within federal jurisdictions; and allow for the Companies to access the transmission line and ancillary facilities in a timely, cost effective, and safe manner.	Included in POD as Appendix R. EPMs provided in Appendix Z.

3.4 Road and Waterbody Crossing Standards

The Companies plan to use existing roads and waterbody (e.g., channel, river, and streambed) crossings where practicable and feasible. The Companies conducted siting and design engineering to avoid new crossings of perennial streams, rivers, or artificial water conveyances such as canals, where possible. New roads have been planned to cross waterbodies only where avoidance is infeasible and largely where waterbodies are ephemeral or intermittent.

New road construction, which includes widening existing roads where necessary, would occur between existing roads to the ROW and each individual facility, including all transmission structures within the ROW. Repair or maintenance of existing roads was not included in impact calculations if the original road prism is not proposed to be enlarged. Examples of road crossing and culvert standards are found in Attachment B. The specific loads and the stream conditions will dictate the type of stream crossing.

Where constructing a new waterbody crossing is impractical or would require a bridge or a very large (>48-inch-diameter) culvert, existing waterbody crossings will be used and access redesigned to avoid a new crossing. All canals and ditches will be avoided by using existing crossings, as would all large perennial bodies like rivers. The following waterbody crossings would be used where avoidance is not possible:

- **Type 1—Drive through:** Crossing of a channel with only minimal vegetation removal and no cut or fill needed. This is typical for much of the low-precipitation sagebrush country with rolling topography and streams that rarely flow with water.
- **Type 2—Ford:** Crossing of a channel that includes grading and stabilization. Stream banks and approaches will be graded to allow vehicle passage and stabilized with rock or other erosion control devices. The stream bed will in some areas be reinforced with coarse rock material, where approved by the land-management agency, to support vehicle loads, prevent erosion and minimize sedimentation into the waterway. The rock will be installed in the stream bed such that it would not raise the level of the streambed, thus allowing continued movement of water, fish, and debris. A ford crossing results in an average disturbance profile of 25 feet wide (along the waterbody) and 50 feet long (along the roadway) for 1,000 square feet or 0.02 acre at each crossing. Disturbance amount is estimated based on need to get equipment into the riparian area to build the 14-foot-wide travelway and protect it from erosion by adding armoring.
- **Type 3—Culvert:** Crossing of a waterbody that includes installation of a culvert and a stable road surface established over the culvert for vehicle passage. Culverts are designed and installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and aquatic biologist where required by the land management agency, recommends placement locations; culvert gradient, height, and sizing; and proper construction methods. Culvert design considers bedload and debris size and volume. The disturbance footprint for culvert installation is estimated to be 50 feet wide (along the waterbody) and 150 feet long (along the road) for 7,500 square feet or 0.17 acre at each crossing. Ground-disturbing activities will comply with Agency-approved BMPs. Construction will occur during periods of low water or normal flow. The use of equipment in streams will be minimized. All culverts will be designed and installed to meet desired riparian conditions, as identified in applicable unit management plans. Culvert slope will not exceed stream gradient. Typically,

culverts are partially buried in the streambed to maintain streambed material in the culvert. Sandbags or other non-erosive material are placed around the culverts to prevent scour or water flow around the culvert. Adjacent sediment control structures such as silt fences, check dams, rock armoring, or riprap may be necessary to prevent erosion or sedimentation. Stream banks and approaches may be stabilized with rock or other erosion control devices. Culverts will be inspected and maintained annually for the life of the Project (estimated at 50 years or longer) for proper operation and to protect water quality.

The performance of low water stream crossings will be monitored for the life of the access road, and maintained or repaired as necessary to protect water quality.

The Companies have a standard set of BMPs in their road and construction manuals (examples in Attachment B) and will use additional BMPs where required by land-managing agencies during construction.

For waterbodies that are primarily dry, the crossing options include Type 1 through 3, and require agency consultation for crossings on Federal lands. For 303(d) listed streams with sediment as the primary contaminant of concern, additional erosion and sediment control devices (e.g., turbidity curtains) will be used if flow is present during installation of in-stream structures and other BMPs are not effective.

3.5 Wetlands Crossings with Access Roads

During construction and for routine and emergency operations, access across wetlands to each structure location is necessary. Two methods of minimizing impact to wetlands were evaluated but are not proposed:

- Constructing at-grade roads with geotextiles and road materials which allow for water through-flow. This type of road would be below water during certain times of the year which would make locating the roads difficult, and the depth of the water over the drivable surface may make travel over the submerged road surface impractical or not feasible.
- Constructing using helicopters in wetlands. The single-circuit 500kV towers will be designed such that they can be erected by helicopter if needed. In each case, the use of ground based vehicles is still required, thus not eliminating the need for an access road to each structure to complete construction or during inspections and live-line maintenance activities.

A combination of methods for road construction in wetlands is proposed:

- Construction of permanent above-grade roads that will be utilized during construction, operation, and maintenance. This will typically entail placement of permanent fill in wetlands such that the travel surface would be higher in elevation than the ordinary high water level. The construction of above-grade access roads allows for the use of the types of equipment needed for construction, operation, maintenance; and for expedited access for emergency restoration throughout the year.
- Construction or use of temporary roads during construction, followed by restoration of the disturbance after construction. The Companies only propose this approach in the area of extensive wetlands in the Bear River Plain, in part because it is feasible to store the amount of matting needed for emergency

access in the immediate vicinity. Smaller wetland and riparian area crossings will be constructed using permanent crossing methods because it would not be feasible to provide for temporary crossing materials for scattered crossings along a thousand miles of the Project. Where feasible in areas where temporary roads will be used, construction equipment may travel overland if the area is dry. If construction occurs when the ground is solidly frozen, ice roads could be constructed.

If construction must occur when the ground is wet, temporary matting materials will be installed to allow access for heavy vehicles and equipment. The mats typically come in the form of heavy timbers bolted together. They are often used over a geotextile that is applied directly over the wet soil surface. When construction use is complete, the mats are removed and the geotextile taken up. This approach will be used where feasible, since it further reduces vegetation damage and compaction and reduces the time for full restoration. Mats spread the concentrated axle loads from equipment over a much larger surface area than the tires alone, thereby reducing the bearing pressure on fragile soils. Matting has a limited service life before replacement is required and must be stored for maintenance and emergency restoration activities. Table 3 shows an estimate of miles of temporary roads for construction access in the three largest wetland areas crossed by the Proposed Route. Though exact locations may change during final design, the Companies are committed to using temporary crossings wherever feasible in these three important wetland areas. They are able to make this commitment only in the Bear River area because they already have storage facilities near enough to the area where mats would be used to allow for quick deployment in case of emergency.

Table 3. Access Road Wetland Crossings in the Bear River Plain

Location	Segment 4 Mileposts	Approximate Miles			
		Total New or Improved Access Roads	New or Improved Access Road in Uplands	Proposed for Permanent Fill in Wetlands	Proposed for Temporary Access in Wetlands
Cokeville	123.0-126.8	2.2	1.3	0.0	0.9
Bear River	133.5-134.5	1.8	0.0	0.0	1.8
Montpielier	148.0-153.6	7.9	5.1	0.0	2.8

Where temporary road access is utilized, road areas will be rehabilitated after construction. Any geotextiles and matting used will be removed and wetland vegetation allowed to re-vegetate. No permanent roads will be available for routine operations inspections or repairs. Operational inspections and repairs will be scheduled for times when the ground is dry or frozen and access will be overland along the road alignment by ATV. Emergency repairs requiring heavy equipment will access the damaged area using matting if necessary. After emergency repairs are completed, matting will be removed and the wetland areas allowed to restore naturally.

4.0 PRELIMINARY ESTIMATION OF IMPACTS TO WATERS OF THE U.S.

Preliminary impacts were identified through detailed remote sensing and image interpretation with ground-truthing. More detailed mapping, field verifications, and jurisdictional determinations have been conducted on Segments 1 – 4 where access was granted in 2012. Additional field

work will be needed in 2013 to complete delineations, functions and values evaluations, and impact calculations for Segments 1 – 4 once engineering design is further refined.

4.1 Methods

Waters of the U.S. were identified through multi-spectral imagery, National Wetland Inventory datasets, existing GIS hydric soil layers, and field verification. Details of this survey are presented in the *Revised Habitat Baseline Technical Report* (Tetra Tech 2010). Survey data were used to produce a baseline map of current vegetation that is consistent across ownership, can be used to route the project outside of sensitive resources to the extent practical, and provides the basis for impact assessment in the EIS.

The results of the remote sensing effort were validated using data obtained during systematic field sampling. Before mapping commenced, biologists field-sampled vegetation communities on accessible public lands. Field plot data were not made available to the crews that conducted field mapping or remote sensing interpretation; they were used as an independent way to check the accuracy of the field and remote sensing efforts. The same biologists that collected field data also participated in the mapping and quality control effort; therefore, they were familiar with the vegetation communities within the Project area.

To determine the acreage of impacts that could potentially occur to waters of the U.S., the Project's construction and operational footprints were overlain onto the wet areas that were mapped through remote sensing. Areas where the Project's construction or operational footprints were co-located with mapped waters of the U.S. were considered to be a direct impact and the acreage of impact was calculated using GIS.

4.1.1 Indicative vs. Design Engineering

Initial estimates of construction and operational footprints were determined through indicative engineering design. Indicative engineering used an initial project route and road layout that was developed based on aerial images, topographic maps, and road and environmental constraint data. The majority of roads and structure locations would be adjusted following field review and an iterative process that assesses potential siting constraints and opportunities. For example, Project components would be sited outside of wetlands during the final siting process whenever possible as a standard engineering practice. In addition, the impacts resulting from tower pads were estimated by applying a standard width buffer to each indicative tower location for a construction work area. During engineering design, structure locations would be refined to further avoid and minimize impacts to waters of the U.S. where feasible. Preliminary engineering design has been completed for Segments 1 – 4, and wetland delineations conducted in 2012 and 2013 have and will rely on that design for determining impacts for the purposes of the 404 permit application. Preliminary engineering design for Segments 5 – 10 will be conducted when state and local as well as federal permits are in place.

4.2 Impacts to Water of the U.S.

The Project comprises critical infrastructure for the Companies and the western U.S. electrical grid. Limiting the potential for, and duration of, unplanned outages, and planning for the use of live line maintenance techniques to minimize the requirement for any outages, is an important part of the design, construction, and O&M requirements for the Project. Because of the need to operate this line almost continuously and to avoid unplanned outages, permanent access to the line and structures is a critical component of the project. The Companies propose to use permanent fill to construct above-grade service roads in waters of the U.S. except in the Bear River Plain as explained in Section 3.5, above. This provides the most flexibility for construction and O&M activities and expedited access for emergency restoration throughout the year.

Service and access roads account for the majority of unavoidable impacts to waters of the U.S. for this Project. Required vegetation management for the safe O&M of the line also contributes to wetland impacts.

Where avoidance through engineering design was not possible, impacts are being minimized where feasible through relocation or redesign of project features. For example, impacts have been minimized by reducing desired vegetation management areas and road width to the minimum needed for safe operation and compliance with regulatory requirements. Permanent and temporary direct and indirect impacts to waters of the U.S. that would result from construction and O&M activities are similar in nature but tend to vary in extent. Removal of vegetation and the introduction of fill material to waters of the U.S. could directly alter their ability to serve as wildlife habitat; their ability to trap sediment and nutrients; and their ability to moderate flood flow or facilitate surface water flow. This could also result in indirect impacts such as increased water and soil temperatures and/or alteration of species composition (which can also change the function) within these areas. Any blasting that may occur within or adjacent to a waters of the U.S. could fracture the bedrock and alter the hydrology of a perched water table and potentially lead to drier conditions that impair re-vegetation efforts. Withdrawal of water for use during construction may temporarily impact waters of the U.S. by reducing the water input that they would normally receive.

Service road maintenance and vegetation management could result in minor impacts to wetlands or riparian areas. Vehicle traffic in wetlands and riparian areas has the potential to permanently alter soil characteristics and drainage patterns unless proper precautions are taken. Indirect impacts during maintenance may include compaction of soils, alteration of drainage patterns, erosion, and sedimentation. Erosion control and sedimentation runoff measures such as water bars, culverts, sediment basins, or perimeter control would be installed as required to minimize erosion.

Although some Project-related disturbances to vegetation would be temporary and associated with construction activities, long-term impacts would occur in forested wetlands because of ongoing vegetation management and the time it takes for re-vegetation efforts to mature. Construction impacts in forested wetlands and forested riparian areas would generally involve a conversion to a different wetland type (i.e., a change to shrub or herbaceous type), rather than a loss of wetland or riparian acreage. The Companies would not actively restore forested wetlands because of the potential for trees to interfere with the transmission line. It is likely that recovery would be fairly rapid in herbaceous and shrub wetlands, and construction in these types is not likely to cause a conversion to a different wetland type.

5.0 MITIGATION FRAMEWORK

The USACE recognizes three mechanisms for providing compensatory mitigation for unavoidable permanent impacts to waters of the U.S. Temporarily impacted areas would be restored to pre-disturbance conditions and are not included in the Framework. Listed in order from most favorable (preferred by the USACE) to least favorable, these include mitigation banks, in-lieu fee programs, and permittee-responsible compensatory mitigation. Both mitigation banks and in-lieu fee (ILF) programs involve off-site compensation activities that are conducted by a mitigation bank or an in-lieu fee program sponsor. Permittee-responsible mitigation is the most traditional form of compensation and continues to represent the majority of compensation acreage provided each year (USACE 2008a). As its name implies, the permittee retains responsibility for ensuring that required compensation activities are completed and successful. Compensatory projects can be located at or adjacent to the impact site (i.e., on-site

compensatory mitigation) or at another location generally within the same watershed as the impact site (i.e., offsite compensatory mitigation).

Project impacts would be largely confined to the requested ROW for the transmission line and roads, occur in multiple locations, and would generally be less than 0.5 acre at each site. The Companies are presently considering multiple locations on Company-owned property where wetland enhancement, restoration, or creation may be feasible.

5.1 Mitigation Banks

The USACE prefers the use of mitigation banks, but has indicated that the Project does not fall within the service areas of any approved and operational mitigation banks (Johnson 2010; Joyner 2010). In addition, it is unlikely any approved mitigation banks would be operational within service areas appropriate for this Project on a schedule that would allow for timely Project permitting. The Companies are not considering creating a mitigation bank as part of this Project and recognize that creating a bank may take more time than the construction schedule would allow.

5.2 In-lieu Fee Program

The Companies will consider the use of ILF programs to mitigate unavoidable impacts to waters of the U.S. if programs are available and applicable. Second in preference for meeting compensatory mitigation requirements, ILF programs have been developed in some parts of the U.S., but few are present in the project area. Two examples of how the in lieu fee program was executed in Idaho are found in Attachment C. The Companies are also considering a combination of ILF and permittee-responsible mitigation including a combination of restoration, enhancement of existing wetlands, and creation of new wetlands. In most locations, the Companies do not have qualified staff to provide long-term maintenance and monitoring for permittee-responsible projects and plan to engage a responsible third party through binding contracts to provide these services. The Companies also consider that a conservation easement instrument will be appropriate to commit the portions of those properties belonging to the Companies to “in perpetuity” wetland uses.

The creation of a conservation easement and an “in perpetuity” agreement with the conservation easement manager to also provide maintenance and monitoring for the project provides the equivalent of an in-lieu fee situation. Suitable sponsors for an ILF program include national non-governmental organizations such as The Nature Conservancy, Ducks Unlimited, Trout Unlimited, or the Rocky Mountain Elk Foundation, state organizations such as the Wyoming Wildlife Federation, or local land trusts.

The proposed framework and resulting mitigation would provide mitigation at a larger scale, with a greater likelihood of long-term success, and an opportunity to provide increased functions over smaller, isolated on-site mitigation. The proposed ILF mitigation provides a more robust approach to ensure long-term success of mitigation goals, i.e., full replacement of lost wetland functions and values.

5.2.1 ILF Mitigation Parameters

Whether the Companies are able to use existing ILF programs or they must develop one or more in partnership with an organization capable of managing it, the following information would be provided for each separate ILF sponsor:

- A description of the sponsor’s experience and qualifications with respect to providing compensatory mitigation;

- Potential site locations, baseline conditions at the sites, and general plans that indicate what kind of wetland compensation can be provided (*e.g.*, wetland type, restoration or other activity, proposed time line, *etc.*);
- Geographic service area;
- Accounting procedures;
- Methods for determining fees and credits including the allocation of advance credits;
- A schedule for conducting the activities that would provide compensatory mitigation or a requirement that projects would be started within a specified time after impacts occur;
- Performance standards for determining ecological success of mitigation sites;
- Reporting protocols and monitoring plans;
- Financial, technical and legal provisions for remedial actions and responsibilities (*e.g.*, contingency fund);
- Financial, technical and legal provisions for long-term management and maintenance (*e.g.*, trust);
- Provision that clearly states that the legal responsibility for ensuring mitigation terms are fully satisfied rests with the organization accepting the fee; and
- Review by the Interagency Review Team (IRT) as established by the district engineer in accordance with 40 CFR part 230, and public review and comment.

Attachment D contains proposed language for an ILF instrument.

5.3 Permittee Responsible Mitigation

The Companies may use permittee responsible mitigation by itself or in combination with an ILF program. While the USACE guidance (FR Vol. 65, No. 216; Nov 7, 2000) states a preference for on-site and in-kind mitigation, the Companies would propose mitigation that would likely result in off-site mitigation that includes in-kind and out-of-kind activities either near the impact site or in the same watershed/HUC unit. The Companies are not likely to propose on-site mitigation because of the need to access structures and associated facilities over the life of the project. The comprehensive mitigation plan that would be developed for permittee responsible mitigation would include the following:

Objectives—This section would discuss:

- The resource type(s) and amounts that would be provided by the mitigation project;
- The method of compensation (i.e., restoration, establishment, enhancement, and/or preservation); and
- The manner in which the resource functions of the mitigation project would address the needs of the watershed, ecoregion, physiographic province, or other geographic area of interest.

Site Selection—This section would discuss the factors considered during the site selection process, such as:

- Needs of affected watersheds;
- On-site alternatives (where applicable); and

- The practicability of accomplishing an ecologically self-sustaining aquatic resource at mitigation project site.

Site Protection Instrument — This section would describe measures that would be used to ensure the long-term protection of the mitigation project site; including legal arrangements and instruments, as well as site ownership.

Baseline Data—This section would discuss or include:

- Historic and existing plant communities of the proposed mitigation site and the impact site(s);
- Historic and existing hydrology of the proposed mitigation site and the impact site(s);
- Soil conditions of the proposed mitigation site and the impact site(s);
- Map(s) showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s); and
- Other site characteristics appropriate to the type of resource proposed as compensation, including delineation.

Mitigation Ratios—This section would describe the number of acres of mitigation wetlands to be preserved/created/enhanced based on determined mitigation ratios and total impact acres of the Project.

Monitoring—This section would include the following:

- A description of parameters to be monitored in order to determine if the mitigation project is on track to meet performance standards, or if adaptive management is needed;
- A schedule for monitoring and reporting to the responsible agency; and
- A description of the length of the monitoring period and responsible party (minimum of 5 years and until success criteria or ecological performance standards are met).

Financial Assurances—This section would describe the financial assurances in-place and how these assurances are sufficient to ensure a high level of confidence that the mitigation project would be successfully completed, in accordance with its performance standards. The USACE may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the mitigation project.

Ecological Performance Standards—This section would describe the ecologically-based standards that would be used to determine whether the mitigation project is achieving its objectives.

5.3.1 Compensatory Mitigation Sub-plans

The following sub-plans would also be included as part of the Comprehensive Mitigation Plan:

1. **Work Plan**—This plan would describe the following:
    - Geographic boundaries of the mitigation area(s) (including watershed size);

- Construction methods, timing, and sequence;
- Source(s) of water, including connections to existing waters and uplands;
- Methods for establishing the desired plant community;
- Plans to control invasive plant species;
- Proposed grading plan, including elevations and slopes of the substrate including plan-form geometry, channel form, and design discharge;
- Soil management measures; and
- Erosion control measures.

2. **Maintenance Plan**—This plan would include a description and schedule for the maintenance requirements to support continued viability of the resource once initial construction is completed.
3. **Long-Term Management Plan**—This plan would include a description of how the mitigation project would be managed after performance standards have been achieved in order to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.
4. **Adaptive Management Plan**—This plan would include a description of how the mitigation plan would be revised and implemented if changes arise. This plan would also identify the party or parties responsible for implementing adaptive management measures.

5.4 Location of Required Mitigation and Known Mitigation Opportunities

Previous discussion with the USACE have indicated that offsite compensatory mitigation, if employed, must be located in the watershed in which the disturbance has taken place and that the watersheds must be 6th order Hydrologic Unit Code (HUC) or smaller. **Figure 3** identifies the 6th order HUC boundaries crossed by the project. **Table 4** lists the potential impacts from operation and maintenance in wetland and riparian areas by 6th order HUC.

Table 4. Acres of Wetland and Riparian Impacts by 6th Order HUC across the Project

6th Order HUC Name	6th Order HUC Number	Acres of Wetland Impacts	Acres of Riparian Impacts	Total
North Platte	101800	5.3	5.8	11.1
Upper Green	140401	0.7	1.3	2.0
Great Divide Closed Basin	140402	0.2	0.2	0.4
White-Yampa	140500	0.0	0.0	0.0
Upper Bear	160101	0.6	3.3	3.9
Lower Bear	160102	1.3	2.2	3.5
Upper Snake	170402	0.1	0.5	0.6
Middle Snake-Boise	170501	0.7	1.6	2.3
Totals		8.9	14.9	23.8

Note: Acreages within the table are inclusive of un-vegetated waters that are associated with wetland or riparian areas. Un-vegetated waters such as intermittent drainages are not included in this table.

Initial estimates by Proposed and BLM Preferred Routes for Segments 1 – 4 are found in **Table 5**, below.

Table 5. Estimated Impacts to Riparian and Wetland Areas (from FEIS, BLM 2011)

Proposed and BLM Preferred Route	Acres Permanent Impact		
	Riparian	**Wetland**	**Total**
Segment 1W(a)	2.3	2.4	**4.7**
Segment 1W(c)	2.2	2.7	**4.9**
Segment 2	1.4	0.2	**1.6**
Segments 3 and 3A	0.4	0.2	**0.6**
Segment 4	6.6	2.5	**9.1**
Totals	**12.9**	**8.0**	**20.9**

In the event ILF options do not meet the needs of the Companies, are not available when the Companies require them, or cannot be developed within these watersheds, the Companies would be responsible for the mitigation as described in Section 5.3. To identify land suitable for mitigation, priority would be given to sites exhibiting the following:

- Stable, predictable water table;
- Beneficial habitat features, such as, “in-kind” community design and connectivity to other protected or important habitats;
- Proximity to other wetlands;
- Existing functional features (e.g. flood detention);
- Imminent risk for destruction or degradation from development;
- Sufficient land area to provide ecologically meaningful upland buffer; and
- Previously degraded wetlands.

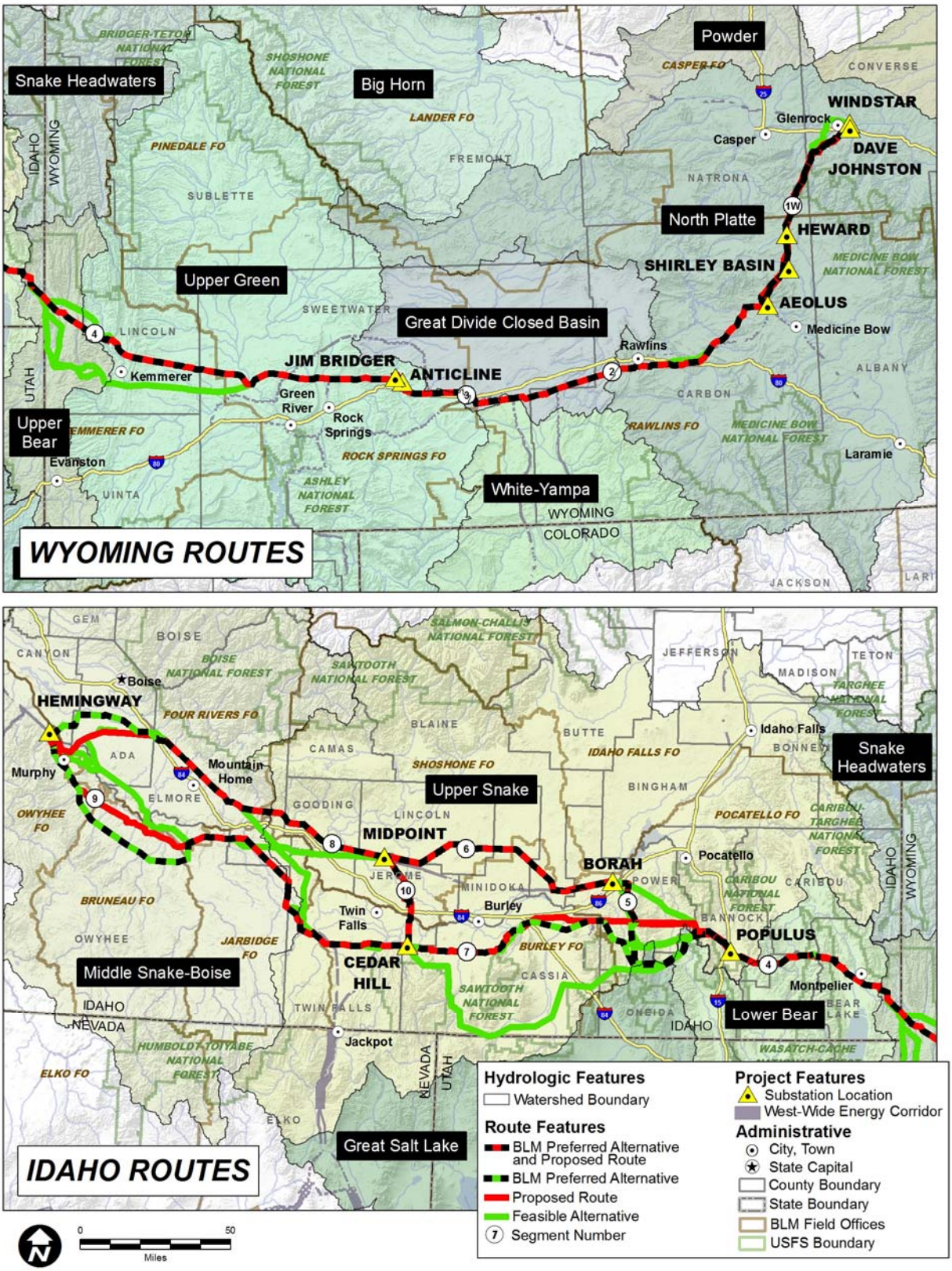

Figure 3. 6th Order HUCs across the Project

Priorities for preservation or protection of existing wetlands are as follows:

- Contiguous with existing preserved or important habitat areas;
- Adjacent to areas with low potential for development;
- Probability for sustained ecological biodiversity value for foreseeable future (low probability for future development);
- Connects two or more preserved or important habitat areas; and
- Contains important wetlands—significant in maintaining water quality, stream flow, and aquatic habitat in a contiguous or downstream watercourse, contains habitat, or has the potential for creation of habitat, for sensitive wildlife.

5.5 Site-Specific Compensatory Mitigation Planning

5.5.1 Bear River Plain

PacifiCorp Energy (affiliated with RMP) owns several large parcels of land west of Montpelier, ID, as part of the Bear River Hydroelectric Project (**Figure 4**). Relicensed for 30 years in 2003, the Bear River Project is subject to a Settlement Agreement. The Settlement Agreement and new license require the provision of recreational enhancements, instream flows to benefit aquatic resources, and various funds to conserve and benefit natural resources near the project. Therefore, PacifiCorp Energy has dedicated staff and resources that already manage various natural resources projects in the vicinity of the Gateway West Project. One of the properties owned by PacifiCorp and leased for meadow hay and grazing operations to a local rancher, is found on Ovid Creek, to the west of the main Bear River but within the larger Bear River Plain.

The property was purchased in the 1980s to allow PacifiCorp to better control the flooding in the Bear River Plain that occurred during very high runoff periods. Ovid Creek, from which PacifiCorp owns irrigation water rights, runs adjacent to and through the parcel. The parcel is flood irrigated every spring/summer using those rights. Water is conveyed through ditches and by manipulation of water levels at the Bern Dam control structure. The lessee manages irrigation to produce one or two cuttings of hay. During the fall and winter months, the parcel is used to graze and winter cattle.

Through PacifiCorp's Hydro Resources Management group, PacifiCorp approved a Property Transaction Notice and Approval Form in late 2010 to allow a portion of this property to be transitioned from its current land use to use as a site for wetland restoration and enhancement. As part of its commitment to develop this portion of the property as a wetland mitigation site to compensate for unavoidable adverse impacts to waters of the US within the Bear River drainage, the Companies have begun the following activities:

- Install a series of piezometers across the parcel to periodically monitor shallow groundwater (December 2012);
- Research existing water rights owned by PacifiCorp to determine if any changes in beneficial use or location need to be recorded to assure a perpetual supply of water for the proposed wetland restoration project (December 2012);
- Conduct a detailed topographic survey of the parcel (one foot contour interval) to assist in the development of a mitigation site plan (March – May 2013);
- Conduct a wetland delineation on the parcel (May/June 2013); and
- Conduct a functions and values assessment of the parcel (May/June 2013).

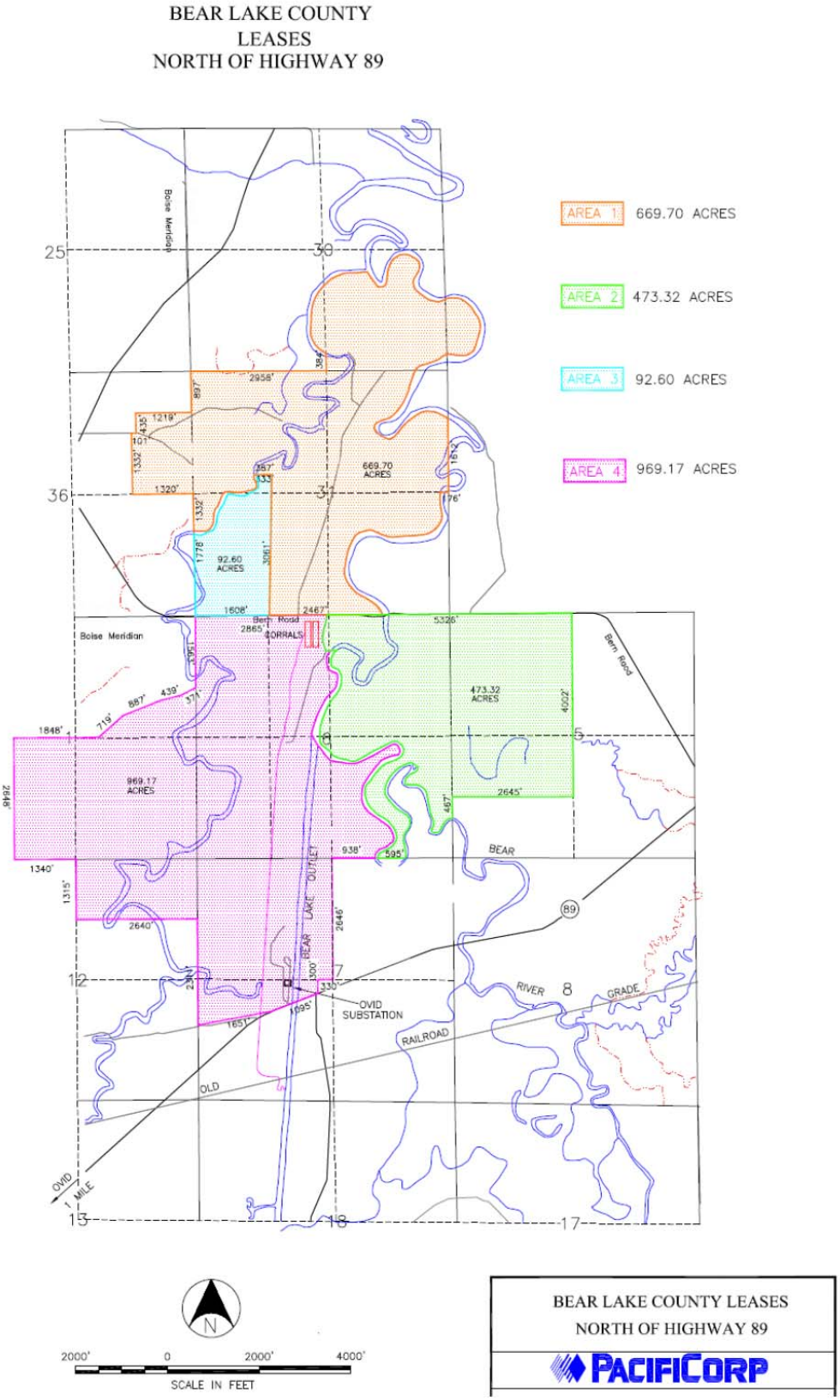

Figure 4. Bear Lake County Leases

The report that results from these activities will form the basis of a site-specific mitigation plan. That plan will also include a written commitment from PacifiCorp Hydro to monitor and maintain the restored wetland so that it continues to provide the established functions and values into the future.

5.5.2 Other Company-Owned Properties

There are properties owned by PacifiCorp near the Dave Johnston Power Plant and also near the Jim Bridger Power Plant in the vicinity of impacts from Segments 1 and 4, respectively. These properties include wetlands that have been degraded by open livestock grazing and other historic land uses. There are possibilities for improvements, restoration, enhancement, or creation of wetlands on these properties. Unlike the properties in the Bear River Plain, there is no equivalent in-house natural resource staff to manage long-term monitoring, reporting, and management. Pursuit of projects on these properties will be accompanied by long-term conservation easements or similar legal instruments with third parties to provide for such long-term services as well.

5.5.3 Riparian and Stream-related Wetland Crossings

The general conditions for Nationwide 12 indicate that compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. The Companies plan to work with the district engineer to use the functions and values assessment of the wetlands and waters of the US permanently impacted by the Project to determine the needed size and number of offsite mitigation projects to fully compensate for losses based on the functions and values restored or contributed by each project.

Mitigating for loss of riparian habitat in an area such as Wyoming where open livestock grazing is common can be achieved in many locations simply by fencing out cattle from the riparian area and providing off-stream water by piping gravity-fed water to a trough or other watering device in an adjacent upland area. The Companies will search for a third-party sponsor to help it identify reaches of creeks and streams within each watershed impacted by the Project where willing landowners may be found and where such fencing activities could substantially improve the riparian conditions, particularly streams listed under 303d as having impaired water quality.

Where there is landowner interest, the Companies will enter into an agreement with the third-party sponsor, similar to the in-lieu fee program draft found as Attachment D to fund the project once land-use permits on public and private lands are in place, with the intent of executing the mitigation in 2015, just prior to construction. Those landowner agreements will include a means of financing ongoing fence and watering system maintenance and may include some form of conservation easement, held by the third-party sponsor, that will ensure the ability to conduct in-perpetuity management.

6.0 CONCLUSION

The Companies have sited and designed the Project to avoid Waters of the US, including wetlands, to the greatest extent feasible. The BLM and other permitting agencies, not the

Companies, select the final route to be permitted. The Companies are therefore limited in their options for avoidance and minimization to the route, and often times to the specific roads, required by the permitting agencies.

Where feasible and within the constraints dictated by the BLM and other agencies' Preferred Route, the transmission structures, access roads, and ancillary facilities have been sited and designed to avoid water features including wetlands and wet creek crossings. Where not feasible to entirely avoid such crossings, the Companies have designed the road network to use existing crossings wherever feasible. The proposed crossings are the smallest possible impact given the need to safely and quickly access each structure in the event of a failure.

In one instance, the Companies have been willing to reduce their standard of a permanent above-grade road to each structure and facility to minimize permanent loss of wetlands. In the Bear River Plain, the Companies have nearby storage available for geotextiles, timber mats, and the equipment and resident staffing to place and remove such temporary road structures in an emergency if needed. In addition, in that area, routine maintenance can be conducted from ATVs during the dry season without permanent roads. These unusual conditions pertain only in this area and do not apply to the rest of the Project, where riparian or wetland crossings are isolated and far from any facility in an emergency.

All crossings of waters and wetlands have been designed and field-checked to avoid new crossings where feasible and to minimize the impact of proposed crossings where total avoidance is not possible. For example, crossings are routinely designed to cross as close to perpendicular to the water body as possible to minimize impacts.

Impacts from the Project to waters and wetlands have been avoided and minimized wherever feasible. The small remaining unavoidable impacts represent the least damaging practicable alternative for the safe and compliant construction and operation, including emergency access, for the Project. These remaining impacts will be fully compensated for as coordinated with, and ultimately approved by, the USACE.

7.0 REFERENCES

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The Environmental Law Institute (Accessed October 8, 2010; http://www.eli.org/Program_Areas/WMB/ilfresults.cfm?state=ID&district=&program=) and USACE databases were reviewed to identify existing mitigation opportunities in the project area.

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ATTACHMENT A
WATERBODIES LISTED AS IMPAIRED ALONG THE PROPOSED ROUTE

Waterbodies Listed as Impaired along the Proposed Route

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Bear River - Idaho/Wyoming border to railroad bridge (T14N, R45E, Sec. 21)	Segment 4	139.9	Sediment		ID16010102BR001_05
Sheep Creek - source to mouth	Segment 4	144.0	Sediment		ID16010102BR008_02
Sheep Creek - source to mouth	Segment 4	144.9	Sediment		ID16010102BR008_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	148.2	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	148.7	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	149.1	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	149.8	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	152.9	Sediment		ID16010201BR002_02
Swan Lake Creek Complex	Segment 4	192.9	Sediment		ID16010202BR018_02b
Marsh Creek - source to mouth	Segment 4	195.7	Temperature	Sediment	ID17040208SK006_03a
Marsh Creek - source to mouth	Segment 4	200.0	Temperature	Sediment	ID17040208SK006_03
Marsh Creek - source to mouth	Segment 4	201.2	Temperature	Sediment	ID17040208SK006_03
Marsh Creek - source to mouth	Segment 5	5.2	Temperature	Sediment	ID17040208SK006_04a
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 5	6.5		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 5	7.6		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 5	8.5		Sediment	ID17040208SK011_03
Hawkins Creek - source to Hawkins Reservoir	Segment 5	12.7		Sediment	ID17040208SK013_02
Hawkins Creek - source to Hawkins Reservoir	Segment 5	13.6		Sediment	ID17040208SK013_02a
Hawkins Creek - source to Hawkins Reservoir	Segment 5	14.9		Sediment	ID17040208SK013_02
Bannock Creek - source to American Falls Reservoir	Segment 5	23.1	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 5	23.4	Sediment		ID17040206SK002_03
Bannock Creek - source to American Falls Reservoir	Segment 5	25.8	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 5	26.7	Sediment		ID17040206SK002_02
West Fork Bannock Creek - source to mouth	Segment 5	27.8	Sediment		ID17040206SK008_02
West Fork Bannock Creek - source to mouth	Segment 5	29.5	Sediment		ID17040206SK008_02
West Fork Bannock Creek - source to mouth	Segment 5	29.6	Sediment		ID17040206SK008_02
West Fork Bannock Creek - source to mouth	Segment 5	30.7	Sediment		ID17040206SK008_02
East Fork Rock Creek - source to mouth	Segment 5	33.2		Sediment	ID17040209SK010_02

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
East Fork Rock Creek - source to mouth	Segment 5	35.2		Sediment	ID17040209SK010_03
East Fork Rock Creek - source to mouth	Segment 5	36.0		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 5	36.8		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 5	37.4		Sediment	ID17040209SK010_02
Marsh Creek - source to mouth	Segment 7	4.8	Temperature	Sediment	ID17040208SK006_04a
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	6.4		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	7.4		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	10.5		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	11.2		Sediment	ID17040208SK011_02
Hawkins Creek - source to Hawkins Reservoir	Segment 7	13.2		Sediment	ID17040208SK013_02
Hawkins Creek - source to Hawkins Reservoir	Segment 7	13.5		Sediment	ID17040208SK013_02
Hawkins Creek - source to Hawkins Reservoir	Segment 7	13.9		Sediment	ID17040208SK013_02b
Hawkins Creek - source to Hawkins Reservoir	Segment 7	16.8		Sediment	ID17040208SK013_02b
Hawkins Creek - source to Hawkins Reservoir	Segment 7	17.4		Sediment	ID17040208SK013_02b
Bannock Creek - source to American Falls Reservoir	Segment 7	21.2	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	22.3	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	23.1	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	23.5	Sediment		ID17040206SK002_03
Bannock Creek - source to American Falls Reservoir	Segment 7	23.6	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	26.4	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	27.6	Sediment		ID17040206SK002_02
West Fork Bannock Creek - source to mouth	Segment 7	30.6	Sediment		ID17040206SK008_02
East Fork Rock Creek - source to mouth	Segment 7	33.5		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 7	35.4		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 7	35.7		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 7	37.4		Sediment	ID17040209SK010_02
South Fork Rock Creek - source to mouth	Segment 7	40.8		Sediment	ID17040209SK009_04
Raft River - Heglar Canyon Creek to mouth	Segment 7	59.4		Sediment	ID17040210SK001_05
Unclassified Waters in CU 17040212	Segment 7	110.3		Sediment	ID17040212SK000_02

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Unclassified Waters in CU 17040212	Segment 7	111.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 7	111.3		Sediment	ID17040212SK000_02
Dry Creek - source to mouth	Segment 7	114.2	Temperature	Sediment	ID17040212SK022_03
Malad River - confluence of Black Canyon Creek and Big Wood River to mouth	Segment 8	19.2		Sediment	ID17040219SK001_06
Malad River - confluence of Black Canyon Creek and Big Wood River to mouth	Segment 8	19.4		Sediment	ID17040219SK001_06
Unclassified Waters in CU 17040212	Segment 8	29.6		Sediment	ID17040212SK000_02
Clover Creek - Pioneer Reservoir Dam to mouth	Segment 8	39.0	Temperature	Sediment	ID17040212SK034_04
Little Canyon Creek - source to mouth	Segment 8	47.7		Sediment	ID17050101SW012_03a
Little Canyon Creek - source to mouth	Segment 8	48.2		Sediment	ID17050101SW012_02
Cold Springs Creek - source to mouth	Segment 8	52.9		Sediment	ID17050101SW014_03
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	90.1	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	91.2	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	92.0	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	92.8	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	93.5	Sediment/ Temperature		ID17050114SW003_03
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	93.8	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	95.0	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	95.4	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	98.8	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	99.6	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	100.9	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	101.0	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	101.1	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	101.7	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	102.9	Sediment/ Temperature		ID17050114SW003_03
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	103.4	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	104.5	Sediment		ID17050114SW003_02

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	105.6	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	106.3	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	107.1	Sediment		ID17050114SW003_02
Snake River - C.J. Strike Dam to river mile 425 (T02N, R04W, Sec. 02)	Segment 8	118.0	Temperature		ID17050103SW006_07b
Rock Creek - Fifth Fork Rock Creek to river mile 25 (T11S, R18E, Sec. 36)	Segment 9	2.3		Sediment	ID17040212SK016_04
McMullen Creek - source to mouth	Segment 9	3.8	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	4.3	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	5.5	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	6.0	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	6.1	Temperature	Sediment	ID17040212SK015_03
Cottonwood Creek - source to mouth	Segment 9	8.9		Sediment	ID17040212SK014_04
Cottonwood Creek - source to mouth	Segment 9	9.0		Sediment	ID17040212SK014_04
Salmon Falls Creek - Salmon Falls Creek Dam to Devil Creek	Segment 9	32.5		Temperature	ID17040213SK003_06
Devil Creek - source to mouth	Segment 9	37.2		Temperature	ID17040213SK002_04
Deadman Creek - source to mouth	Segment 9	48.5	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	49.0	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	49.5	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	51.4	Sediment		ID17050101SW008_03
Deadman Creek - source to mouth	Segment 9	51.7	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	53.1	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	61.3	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	62.6	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	72.2	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	76.5	Sediment		ID17050101SW008_03
Sailor Creek - source to mouth	Segment 9	82.1	Sediment		ID17050101SW006_04
Sailor Creek - source to mouth	Segment 9	82.7	Sediment		ID17050101SW006_02
Browns Creek - source to mouth	Segment 9	87.6	Sediment		ID17050101SW003_04
Sugar Valley Creek - source to mouth	Segment 9	104.5		Sediment	ID17050102SW008_04
Jacks Creek - confluence of Little and Big Jacks Creeks to C.J. Strike Reservoir	Segment 9	104.8	Temperature	Sediment	ID17050102SW002_05

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Birch Creek - source to mouth	Segment 9	126.8	Sediment		ID17050103SW021_03
Castle Creek - source to mouth	Segment 9	131.6		Sediment/ Temperature	ID17050103SW014_04
Sinker Creek - source to mouth	Segment 9	143.8		Sediment/ Temperature	ID17050103SW012_04
Snake River - Milner Dam to Twin Falls	Segment 10	23.5	Temperature	Sediment	ID17040212SK020_07
Unclassified Waters in CU 17040212	Segment 10	26.9		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	27.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	27.5		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	28.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	28.3		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	29.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	29.6		Sediment	ID17040212SK000_02

*From Idaho Department of Environmental Quality Working Principles and Policies for the 2008 Integrated (303[d]/305[b]) Report

Category 1 waters are attaining water quality standards and no uses are threatened.
Category 2 waters are attaining some designated uses, and no uses are threatened, but there is insufficient (or no) data and information available to determine if the remaining uses are attained or threatened.
Category 3 waters have insufficient data (or no data) and information to enable determining if designated uses are being attained.
Category 4 waters do not support (or threaten) a standard for one or more designated uses, but they do not require the development of a Total Maximum Daily Load (TMDL). There are three subcategories under Category 4:

- *Category 4a* waters have had a TMDL completed and approved by EPA.
- *Category 4b* waters have had pollution control requirements placed on them other than a TMDL—and these waters are reasonably expected to attain the water quality standard in the near future.
- *Category 4c* waters are those waters for which nonsupport of the water quality standard is not caused by a pollutant.

Category 5 waters do not meet (or threaten) applicable water quality standards for one or more designated uses by one or more pollutants. Category 5 water bodies make up the 303(d) list of impaired waters.

NOTE: No impaired waterbodies occur within the project in Wyoming.

ATTACHMENT B
ROAD AND CULVERT CROSSING EXAMPLES

Roads—Construction

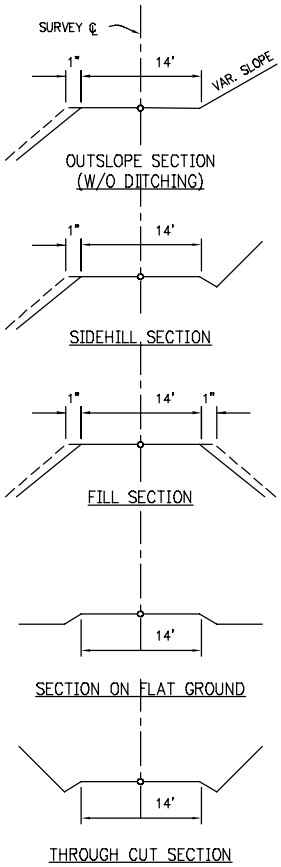
A. Scope

This standard provides information about constructing transmission line access. All road construction/improvements, fords, structure/equipment landings, and lay-down yards shall be held to a minimum. On level terrain, road construction may only require back-dragging a blade to remove brush to facilitate construction. In undulating or mountainous terrain the following standards shall apply.

B. Index

The index below provides a quick reference to detailed figures contained in this standard for road construction with varying slopes and conditions.

Referenced Road Cross Section	ACCESS ROAD SECTION
Figure 2	OUTSLOPE SECTION (W/O DITCHING)
Figure 3 Figure 4 Figure 5	SIDEHILL SECTION
Figure 2	FILL SECTION
Figure 2	SECTION ON FLAT GROUND
Figure 2	THROUGH CUT SECTION



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C. Planning

Before construction can take place. the road system must be planned and located properly. Poor planning or road location is associated with the following most common causes of road failure (Furniss et al. 1991):

- Improper placement and construction of road fills.
- Insufficient culvert sizes.
- Very steep road grades.
- Improper placement or sidecast of excess materials.
- Removal of slope support by undercutting.
- Altering drainage by interception and concentration of surface and subsurface flows.

A plan showing existing and new road locations shall be developed and shall be shown on the company's access road charts, plan maps, and transportation plan map. Road locations shall be marked on the ground by survey stakes and blue-and-white, striped flagging. GPS coordinates shall be obtained to define the road center–line. These coordinates shall be used to create the transportation plan map. Road information shall also be placed on transmission line plan maps.

In the event of conflict between the drawings and the staked locations, the latter shall take precedence and transportation plan maps and the transmission line plan maps shall be revised accordingly. Any culverts and gates listed in access road charts are required. Fords, drainage improvements, rip-rap fills and crushed rock requirements listed in the access road charts are anticipated; however, requirements will be determined based on actual site conditions encountered. If changes are made in the field, the maps shall be revised to show these changes.

Because roads are long-term features, their location must be carefully chosen to provide safe access, avoid long-term maintenance problems, reduce potential for degrading water quality, and minimize costs over the short and long term. For more information see the references in Section H.

D. Road Construction

Roads shall be constructed in a manner that will support equipment for construction of the transmission line and to provide access roads for line inspection and maintenance equipment after the line has been constructed.

All construction access roads on federally managed public lands are subject to approval prior to construction. Other federal, state, and local landowners may require approvals before road construction commences on their property. Where side slopes exceed 60 percent, a full bench cut will be reburied. No side-casting of material will be allowed in these areas; end-haul of material will be required to a designated location approved by the federal agency or other property owner. Close coordination with the federal agency will be required.

The detail drawings provided in this standard for completing cuts and fills, providing drainage, and installing culverts are furnished as guidelines for the road construction. Actual road construction cut slopes, fill slopes, drainage requirements, rip-rap, and

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crushed rock needs will be determined during construction based on site conditions. Cut and fill quantities shall balance when possible, reducing the material removed or brought in for road completion.

During road construction, consideration shall be given to restoration required after construction completion, including re-vegetation, rock cover, and other drainage and erosion control factors. Clearing and grading shall be minimized to reduce the restoration requirements for disturbed areas. The visual impact of roads on the surrounding areas shall be considered at all times during construction.

Crushed rock shall be sound, hard, durable, angular, or sub-angular rock, suitable for road base courses. Crushed rock shall be well graded 2″ to 1/4″ size (3″ to minus-size skip-graded is a minimum acceptable substitute).

Rip Rap shall be sound, hard, durable, rock ranging in size from 2″ to 8″ as specified on drawings and as required by conditions.

Any improvements made, including spur roads, fords, bridges, equipment landings and lay-down areas, shall be held to a minimum. Following completion of the work, the removal of these improvements shall be at the discretion of company or its representative.

Roads shall be sufficiently wide, but not less than 14′ in width. The construction shall provide bench cuts, grading, filling, compaction, and ditches necessary to accommodate heavy construction equipment and other heavily loaded vehicles. Roads shall be installed in accordance with the figures in this standard.

All roads shall be constructed with a smooth, uniform surface and shall be outsloped where practical to provide drainage and minimum erosion. Avoid outsloped roads where they will direct runoff onto erodible fill, embankments, or where they would cause off-camber curves. Where outsloping is not practical, sufficient water dips, water bars, or ditching, shall be installed as shown in the Section E of this standard. See standards TA 503, *Roads—Water Bars and Water Dips* and TA 504, *Roads—Culvert Installation* for further detail on proper drainage.

Outsloping a road means building the road surface so that it is tilted outward 2-3 percent so water can run off the road surface (see Figure 1). Outsloping works well under the right conditions. The following conditions are favorable for use of outsloped roads with no ditch:

- Short back slopes.
- Terrain slope less than 20 percent.
- Road grades steeper than 3 percent.
- Seasonal road use.
- Light traffic.
- Fast re-vegetation of cut and fill slopes.

Outslopes become a problem if roads are not maintained when ruts begin to form. The ruts will then act as channels.

The following conditions are unfavorable for outsloping:

- Long back slopes.

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- Terrain steeper than 20 percent.
- Steep, continuous road grade.
- Where ruts occur and allow water to concentrate and run along the road.
- Where winter hauling is required.

To minimize rutting and erosion of the right-of-way, road construction shall be completed during predominantly dry conditions. Fills, which will essentially consist of native soils, shall not be made when the moisture content of the soils will not permit adequate compaction.

As a minimum level of compaction, common fill shall be placed in 12″-thick, loose lifts and each lift compacted by walking or tracking in with a heavy dozer or rubber-tired (pneumatic) equipment. Each lift shall be compacted by at least four passes with the equipment.

In areas of dense vegetation, the surface organic material shall be stripped from the ground within the roadway and cut and fill areas. Stripping to a maximum depth of 6″ will be adequate unless otherwise directed by the company or its representative. Stripped and disturbed areas shall be compacted as specified above or as shown in the drawings or access road charts.

Personnel constructing the access road system shall be aware of the definition of a wetland such that potential wetlands may be identified before work is begun. In some cases where wetlands have been identified, road construction personnel shall comply with requirements as directed by the company or its representative.

Ditches, installed culverts, and/or installed surface drains to drain wet areas resulting from springs, seeps, or poor surface drainage may be required to construct the road. Drainage ditches shall be shallow, not to exceed 18″ in depth. The ditch bottom shall have a width of approximately 1′ and side slopes shall not exceed 1.5 to 1 (see Figure 5).

All earthwork and grading, cut and fill slopes, and other disturbed areas shall be re-vegetated with seed. Unless otherwise specified, the seed mix shall consist of 45 percent rye grass, 45 percent orchard or fescue grass, and 10 percent clover. The seed shall be applied at a minimum of 60 pounds per acre. At locations where the ground slope is greater than 10 percent, the seeds shall be covered with straw- or wood-fiber mulch applied at a rate of one ton of mulch per acre. The seed shall be spread in early fall when weather permits.

All phases of operation, including the construction of truck and tractor roads, shall be conducted to minimize as much as practical the damage to the soil and to prevent gullies and creation of other conditions conducive to soil erosion. Repair of all erosion damage shall be accomplished as soon as it occurs to prevent further loss of material into existing drainages. Cut slopes shall be stabilized. Care shall be taken to avoid creation of wet land conditions.

Crew movement on the right-of-way, including access routes, shall be limited so as to minimize damage to land or property. Crews shall endeavor to avoid marring the lands. Ruts and scars shall be obliterated, damage to ditches, terraces, roads and other features of the land shall be corrected, and the disturbed land beyond the access roads and structure landings shall be restored, as nearly as practical, to its original condition before final acceptance of the work.

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Erosion control measures shall be installed to minimize the transport of eroded sediments to streams and other waterways. Erosion control measures may include, but are not necessarily limited to, straw bales and silt fences.

E. Road Cross Sections

This section provides road cross sections, including required dimensions, cleared right-of-way width, and other information. See general road construction notes in Section G and references in Section H.

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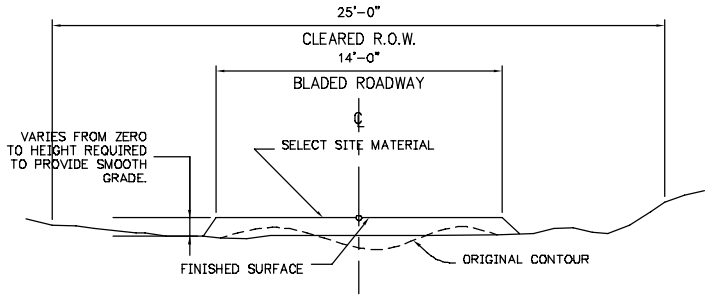
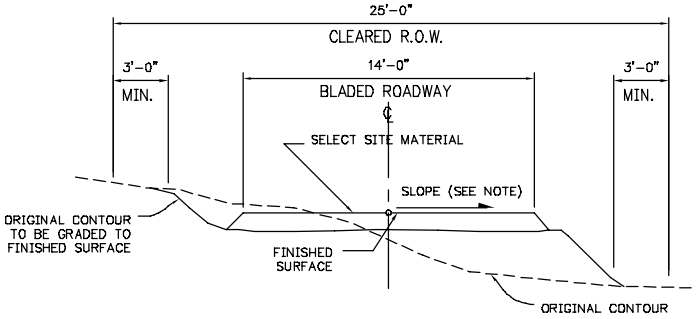
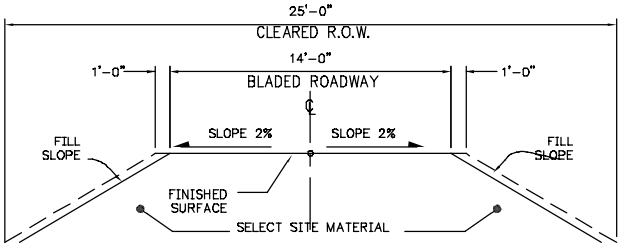


TYPICAL SECTION ON FLAT GROUND

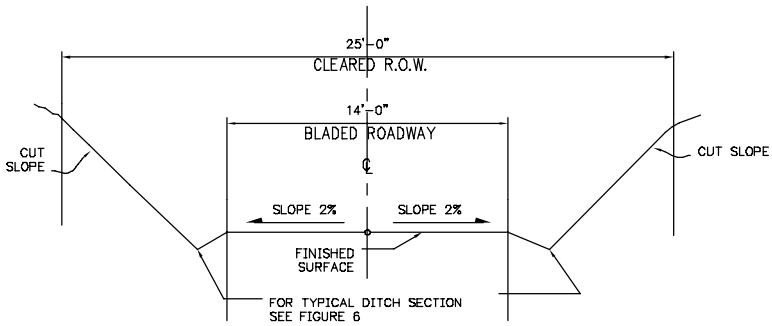


NOTE:
PROVIDE "OUTSLOPED" ROAD CROSS-SECTION, BY GRADING ROADS TO SLOPE IN THE SAME DIRECTION AS THE SURROUNDING TOPOGRAPHY. SO THAT THE UPHILL EDGE OF THE ROAD IS HIGHER THAN THE DOWNHILL EDGE. BESIDES ALLOWING RUNOFF TO EXIT THE ROADWAY IN AS SHORT A DISTANCE AS POSSIBLE. THIS ELIMINATES THE NEED FOR ROADSIDE DITCHES. PROVIDE A MINIMUM 2% OUTSLOPE ON ROADS WITH GRADES AS STEEP AS 15% ON STEEPER ROADS. PROVIDE 4% OUTSLOPE. AVOID OUTSLOPED ROADS WHERE THEY WOULD DIRECT RUNOFF ONTO ERODIBLE FILL, EMBANKMENTS OR WHERE THEY WOULD CAUSE OFF-CAMBER CURVES.

TYPICAL "OUTSLOPE" SECTION



TYPICAL FILL SECTION



TYPICAL THROUGH CUT SECTION

Figure 1—Typical Road Sections for Different Terrains

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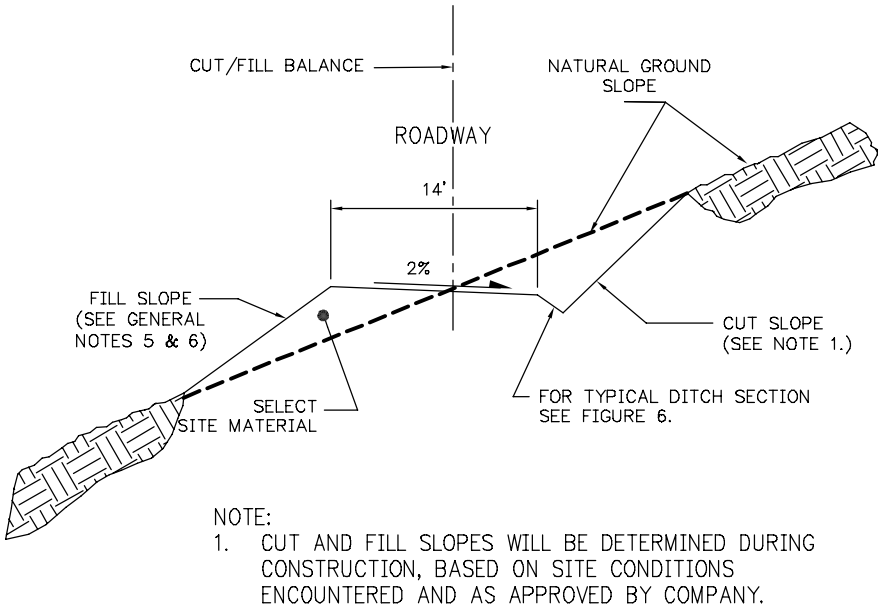

Figure 2—Typical Cut and Fill Insloped Road Section for Natural Side Slopes Less Than 30 Percent (15□)

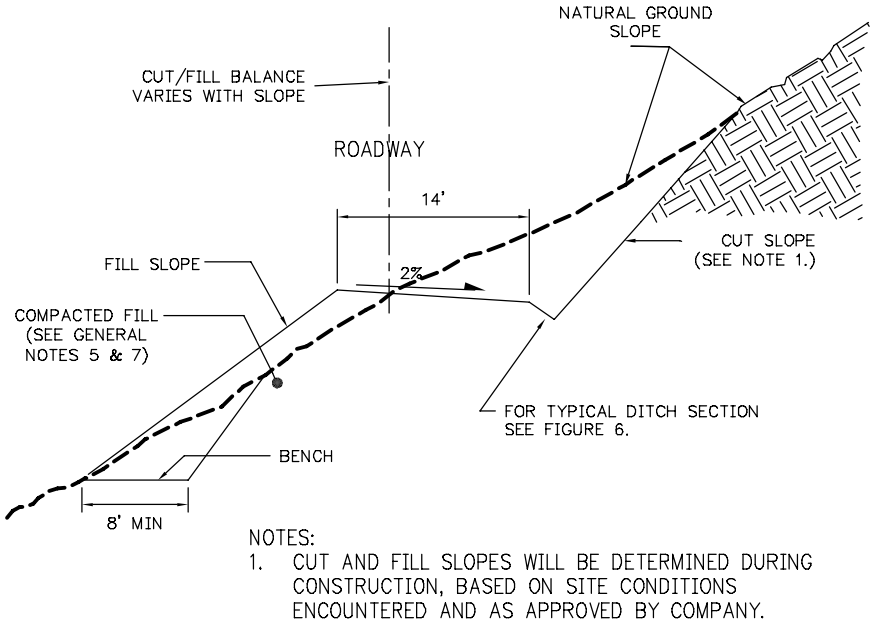

Figure 3—Typical Cut and Fill Insloped Road Section for Natural Side Slopes Greater Than 30 Percent (15□) and Less Than 60 Percent (30□).

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Engineer (C. Wright): CLW
Standards Manager (G. Lyons): GS

Roads—Construction

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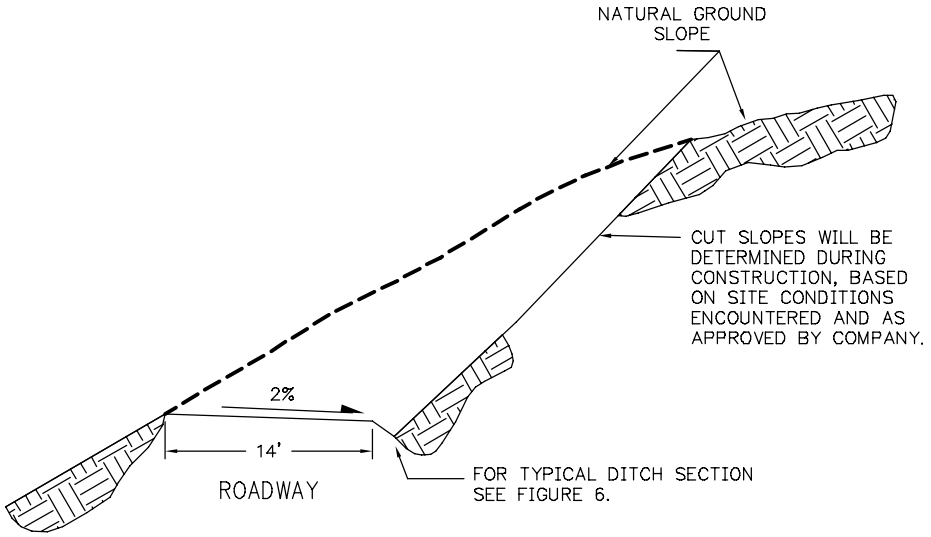

Figure 4—Typical Cut and Fill Section
for Natural Side Slopes Greater than 60 Percent (30□).

F. Typical Ditch Section

Typical ditch construction is depicted in Figure 6. Many of the road cross sections shown above use this ditch construction.

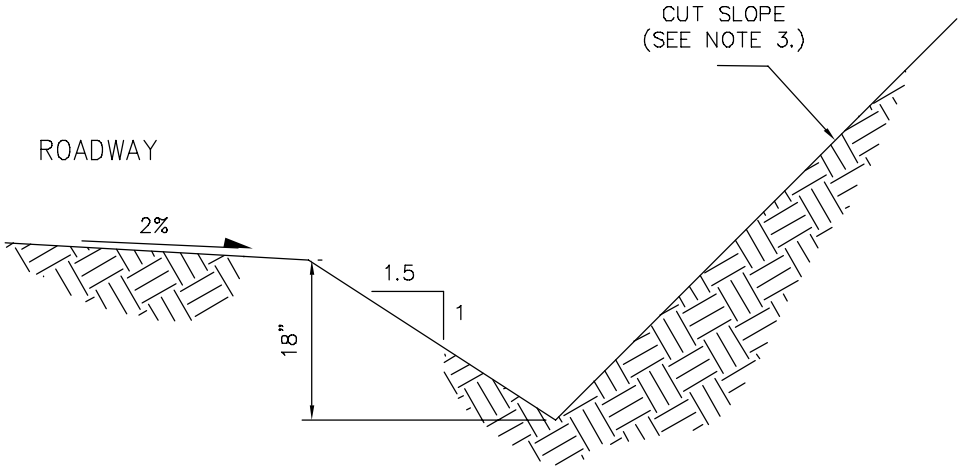

Figure 5—Ditch Section

Notes:

1. Slope the ditch so that it will drain; ditch shall have a minimum slope of 1 percent and not to exceed 3 percent.
2. Remove all soil, rock, and other material loosened by grading from ditch.
3. Cut slopes will be determined during construction based on site conditions and as approved by the company representative.

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G. General Road Construction Notes

1. Roads shall follow natural contours as much as practical.
2. Maximum grade for roads shall be 10 percent. Grades up to 20 percent will be allowed for a distance of 1000 feet where unavoidable and approved by the company.
3. Radius of curves shall be 200 feet, with a minimum of 80 feet when approved by company. When curves are less than 200 feet, roadbed shall be widened as shown in Table 1.
4. Cut and fill slopes will be determined during construction based on site conditions encountered and as approved by the company.
5. Unless specified otherwise by the company, fill material shall consist of site material excavated from RG-1 cuts. Fill material shall have a maximum particle size of 12″.
6. Fills placed on side slopes of 30 percent or less shall be placed in nominal 9″ lifts and compacted by walking in with at least four passes of earthwork equipment.
7. Fills placed on side slopes greater than 30 percent shall be placed in nominal 12″-thick lifts and compacted to at least 90 percent of the maximum dry density as determined by the ASTM D 696 method of compaction.
8. Allow 1′ additional road width on fill slopes for sloughing. When fills are over 6′ high at shoulder, allow 2′ additional road width.
9. Road construction across wetland areas may require placement of fragmented 6″ minus rock. Rock shall be placed in 8″-thick lifts and compacted by a heavy dozer or vibratory roller until well keyed. RB-(1) rock will be provided and installed by the contractor. Proper construction shall be use in wetlands so conditions as shown in Figure 7 do not develop.
10. Geotextile fabric material shall consist of MIRAF1212 OHP or equivalent, as approved by the company.

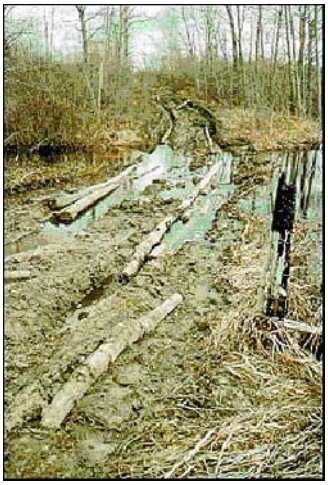

Figure 6—Poor Road Construction in Wetland Area

Table 1—Road Width for Different Road Curves

Curve Radius (feet)	Roadbed Width (feet)
200 or >	14
150 to 200	16
100 to 150	18
80 to 100	20

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H. References

1. *Handbook for Forest and Ranch Roads*, William E. Weaver, PHD. and Danny K. Hagans, 1994.

2 *A Landowner's Guide to Building Forest Access Roads,* United States Department of Agriculture, Forest Service, Northeastern Area State and Private Forestry, July 1998.

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Roads—Culvert Installation

A. Scope

This standard provides information about the construction of surface drainage and the installation of culverts. It is impossible to over-emphasize the importance of drainage in maintaining stable roads and protecting water quality. Roads should be designed and constructed to cause minimal disruption of natural drainage patterns. Provisions for two components of road drainage should be included in every road project: 1) road-surface drainage (including drainage which *originates* from the cutbank, road surface, and fill-slope), and 2) hill-slope drainage (including drainage from large springs, gullies, and streams which *cross* the road alignment).

B. Determining Culvert Diameter

Use pipe no smaller than 24″ in diameter. A drainage table provides help in determining the proper size culvert (see Table 1 and Table 2). The following example illustrates how to choose pipe size (Table 1) using the drainage table (Table 2). To use this method, you will need information on slope, soils, and cover.

Example: The area to be drained is 70 acres on steep slopes with heavy soils and moderate cover. In Table 2 under C opposite 70, find area required: 10.3 square feet. Under the area table for round pipe (Table 1), the pipe size should fall between 42″ and 48″. Use 42″ pipe with an area of 9.6 square feet. If a wood or other type of box culvert is planned, one 3′ by 3.5′ pipe would furnish the required area.

Table 1—Size of Round Pipe Needed for Area of Waterway

Area (square feet)	Pipe diameter (inches)
1.25	24
1.80	24
3.10	24
4.90	30
7.10	36
9.60	42
12.60	48
15.90	54
19.60	60
23.80	66
28.30	72
33.20	78
38.50	84
44.20	90

Source: Figure 45, Haussman and Pruett 1978, p. 36

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Table 2—Drainage Table Based on Talbot's Formula for Rainfall
1-1/4″ per Hour

Acres	Impervious 100% runoff †C=1.00	Steep slopes Heavy soils Moderate cover C=0.80	C=0.70	Moderate slopes Heavy to light soils Dense cover C=0.60	C=0.50	Gentle slopes Agricultural soil & cover C=0.40	C=0.30	Flatland Previous soils C=0.20
	Area required for waterway Square Feet							
2	0.5	0.4	0.4	0.3				
4	0.9	0.7	0.6	0.5				
6	1.2	1.0	0.8	0.7	0.6	0.5		
8	1.5	1.2	1.0	0.9	0.7	0.6		
10	1.7	1.4	1.2	1.0	0.9	0.7	0.3	
20	2.9	2.3	2.0	1.8	1.5	1.2	0.5	
30	4.0	3.2	2.7	2.4	2.0	1.6	0.5	0.3
40	4.9	3.9	3.4	3.0	2.5	2.0	0.9	0.4
50	5.8	4.7	4.0	3.5	2.9	2.3	1.2	0.6
60	6.7	5.4	4.6	4.0	3.4	2.7	1.5	0.8
70	7.5	6.0	5.2	4.5	3.8	3.0	1.8	1.0
80	8.3	6.7	5.8	5.0	4.2	3.3	2.0	1.2
90	9.1	7.3	6.3	5.5	4.6	3.6	2.3	1.4
100	9.9	7.9	6.8	5.9	4.9	3.9	2.5	1.5
150	13.5	10.6	9.3	8.0	6.7	5.4	2.7	1.7
200	16.6	13.4	11.5	10.0	8.4	6.7	2.9	1.8
250	19.8	15.8	13.6	11.9	9.9	7.9	4.0	2.0
300	22.9	18.1	15.5	13.6	13.5	9.0	5.0	2.7
350	25.5	20.3	17.5	15.3	12.7	10.1	5.9	3.3
400	28.0	22.5	19.5	17.0	14.0	11.1	6.8	4.0
450	30.9	24.9	21.0	18.5	15.3	12.1	7.5	5.1
500	33.4	26.4	23.0	20.0	16.6	13.3	8.4	5.6
600	38.5	30.8	26.3	23.0	19.0	15.2	9.0	6.2
700	43.0	34.2	29.8	26.0	21.5	17.0	9.9	6.6
800	48.0	38.1	32.9	28.5	23.8	19.0	11.4	7.7
900	52.0	41.5	35.9	31.1	26.0	20.8	12.9	8.6
1000	56.5	45.0	38.9	34.0	28.3	22.5	14.3	9.5

* See Table 1 for size of pipe needed.

† C is the constant factor based on a combination of how much water the soil can hold, slope, and cover. C = .70 is adequate for most conditions prevailing in the Northeast. C = 1.00 represents complete runoff of precipitation (e.g., rock surfaces).

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Table 3 provides a simplified method for determining culvert size. To use this table, determine the size of the drainage area (in acres) above the stream crossing as well as the expected life of the culvert. A private consultant may provide assistance determining the size of a culvert. Make sure they do not size the culverts for a 50- or 100-year storm, unless that is what is required. For low-traffic or temporary roads, a flood frequency of 20 years can be used.

Table 3—Culvert Sizes by Drainage Area

	Recurrence interval (years)		
	10	20	50
Area (acres)	**Culvert diameter (inches)**		
10	24	24	18
20	24	24	20
30	24	24	24
40	24	24	26
50	24	24	28
60	24	24	28
70	24	26	30
80	24	26	30
90	24	28	32
100	26	28	34
125	28	30	36
150	28	32	38
175	30	34	40
200	32	36	42

Source: Table 3, Helvey and Kochenderfer 1988, p. 125

C. Determining Culvert Lengths

The following simplified procedure can be used to determine culvert lengths needed for new stream crossings or ditch-relief drains. Refer to Figure 1 for specific locations and distances described in the step-by-step procedure. A complete example follows these instructions.

1. Estimate the depth of the fill (F) at the running surface on the inside of the road above the culvert inlet (point “a”).
2. Additional width (C) due to fill is then estimated as 1.5 times the fill depth (F) (that is, all fill slopes are assumed to be 1.5:1 in steepness).
3. Add half the road width (1/2 W) and the fill width (C). Measure this distance horizontally upstream from the center line of the road, and place stake at location A. The horizontal

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distance must be converted to slope distance before you can tape it off on the ground. Use Table 4 to convert horizontal distance to slope distance (on-the-ground distance).

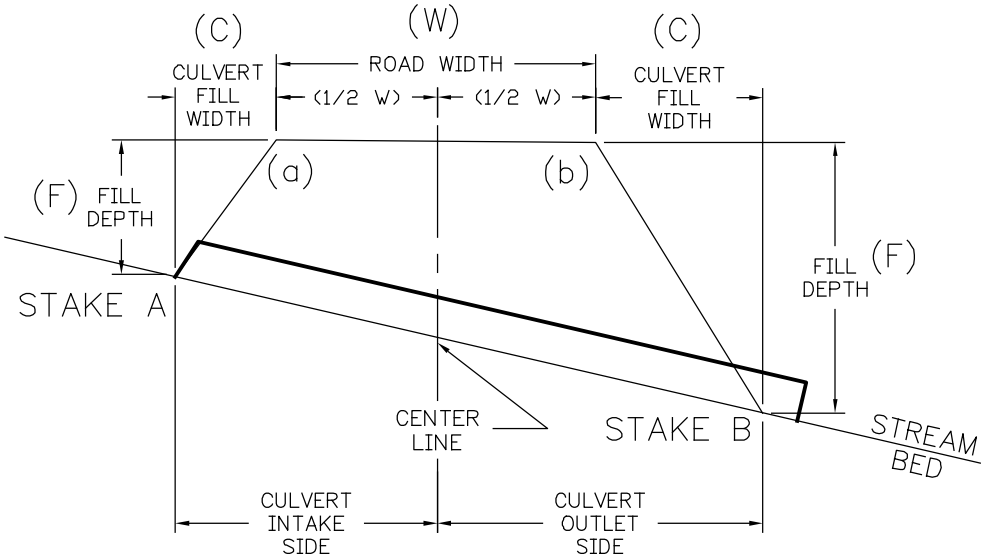

Figure 1—Culvert Length

4. Repeat steps 1 through 3 for the culvert outlet side of the crossing and place stake at location B.
5. Measure the slope length between stakes A and B. This measurement, plus two to four extra feet, is the length of culvert needed for the installation. The extra several feet are added to extend the inlet and outlet beyond the edge of the fill.

   Forty-four feet horizontal distance equals 52.4 feet slope distance on a 65 percent slope.

   horizontal distance × correction factor = slope distance

   (44ft) × (1.19) = 52.4′

   Example: What culvert length is needed for a 14′ wide road crossing a stream with a 55 percent gradient? The estimated inside fill-depth, above the culvert inlet, will be 6′ and the fill-depth above the outlet will be 13′.

   Step 1: Estimated depth of fill (F) at culvert inlet = 6′

   Step 2: (C) = 1.5 × 6′ = 9′

   Step 3: 14′ wide road (W), so 1/2 × 14′ = 7′

   Stake A (the location of the culvert inlet) should be placed on the ground a distance of (9′ + 7′) = 16 horizontal feet up the stream channel from the flagged centerline of the road. According to the correction table, 16 feet horizontally on a 55 percent slope is 18.2′ slope distance (16′ × 1.14 = 18.2′).

   Place the inlet stake (A) 18.2′ up the channel from the centerline of the road.

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Step 4: Estimated depth of fill (F) at culvert outlet =13′

Step 5: (C) = 1.5 ×13′ = 20′

Step 6: 14′ wide road (W), so 1/2 × 14 = 7′

Stake B (the location of the culvert outlet) should be placed on the ground a distance of (13′ + 20′) = 33 horizontal feet down the stream channel from the flagged centerline of the road. According to the correction table, 33 feet horizontally on a 55 percent slope is 37.6′ slope distance (33′ × 1.14 = 37.6′0.

Place the outlet stake (B) 37.6 ′down the channel from the centerline of the road.

Step 7: Length of culvert needed = 18.2′ + 37.6′ = 55.8′ or about 56′.

Approximately 2′–4′ should be added to this length to make sure the culvert inlet and outlet extend sufficiently beyond the base of the fill.

Final culvert length to be ordered and delivered to the site = 56 ′+ 4 ′= 60 ′.

Table 4—Slope Correction Factors to (C) on Vertical-Horizontal Distance to Slope Distance

Hill slope or stream channel gradient (%)	Correction factor (multiplier)	Hill slope or stream channel gradient (%)	Correction factor (multiplier)
10	1.00[1]	45	1.10
15	1.01	50	1.12
20	1.02	55	1.14
25	1.03	60	1.17
30	1.04	65	1.19
35	1.06	70	1.22
40	1.08	75	1.25

[1] For a slope of 10 percent or less, no correction factor is needed.

D. Culvert Installation for Ditch Relief

Insloped roads should be constructed: 1) where road-surface drainage discharged over the fillslope would cause unacceptable erosion or discharge directly into stream channels, 2) where fillslopes are unstable, or 3) where outsloping would create unsafe conditions for use. It is generally preferable to outslope road surfaces in order to disperse road-surface runoff before it has a chance to concentrate.

Insloped roads should be built with an inside drainage ditch to collect and remove road surface runoff (TA 501, *Roads—Construction*). Roads steeper than about 8 percent may be too steep for an inside ditch because of the potential for gullying in the ditch. Inside ditches should also be drained at intervals sufficient to prevent ditch erosion or

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outlet gullying, and at locations where water and sediment can be filtered before entering a watercourse. Filtering can be accomplished with thick vegetation, gentle slopes, settling basins, or filter windrows of woody debris and mulches secured to the slope.

As with outsloped roads, steep insloped road surfaces may be difficult to drain. Rolling dips (for permanent, surfaced roads and seasonal roads) or waterbars (for seasonal or temporary, unsurfaced roads) should be constructed at intervals sufficient to disperse road surface runoff from steep road segments. See TA 503, *Roads—Water Bars and Water Dips* for more information.

Ditches and culverts need occasional maintenance to maintain proper flow. Annual and storm-period inspection can prevent small problems from growing into large failures. When ditches become blocked by cutbank slumps, they need to be cleaned and the spoil deposited in a stable location. However, excessive maintenance (i.e., grading) can cause continuing and persistent erosion, sediment transport, and sediment pollution to local streams. It may also remove rock surfacing.

Ditch relief culverts should be designed and installed along the road at intervals close enough to prevent erosion of the ditch and at the culvert outfall, and at locations where collected water and sediment is not discharged directly into watercourses (Table 5).

Table 5—Maximum Suggested Spacing for Ditch Relief Culverts (ft)

Road grade	**Soil Credibility**				
(%)	**Very High**	**High**	**Moderate**	**Slight**	**Very Low**
2	600–800				
4	530	600–800			
6	355	585	600–800		
8	265	425	525	600–800	
10	160	340	420	555	
12	180	285	350	460	600–800
14	155	245	300	365	560
16	135	215	270	345	490
18	118	190	240	310	435

On new roads, ditch flow should be directed into a culvert and discharged into buffer areas and filter strips before it reaches a watercourse crossing. Ditches should neither be discharged directly into the inlet of a watercourse crossing culvert, nor should ditch relief culverts discharge into a watercourse without first directing flow through an adequate filter strip. In addition to installing ditch relief culverts on either approach to watercourse crossings, it is advisable to consider installing ditch drains before curves, above and below through-cut road sections, and before and after steep sections of the road.

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If a ditch is capable of transporting and delivering sediment to a Class I or Class II watercourse during a flood event, it can be said to function the same as a Class III watercourse. It has a bed and a bank, and it can transport sediment. Ditches which drain directly into watercourse-crossing culverts should be treated and protected from disturbance and erosion, just as is a Class III watercourse. Ditch relief culverts should be installed across ditched roads before water course crossings so that water and sediment can be filtered before reaching the stream.

Ditch relief culverts do not need to be large, since they carry flow only from the cutbank, springs, and a limited length of road surface. In areas of high erosion and/or storm runoff, nominal ditch relief culvert sizes should be 18″, but ditch relief culverts should never be less than 15″ diameter. Smaller culverts are too easily blocked (Figure 2). Generally, culverts should have a grade at least 2 percent greater than the ditch which feeds it to prevent sediment buildup and blockage. Where possible, ditch relief culverts should be installed at the gradient of the original ground slope, so it will emerge on the ground surface beyond the base of the fill. If this is not possible, the fill below the culvert outlet should be armored with rock or the culvert fitted with an anchored downspout to carry erosive flow past the base of the fill. Culverts should never be “shot-gunned” out of the fill, thereby creating highly erosive road drainage waterfalls (Figure 3).

Figure 2—Undersized Culvert

Figure 3—Culvert Not Installed at the Existing Stream Gradient

A 10 percent grade to the culvert will usually be self-cleaning. The culvert should be placed at a 30° angle to the ditch to improve inlet efficiency and prevent plugging and erosion at the inlet. The pipe should be covered by a minimum of 18″ of compacted soil, or to a depth of 1.5 times the culvert diameter, whichever is greater. Finally, inlet protection such as rock armoring or drop structures can be used to help minimize erosion, slow flow velocity, and settle sediment before it is discharged through the pipe.

E. Culvert Installation for Stream Crossings

The importance of proper planning for stream crossings cannot be overstated. If stream crossings are not planned and located before road construction begins, serious problems may arise, including unintended damage to natural resources. Requirements for stream crossings vary from state to state. Often, a permit is required; check with the water division of the local natural resources agency.

Culverts can be considered dams that are designed to fail. The risk of culvert failure is substantial for most crossings, so *how* they fail is critical. In the upper sketch in

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Figure 4, the crossing has failed and the road grade has diverted the stream down the road, resulting in severe erosion and downstream sedimentation. Such damage to aquatic habitats can persist for many years. Stream diversions are easy to prevent, as illustrated by the lower sketch, in which the road grade was such that a failed crossing caused only some loss of road fill.

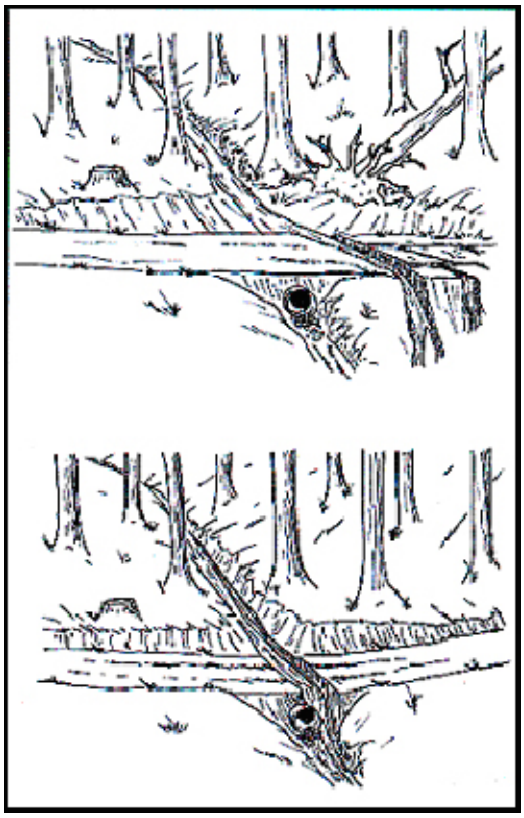

Figure 4—Stream Crossing Failures

Culverts should be installed as road work progresses. The culvert and its related drainage features should be installed via the following steps:

1. Place debris and slash to be used as a filter system, if needed.
2. Construct sediment ponds, if needed.
3. Complete downstream work first, such as energy dissipating devices and large rock riprap.
4. Route stream around work area until pipe is installed.
5. Construct pipe inlet structure.
6. Install culvert pipe.

A culvert inlet should be placed on the same level as the stream bottom. Where the culvert inlet has to be lower than the drainage gradient, a drop box can be constructed. The box provides a place for sediment to settle before water enters the culvert. Drop boxes require frequent maintenance.

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Install culvert pipes as near as possible to the gradient of the natural channel and so there is no change in the stream bottom elevation (Figure 5). Culverts should not cause damming or pooling. Seat the culvert on firm ground and compact the earth at least halfway up the side of the pipe to prevent water from leaking. Pipe culverts must be adequately covered with fill; the rule is a minimum of 30″ or 1.5 times the culvert diameter, whichever is greater.

Figure 5—Culvert Installed at Channel Gradient

If adequate cover cannot be achieved, an arch pipe or two small culverts should be installed. The cover must also be compacted to prevent settling in the road. Debris-laden material should not be used to cover pipe culverts.

The following are additional guidelines for installing culverts in streams:

- Limit construction activity in the water to periods of low or normal flow.
- Minimize use of equipment in streams.
- Use soil stabilization practices on exposed soil at stream crossings. Seed/mulch and install temporary sediment control structures, such as silt fences made of straw bales or geotextiles, immediately after road construction. Maintain these practices until the soil is permanently stabilized.
- Use materials that are clean, non-toxic, and which do not erode.

To prevent erosion and under-cutting of the inlet end of the culvert, provide a headwall. Sandbags containing some cement mixed with the sand, durable logs, concrete, or hand-placed riprap are suitable.

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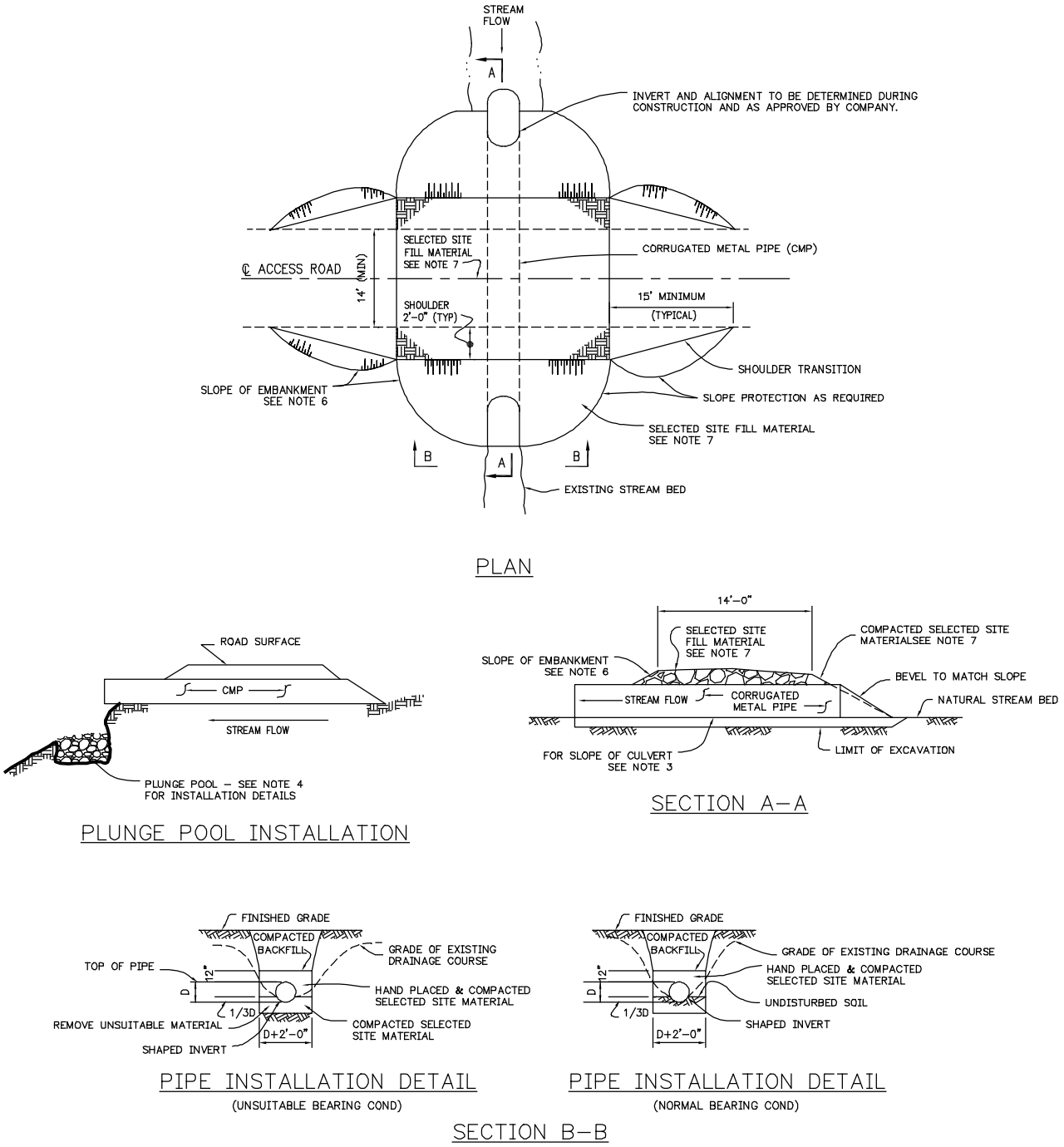

Figure 6—Stream Crossing Culverts

Installation Notes for Figure 6:

1. Culverts for existing drainage shall be aligned with the drainage.

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2. Culverts for roadway and ditch drainage shall be oriented at an angle of 30° to 45° to the roadway. See TA 503, *Roads—Water Bars and Water Dips*, for installation instructions.
3. Culverts shall be sloped a minimum of 1 percent or at least 1 percent steeper than the existing drainage.
4. When the culvert outlet is above grade, a plunge pool shall be constructed with length and width equal to two pipe diameters and a depth of one pipe diameter. Line plunge pool with geotextile fabric filled with 2″ to 8″ rock.
5. Culvert clogging debris located within 50′ of a culvert inlet shall be removed.
6. Cut and fill slopes will be determined during construction based on site conditions and as approved by the company.
7. See TA 501, *Roads—Construction*, for general road construction information.
8. Cover over culverts shall be 18″ or 1.5 times the culvert diameter, whichever is greater. To minimize damage from culvert failure, height of fill over culverts shall be as close to minimum as practical.
9. Outlets on culverts with pipe slopes greater than 3 percent shall be protected with a 30′ × 10′ strip of geotextile fabric fastened to culvert as a bib. Fabric shall be weighted down with 6″to 8″ rock to slow runoff.
10. Bottom of culvert shall be cushioned with fine-grain site material when installed over large rocks.

F. Fords

A ford is an alternative way to cross a water course where the streambed has a firm rock or coarse gravel bottom; the approaches are low and stable enough to support traffic; the stream is small to medium-sized, with water depth less than three feet and stream flows not exceeding 6 fps; and vehicle traffic is light. Dry fords can often be installed and used with minimal impact to the channel system.

The following standards apply when constructing a ford:

1. Install wing ditches, water-bars, dips, and level spreaders before the crossing. These structures should disperse runoff into an established and stable stream buffer.
2. If corduroy, coarse gravel, or gabion is used to create a driving surface, it should be installed flush with the streambed to minimize erosion and to allow fish passage.
3. Crossings should be at right angles to the stream.
4. Stabilize the approaches by using non-erodible material. The material should extend at least 50 feet on both sides of the crossing.
5. Requirements for stream crossings vary from state to state. Often a permit is required; check with the water division of the local natural resources agency.
6. Fords shall be designed for a low-maintenance long-term life. Rock size and grading, depth of rock, fabric underlayment, etc. and approaches shall be designed for the equipment expected to use the road.

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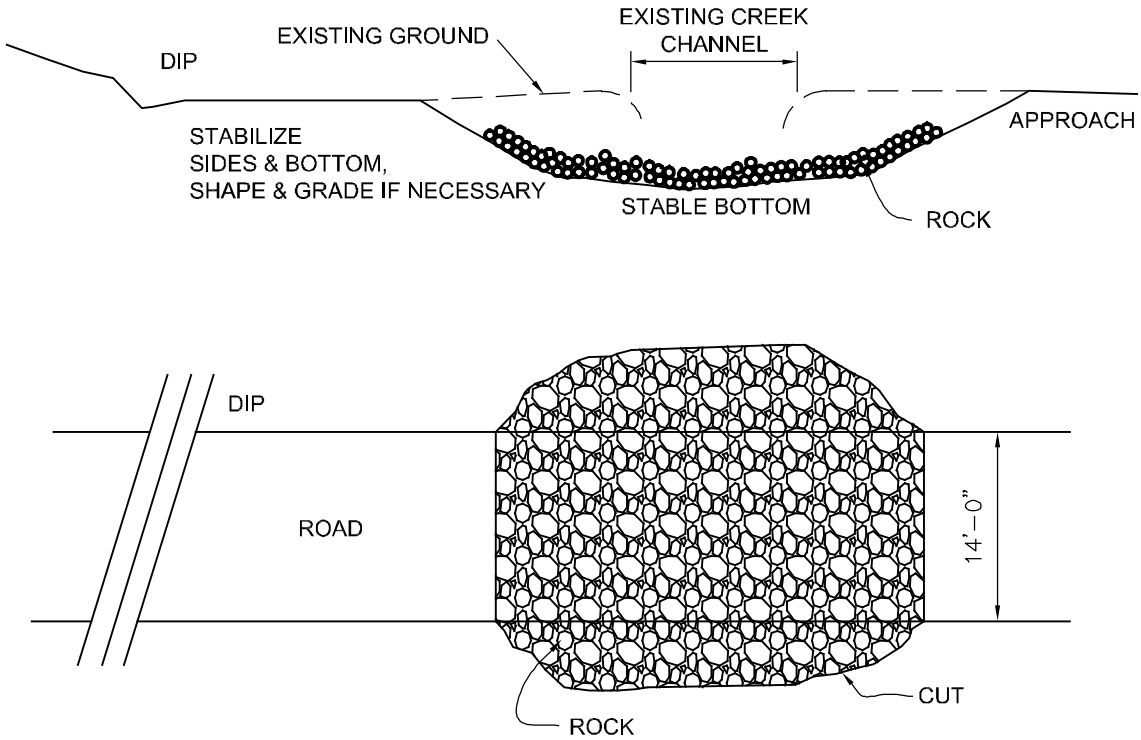

Figure 7 – Ford Stream Crossing

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ATTACHMENT C
IN-LIEU FEE
EXAMPLES

The following two ILF programs were identified in Idaho and serve as an example of how to set up an in lieu:

Ducks Unlimited Program

State	ID
Corps District	Walla Walla
Program Type	Corps
Sponsor	Ducks Unlimited
Sponsor Requirements	Ducks Unlimited
Administrator	U.S. Army Corps of Engineers, Walla Walla District
Completed Projects	1
Pending Projects	0
Total Acres of Permitted Losses	1
Total Acres Replaced	100
Total Feet of Permitted Losses	0
Delineated Service Areas	No
Description of Service Area	The Corps tries to keep the restoration as local as possible. The projects have occurred in the same drainage basin as the impacts.
Contact Information	Mike Doherty
Contact Address	U.S. Army Corps of Engineers Walla Walla District 201 North 3rd Avenue Walla Walla, WA 99362-1876
Replacement Ratio Determination	Replacement ratios were not used. The Corps offered a project that it wanted done to the applicant and the applicant had a choice of whether to accept the project.
Fee Amount Calculated	For the Burlington Northern project, $265,000 was charged, based on the amount of money needed to complete the restoration project.
Success Criteria	The success criteria include vegetation planning, earthworks to ensure everything is at the right elevation, and required plantings. Monitoring for survival is required.
Protection Mechanisms	Project completed in federal wildlife refuge
Entity Holding Funds	Ducks Unlimited
Funds To Date	$265,000.00
Date of Information	8/30/2001

The Nature Conservancy In-Lieu-Fee Program

State	ID
Corps District	Walla Walla
Program Type	Corps
Sponsor	The Nature Conservancy
Sponsor Requirements	The Nature Conservancy
Administrator	U.S. Army Corps of Engineers, Walla Walla District
Completed Projects	1
Pending Projects	0
Total Acres of Permitted Losses	4
Total Acres Replaced	100.8
Total Feet Replaced	560
Delineated Service Areas	No
Description of Service Area	They try to keep the restoration as local as possible. The projects have occurred in the same drainage basin as the impacts.
Contact Information	Mike Doherty
Contact Address	USACE, Walla Walla District 201 North 3rd Avenue Walla Walla, WA 99362-1876
Replacement Ratio Determination	Replacement ratios were not used. The Corps offered a project that it wanted done to the applicant and the applicant had a choice of whether to accept the project.
Success Criteria	The success criteria include vegetation planning, earthworks to ensure everything is at the right elevation, and required plantings. Monitoring for survival is required.
Protection Mechanisms	conservation easement
Entity Holding Funds	Bonner Boundary Board
Funds To Date	$140,000.00
Date of Information	8/30/2001

ATTACHMENT D
PROPOSED IN-LIEU FEE MITIGATION INSTRUMENT

PROPOSED IN-LIEU FEE MITIGATION INSTRUMENT

The Companies would prepare a prospectus for the proposed ILF program that would include the following:

1. Objectives.
2. How the ILF would be established and operated.
3. Proposed service area(s).
4. Need and technical feasibility.
5. Ownership arrangements and long-term management strategy.
6. Sponsor qualifications.
7. Compensation planning framework.
8. Description of program account.

The prospectus would be provided to the USACE and the USACE is responsible for public notice and coordination with the IRT. If the USACE determines that the proposed ILF program has the potential to provide compensatory mitigation, the Companies would prepare a Draft Instrument. The Draft Instrument would include the following elements:

1. Service area.
2. Accounting procedures.
3. Provision stating legal responsibility to provide compensatory mitigation.
4. Default and closure provisions.
5. Reporting protocols.
6. Compensation planning framework.
    a. Geographic service area(s)
    b. Description of threats
    c. Analysis of historic resource loss
    d. Analysis of current resource conditions
    e. Goals and objectives
    f. Prioritization strategy
    g. Preservation justification
    h. Description of stakeholder involvement
    i. Long-term protection and management strategies
    j. Strategy for periodic evaluation and reporting
7. Advance credits.
8. Method for determining project specific credits and fees & draft fee schedule
9. In-lieu fee program account.
10. Transfer of long-term management responsibilities.
11. Financial arrangements for long-term management.
12. Other information deemed necessary by the USACE district engineer.

The Draft Instrument is not a ILF mitigation plan. The Companies would also develop an ILF mitigation plan, concurrent with, and dependent upon, the ILF Instrument. The ILF mitigation plan would include:

1. Objectives.
2. Site selection (further described in §332.3(d)).
3. Site protection instrument (further described in §332.7(a)).
4. Baseline information.
5. Determination of credits (further described in §332.3(f)).
6. Mitigation work plan.
7. Maintenance plan.
8. Performance standards (further described in §332.5).
9. Monitoring requirements (further described in §332.6).
10. Long-term management plan (further described in §§332.7 and 332.8(u)).
11. Adaptive management plan (further described in §332.7(c)).
12. Financial assurances (further described in §332.3(n)).

The ILF mitigation plan is not discussed further in this Appendix.

Proposed Draft ILF Instrument

1.0 Service Area

The geographic service area[2] for the (Gateway West ILF Program) is defined as (*specify the geographic unit*). Idaho Power Company (IPC) and Rocky Mountain Power (RMP) (the Companies) would provide compensatory mitigation for permitted impacts within the same geographic service area in which the impacts occurs unless the district engineer, in consultation with the IRT, has agreed to an exemption. [*Insert maps of project area, impacts, service area*.] This service area was selected because the Companies, in consultation with the district engineer, has concluded that the scale is appropriate to ensure that the projects selected would be able to effectively compensate for adverse environmental impacts across the entire service area. The Companies would not accept participation from other permittees; this ILF Program has been developed for the sole use of the Companies to mitigate for unavoidable impacts to waters of the U.S. resulting from the construction, operation, and maintenance of the Gateway West 500 Kilovolt Transmission Line Project. Individual mitigation projects would be proposed for specific service areas in project-specific mitigation plans.

2.0 Accounting Procedures

The Companies shall establish and maintain a system for tracking the production of credits, credit transactions, and financial transactions between the Companies and ILF sponsor. Credit production, credit transactions, and financial transactions must be tracked on a programmatic

[2] Service area is defined as: "the watershed, ecoregion, physiographic province and/or other geographic area within which the…in-lieu fee program is authorized to provide compensatory mitigation required by DA permits.

basis (i.e., the number of available credits for the entire program by service area) and separately for each individual project.

3.0 Provisions Stating Legal Responsibility to Provide Compensatory Mitigation

(*Program Sponsor*) assumes all legal responsibility for satisfying the mitigation requirements of the Corps/state permit for which fees have been accepted (i.e., the implementation, performance, and long-term management of the compensatory mitigation project(s) approved under this agreement and subsequent mitigation plans). The transfer of liability is established by: 1) the approval of this in-lieu fee instrument; 2) receipt by the district engineer of a credit sale form/letter/certificate that is signed by the (*Program Sponsor*) and the Companies and dated (see Section (X, "Reporting protocols"); and 3) the transfer of fees from the Companies to (*Program Sponsor*).

4.0 Default and Closure Provisions

If the Corps determines that (*Program Sponsor*) has failed to provide the required compensatory mitigation in a timely manner (i.e., (*Program Sponsor*) has failed to meet performance based milestones set forth in the project-specific mitigation plan, meet ecological performance standards, submit monitoring reports in a timely manner, establish and maintain an annual ledger report and individual ledgers for each project in accordance with the provisions in Section (X, "Accounting Procedures"), submit an annual financial assurances and long-term management funding report, report approved credit transactions, complete land acquisition and initial physical and biological improvements by the third full growing season after the first advance credit in that service area is secured by a permittee, and/or otherwise comply with the terms of the instrument), the district engineer must take appropriate action to achieve compliance with the terms of the instrument and all approved mitigation plans. Such actions may include suspending credit sales, decreasing available credits, requiring adaptive management measures, utilizing financial assurances or contingency funds, terminating the agreement, using the financial assurances or contingency funds to provide alternative compensation, directing the use of in-lieu fee program account funds to provide alternative mitigation (e.g., securing credits from another third party mitigation provider), or referring the non-compliance with the terms of the instrument to the Department of Justice.

Any delay or failure of (*Program Sponsor*) to comply with the terms of this agreement shall not constitute a default if and to the extent that such delay or failure is primarily caused by any force majeure or other conditions beyond (*Program Sponsor*)'s reasonable control and significantly adversely affects its ability to perform its obligations hereunder, such as flood, drought, lightning, earthquake, fire, landslide, condemnation or other taking by any governmental body. (*Program Sponsor*) shall give written notice to the district engineer and IRT if the performance of any of its in-lieu fee projects is affected by any such event as soon as is reasonably practicable.

Either party to this agreement may terminate the agreement within 60 days of written notification to the other party. In the event that the Gateway West ILF Program operated by (*Program Sponsor*) is terminated, (*Program Sponsor*) is responsible for fulfilling any remaining project obligations including the successful completion of ongoing mitigation projects, relevant

maintenance, monitoring, reporting, and long-term management requirements. (*Program Sponsor*) shall remain responsible for fulfilling these obligations until such time as the long-term financing obligations have been met and the long-term ownership of all mitigation lands has been transferred to the party responsible for ownership and all long-term management of the project(s).

Funds remaining in the Gateway West ILF Program accounts after these obligations are satisfied must continue to be used for the restoration, establishment, enhancement, and/or preservation of aquatic resources. The Corps shall direct Gateway West ILF Program to use these funds to secure credits from another source of third-party mitigation, such as another in-lieu fee program, mitigation bank, or another entity such as a governmental or non-profit natural resource management entity willing to undertake the compensation activities. The funds should be used, to the maximum extent practicable, to provide compensation for the amount and type of aquatic resource for which the fees were collected. The Corps itself cannot accept directly, retain, or draw upon those funds in the event of a default.

5.0 Reporting Protocols

The Companies must report to the district engineer and the IRT the following information:

1. Monitoring reports, on a schedule and for a period as defined by project specific mitigation plan(s).
2. Credit transaction notifications.
3. An annual program report summarizing activity from the program account (financial and credit accounting) as detailed below.
4. An annual financial assurances and long-term management funding report as detailed below.

<u>Monitoring reports</u>

Monitoring is required of all compensatory mitigation projects to determine if the project is meeting its performance standards and if additional measures are necessary to ensure that the compensatory mitigation project is accomplishing its objectives. If (*Program Sponsor*) fails to submit reports within 90 days of the deadlines outlined in the mitigation plan(s), the Corps may take appropriate compliance action (see Section (X, “Default and closure”)). Project-specific mitigation plans would detail the parameters to be monitored, the length of the monitoring period, the dates that the reports must be submitted (e.g., first of each month), the party responsible for conducting the monitoring, the frequency for submitting monitoring reports to the district engineer, and the party responsible for submitting those monitoring reports to the district engineer and the IRT. The level of detail and substance of the reports must be commensurate with the scale and scope of the compensatory mitigation project. The Corps is required to provide monitoring reports to interested federal, tribal, state, and local resource agencies, and the public, upon request.

<u>Credit transaction notification</u>

Section (X, “Provisions stating legal liability”) establishes the terms by which the legal responsibility for compensation requirements is transferred from the Companies to (*Program*

Sponsor). These terms require (*Program Sponsor*) to submit a credit sale form/letter/certificate to the Corps. The document must be signed by the (Program Sponsor) and the permittee and dated. The credit transaction form/letter/certificate must include the permit number(s) for which (*Program Sponsor*) is accepting fees, the number of credits being purchased, and resource type(s) (e.g., Cowardin class) of credits being purchased. (Program Sponsor) must submit the signed and dated credit transaction form/letter/certificate within 10 days of receiving the fees from the permittee. A copy of each credit transaction form/letter/certificate would be retained in both the Corps' and (*Program Sponsor's*) administrative and accounting records for the Gateway West ILF Program.

Annual program report

(*Program Sponsor*) must submit an annual report (annual ledger report) to the district engineer and the IRT. The report must be made available to the public upon request. The annual program report must be submitted no later than the last day of March, or the following business day if that date falls on a federal/state holiday or weekend. The annual report must include the following information:

Program account (financial) reporting:

- All income received and interest earned by the program account for the program and by service area.
- A list of all permits for which in-lieu fee program funds were accepted by service area, including (1) Corps permit number (and/or the state permit number); (2) service area in which the authorized impacts are located; (3) amount of authorized impacts; (4) amount of required compensatory mitigation; (5) amount paid to the in-lieu fee program; and (6) date the funds were received from the permittee.
- A description of in-lieu fee program expenditures/disbursements from the account (i.e., the costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration) for the program and by service area.

Ledger (credit) reporting:

- The balance of advance credits and released credits at the end of the report period for the program and by service area.
- The permitted impacts for each resource type.
- All additions and subtractions of credits.
- Other changes in credit availability (e.g., additional credits released, credit sales suspended).

Financial assurances and long-term management funding report

(Program Sponsor) must submit an annual report on financial assurances and long-term management to the district engineer and the IRT. (Program Sponsor) is required to give the Corps at least (XX days; to be determined by the sponsor in consultation with the Corps and IRT) advance notice if required financial assurances would be terminated or revoked. In addition, the financial assurance instrument must be written in such a way that it is the obligation of the bonding company or financial institution to provide the Corps notice. Inclusion of a summary of any changes to the financial assurances in the reporting year does not alter

this separate obligation. The financial assurances and long-term management funding report must include:

- Beginning and ending balances of the individual project accounts providing funds for financial assurance and long-term management.
- Deposits into and any withdrawals from the individual project accounts providing funds for financial assurance and long-term management.
- Information on the amount of required financial assurances and the status of those assurances, including their potential expiration for each individual project.

6.0 Compensation Planning Framework

The compensation planning framework must include the following ten elements:

1. The geographic service area(s), including a watershed based rational for the delineation of each service area.
2. A description of the threats to aquatic resources in the service area(s), including how the in-lieu fee program would help offset impacts resulting from those threats.
3. An analysis of historic aquatic resource loss in the service area(s).
4. An analysis of current aquatic resource conditions in the service area(s), supported by field documentation.
5. A statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types and locations of aquatic resources the program would seek to provide.
6. A prioritization strategy for selecting and implementing compensatory mitigation activities
7. An explanation of how any preservation objectives identified above satisfy the criteria for use of preservation.
8. A description of any public and private stakeholder involvement in plan development and implementation, including coordination with federal, state, tribal and local aquatic resource management and regulatory authorities.
9. A description of the long term protection and management strategies for activities conducted by the in-lieu fee program sponsor.
10. A strategy for periodic evaluation and reporting on the progress of the program in achieving the goals and objectives above, including a process for revising the planning framework as necessary.

7.0 Advance Credits

Upon approval of this instrument for Gateway West ILF Program, (*Program Sponsor*) is permitted to sell advance credits in the amount indicated in the chart below. The number of advance credits available for sale varies by service area, as indicated. The number of advance credits available for sale is specified by service area, as indicated in (*the chart*). As the milestones in the schedule are reached (i.e., restoration, creation, enhancement and/or preservation is implemented), advance credits convert to released credits. At a minimum, credits would not be released until (*Program Sponsor*) has obtained IRT approval of the mitigation plan for the site, has achieved the applicable milestones in the credit release schedule, and the credit releases have been approved by the district engineer.

Once (*Program Sponsor*) has sold all of its advance credits, no more advance credits may be sold until an equivalent number of credits has been released in accordance with the approved credit release schedule outlined in a project-specific mitigation plan. Once all advance credits are fulfilled, an equivalent number of advance credits may be made available for sale, at the discretion of the district engineer and IRT. (*Program Sponsor*) shall complete land acquisition and initial physical and biological improvements by the third full growing season after the sale of advance credits. If (*Program Sponsor*) fails to meet these deadlines, the district engineer must either make a determination that more time is needed to plan and implement an in-lieu fee project or, if doing so would not be in the public interest, direct (*Program Sponsor*) to disburse funds from the Gateway West ILF Program account to provide alternative compensatory mitigation to fulfill those compensation obligations.

8.0 Method for Determining Project-Specific Credits and Fees and Draft Fee Schedule

The draft fee schedule section should simply include a chart or list of the fees charged by the program per unit of credit and for each wetland type provided and in each service area in which the program operates. Fees for Gateway West ILF Program shall be determined based on an analysis of the expected costs associated with the restoration, establishment, enhancement, and/or preservation of aquatic resources in [*the state/region/watershed*]. The program costs included in this analysis are those related to land acquisition, project planning and design, construction, plant materials, labor, legal fees, monitoring, remediation or adaptive management activities, program administration, contingency costs appropriate to the stage of project planning, including uncertainties in construction and real estate expenses, the resources necessary for the long-term management and protection of the in-lieu fee project, and financial assurances (including contingency costs) that are expected to be necessary to ensure successful completion of in-lieu fee projects. These fees shall be reviewed annually and updated as appropriate. Credits generated by Gateway West ILF Program shall be based on [*an appropriate assessment*
method or other suitable metric] approved by the Corps. The standard mitigation ratios for wetlands are currently (*insert chart*). The standard mitigation ratios for streams are currently (*insert chart*).

9.0 In-Lieu Fee Program Account

<u>Financial accounting</u>

Reporting requirements for financial reporting are at Section (X, “Reporting Protocol.”) The Gateway West ILF Program account would track funds accepted from permittees separately from those accepted from other entities and for other purposes (i.e., fees arising out of an enforcement action, such as supplemental environmental projects). The account would be held at a financial institution that is a member of the Federal Deposit Insurance Corporation. Any and all interest accruing from the account would be used to provide compensatory mitigation for impacts to aquatic resources. The program account would be established after this instrument is approved and before any fees are accepted. If the Corps determines that the (Program Sponsor) is failing to provide compensatory mitigation by the third full growing season after the first advance credit is secured, the agency may direct the funds to alternative compensatory mitigation projects. Additional information on failure to fulfill the terms of the instrument is

discussed in Section (X, “Default & Closure”). The Corps has the authority to audit the program account records at any time. Funds paid into the Gateway West ILF Program account may only be used for the direct replacement and management of aquatic resources. This means the selection, design, acquisition (i.e., appraisals, surveys, title insurance, etc.), implementation, and management of in-lieu fee compensatory mitigation projects. This may include fees associated with securing a permit for conducting mitigation activities, activities related to the restoration, enhancement, creation, and/ or preservation of aquatic resources, maintenance and monitoring of mitigation sites, and the purchase of credits from mitigation banks. Use of fees is explicitly prohibited for activities such as upland preservation (other than buffers), research, education and outreach, or implementation of best management practices for wetlands unless these are directly associated with the success of the mitigation and have been identified in the mitigation plan. Up to (__%) of the fees paid into Gateway West ILF Program may be used for administrative costs. Such costs include bank charges associated with the establishment and operation of the program, staff time for carrying out program responsibilities, expenses for day to day management of the program, such as bookkeeping, mailing expenses, printing, office supplies, computer hardware or software, training, travel, and hiring private contractors or consultants.

Credit accounting

(*Program Sponsor*) shall establish and maintain an annual report ledger that tracks the production of released credits for Gateway West ILF Program and for each individual in-lieu fee project. Reporting requirements for the annual report ledger are at Section (X). On the income side, (*Program Sponsor*) shall track the fees and all other income received, the source of the income (i.e., permitted impact, penalty fee, etc.), and any interest earned by the program account. The ledgers shall also include a list of all the permits for which in-lieu fee program funds were accepted, including the appropriate permit number (Corps or state permit), the service area in which the specific authorized impacts are located, the amount (acreage or linear feet) of authorized impacts, the aquatic resource type impacted by Cowardin class, the amount of compensatory mitigation required, the amount paid to the in-lieu fee program for each of the authorized impacts, and the date the funds were received from the permittee. (*Program Sponsor*) shall establish and maintain a report ledger for Gateway West ILF Program that would track all program disbursements/expenditures and the nature of the disbursement (i.e., costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration). (*Program Sponsor*) may also track funds obligated or committed, but not yet disbursed. The ledger shall also include, for each project, the permit numbers for which the project is being used to offset compensatory mitigation requirements, the service area in which the project is located, the amount of compensation being provided by method (i.e., restoration, establishment, enhancement, or preservation), the aquatic resource type(s) represented (e.g., Cowardin class), the amount of compensatory mitigation being provided (acres and/or linear feet), and the number of credits certified by the IRT. The annual report ledger shall also include a balance of advance credits and released credits at the end of the report period for each service area.

10.0 Transfer of Long-Term Management Responsibilities

After securing approval from the district engineer, (*Program Sponsor*) shall transfer long-term management responsibilities to [*name a specific land stewardship entity or "a land stewardship entity, such as a public agency, non-governmental organization, or private land manager*"]. Transfer of long term stewardship responsibilities may occur before or after performance standards have been achieved. Once long term management has been transferred to land stewardship entity, said party is thereby responsible for meeting any and all long-term management responsibilities outlined in the project-specific mitigation plan. Until such time as long-term management responsibilities are transferred to another party, (*Program Sponsor*) would be considered responsible for long-term management of the mitigation project.

11.0 Financial Arrangements for Long-Term Management

If (*Program Sponsor*) chooses to transfer the responsibilities for long-term management to a long-term steward, (*Program Sponsor*) must seek Corps' approval. The Corps must be given the option of being a signatory to any contract or other arrangement assigning the rights and delegating the responsibilities to the steward. If long-term stewardship responsibilities are transferred to (*land stewardship entity*), (*Program Sponsor*) shall also transfer the long-term management funds/account for otherwise arrange for disbursements from such funds/account to the (*land stewardship entity*).

12.0 Signatures

_____ _____

Program sponsor Date

_____ _____

District Engineer Date

_____ _____

IRT members choosing to participate Date

Appendix C-3

Greater Sage-grouse Avoidance, Minimization, and Mitigation Measures

Gateway West Transmission Line Project: Detailed Outline for Offsite Compensatory Mitigation to Offset Project Impacts to Greater Sage-grouse

Prepared by:

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

and

IDAHO POWER®
An IDACORP Company

June 15, 2012

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1. Introduction

1.1. Project Overview

Idaho Power Company and Rocky Mountain Power (Companies) propose to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV, and 500-kV electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving, access roads, multi-purpose yards, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project is designed/sited to avoid greater sage-grouse (*Centrocercus urophasianus*) leks and adhere to lek buffers and use designated energy corridors. Portions of the Project will cross suitable habitat for greater sage-grouse. As a result, the Companies, in close coordination with the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), Wyoming Game and Fish Department (WGFD), and Idaho Department of Fish and Game (IDFG) have developed a mitigation strategy to compensate for the unavoidable impact to sage-grouse habitat that may occur as a result of Project construction and operation.

1.2. Companies' Mitigation Goals

The Companies' mitigation goals include:

- identify mitigation opportunities that reduce or remove threats under the five listing factors used by the USFWS to assess the status of Endangered Species Act (ESA)-listed and candidate species,
- compliance with Wyoming Executive Order 2011-5 and other state regulatory mechanisms, and
- address primary and secondary threats identified in Idaho Executive Order 2012-02 and recommendations of the State of Idaho and the Idaho Task Force that may ultimately be adopted through regulatory mechanisms.

1.3. Mitigation Purpose

1.3.1. Mitigation Strategy for Known Impacts

Current literature identifies habitat loss/fragmentation (e.g., fire in Idaho) poses the greatest threat to sage-grouse however, the literature also indicates that conversion, noise, and human activity may also pose impacts to greater sage-grouse (refer to the Final Habitat Equivalency Analysis [HEA] report). Knowledge of the impacts of transmission structures and other tall structures on the landscape is currently lacking (Utah Wildlife in Need 2010). The Companies' mitigation strategy is to compensate for known impacts to greater sage-grouse that could occur as a result of Project construction and operation. This mitigation strategy is guided by the following:

- Sage-grouse habitat quality and quantity varies across the landscape. To ensure that habitat variability is fully captured, the HEA used a quantitative habitat metric to model the direct loss of habitat that would result from construction and operation of the Project.

- Sage-grouse habitat services lost or impacted due to the construction and operations of the Project will be replaced by either preserving at-risk habitat services or enhancing degraded habitat services through one or more methods either modeled during the HEA effort or approved by an Oversight Committee (see Section 2.4).
- Offsite compensatory mitigation projects will be defined in suitable locations as close to the Project area as possible in order to benefit the sage-grouse populations being impacted by project construction and operations but may also be directed to habitats where mitigation has greater value in providing long term benefit to sage-grouse.
- Mitigation projects that are approved and funded will result in:
    - Habitat conservation or protection in at-risk areas
    - an increase in long-term habitat availability, and/or
    - an increase in habitat quality
- The Companies will fund a program of maintenance and monitoring for each compensatory mitigation project to determine the effectiveness of the mitigation and provide guidance for future projects. Funding for maintenance and monitoring has been incorporated in the HEA and is therefore inherently part of the compensatory mitigation to be proposed.

2. Compensatory Mitigation for Gateway West

2.1. Approach to Determine Mitigation Obligation

2.1.1. Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines

The Companies have been actively working with agency personnel (refer to Appendix A for a list) to satisfy the requirements of the Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines (November 22, 2010, last revised October 22, 2011), Attachment 3.

The Framework specifies the use of a HEA, an economics model, to scale mitigation for the loss of habitat services. Habitat services include those ecosystem features (i.e., physical site-specific characteristics of an ecosystem) and ecosystem functions (i.e., biophysical processes that occur within an ecosystem) that support, in this case, greater sage-grouse populations.

The HEA for the Project produced an estimate of the permanent and interim loss of sage-grouse habitat services as a result of vegetation loss, noise, and human presence anticipated with project construction and operation. Once BLM has identified a preferred alternative, the HEA can be used to identify the sum total of modeled habitat services lost. The HEA also modeled feasible mitigation project types and incorporated their typical costs. The Companies will use the HEA-generated sum of modeled habitat services lost and develop a proposed set of mitigation projects, whose total habitat services gained can also be summed. The Companies can then use the estimated mitigation project cost for each project type to develop an estimated total cost for the entire Project's compensatory mitigation obligations (see Section 3.0). The suggested project mix and sum of habitat services provided by the mitigation project types will offset the sum of modeled habitat services lost, as specified in the HEA.

2.1.2. U.S. Fish and Wildlife Service Mitigation Recommendations

The USFWS Wyoming Office provided the Companies with recommendations regarding the development and implementation of a mitigation plan to address Project impacts on sage-grouse and its habitat (attached as Appendix B). Per these recommendations, the Companies will:

- Use the HEA's estimation of permanent and interim loss of habitat services to determine how many habitat services must be gained by a suite of projects. The sum of habitat services gained from mitigation projects selected will provide an estimate of how much compensatory mitigation will be offered by the Companies.
- Once the preferred alternative is selected and the ROD is issued, the Companies will select and submit to BLM a proposed set of projects (project mix), the sum of whose habitat services gained will equal the sum of the habitat services modeled as lost from the Project.
- Focus the majority of mitigation (project mix) on conservation of habitat, specifically on projects that protect habitat, enhance or maintain quality of habitat, and reduce fragmentation. Components of habitat conservation include preservation through easements, enhancements (such as juniper removal), and restoration. These habitat conservation projects may then be supplemented by a smaller portion of projects such as fence-marking or others.
- Develop an approach to ensure mitigation is implemented in a collaborative manner by establishing an "Oversight Committee" (see Section 2.4) that will support the in-lieu fee administrator (Section 3.1.4) and be composed of biologists working for BLM, USFWS, IDFG, and WGFD. The role of this team is to provide guidance and biological advice concerning the accomplishment of successful mitigation on the ground.

Additionally, the USFWS provided specific recommendations to ensure successful completion of mitigation projects that contribute to sage-grouse habitat conservation. Within these recommendations, the USFWS emphasizes the need to consider each mitigation site individually and provide a clear justification regarding the value of the treatment at that site. The Companies will establish mechanisms for receiving, reviewing and selecting proposals for projects through coordinated efforts between the Oversight Committee (that has been assembled for each state or regional area) and in-lieu fee administrator. Each proposed project will meet the intent of the mitigation, which is to protect, enhance, or maintain habitat quality for sage-grouse in order to receive funding. No projects will be funded that do not meet one of those goals.

2.1.3. Changes to the Plan

Given the dynamic nature of the current regulatory environment for sage-grouse, the Companies expect that there may continue to be changes in sage-grouse policies and guidance between submittal of this detailed outline, the final mitigation plan and final selection and implementation of mitigation projects. The Companies will consider new information as it becomes available and revise the Mitigation Plan if appropriate.

2.2. Siting Compensatory Mitigation Projects

Compensatory mitigation projects will be sited in the same state where the impact will occur and will be located using the following priorities:

First Priority: Projects will be located in polygons of Key Habitats/Core Areas (i.e., Preliminary Priority Habitats) that are intersected by the Project. Projects may be located in polygons of Key Habitat/Core (i.e., Preliminary Priority Habitats) that are *not* intersected by the Project but are within the region (e.g., Western Association of Fish and Wildlife Agencies' management zones) where the Oversight Committee agrees.

Second Priority: Projects may be located in areas outside of Key Habitat/Core (i.e., Preliminary Priority Habitats) where the Oversight Committee agrees that habitat connectivity may be restored.

The overarching goal and priority for siting mitigation projects is to locate projects where the greatest benefit to sage-grouse will be realized. The priorities stated above are a general rule for project siting, however, projects may be located elsewhere if the Oversight Committee (see Section 2.4) identifies specific opportunities that will provide a greater benefit to sage-grouse than those in the impacted region. Refer to Section 3.1.2 for additional discussion of mitigation project placement.

2.3. Timing for Financing of Mitigation Projects

There are three factors that influence the timing of financing and execution of mitigation projects. First, the best available estimates of disturbance of known habitat can only be made after the BLM establishes the preferred alternative for the Project and the Companies complete the design engineering for each segment based on that preferred alternative. Second, the Companies can only finance mitigation for a permitted project—that is, the mitigation investment can only be made after a permit is issued. While the Companies are willing to commit to making an appropriate investment if the permit is issued, mitigation funding would occur only after permits are in hand. Third, the Companies cannot know in advance what projects will be available in the timeframe between the issuance of permits and the desired start of construction. Flexibility is therefore required in the identification and financing of mitigation projects.

2.4. Oversight Committee

As described in the USFWS recommendations for mitigation approaches, an Oversight Committee consisting of agency biologists and other state and federal advisors, will be created to provide guidance to the in-lieu fee administering entity (see Section 3.1.4.) on the utilization of mitigation funds provided by the Companies. The Companies expect that both local and landscape level perspectives will be represented on the Oversight Committee, and that membership may shift as needed to consider local experts in each state or region. This will likely include local sage-grouse working groups, experts in the fields of mitigation, sage-grouse ecology, or other applicable disciplines. Committee members should be familiar with the Project area to help select mitigation projects locations and approve projects proposed by entities for use of mitigation funds.

The purposes of the Oversight Committee are to:

- Provide guidance to the in-lieu fee administering entity by:
  - Identifying and selecting mitigation projects;
  - Reviewing and approving projects proposed by other entities (proposals for use of mitigation funds);
- Employ experts as needed to determine the habitat services replacement value of project types not modeled in the HEA;
- Review proposed projects for compliance with the intent of the Framework and existing regulation and policy regarding compensatory mitigation;
- Validate the success of mitigation projects and their effectiveness at the local or landscape level; and
- Provide monitoring and oversight of project implementation and review of project monitoring results.

A selected committee member/entity will be identified who will be responsible for facilitating communications among Oversight Committee members and scheduling necessary review meetings to discuss mitigation projects and monitoring results. The roles and responsibilities of agency representatives, and other Oversight Committee members will vary by mitigation project type and location. Once final mitigation projects are identified, participants, roles and responsibilities within the Oversight Committee will be determined and assigned. Further detail will be presented in the final mitigation proposal regarding the Oversight Committee and mitigation project selection criteria.

3. Compensatory Mitigation Plan

3.1. Direct and Indirect Loss of Habitat Services Modeled in HEA

The avoidance (routing and siting criteria) and minimization measures (environmental protection measures and plans) undertaken by the Companies and discussed in the DEIS for the Project substantially avoid known impacts to greater sage-grouse and minimize impacts to their habitat. However, even with these measures in place, there are residual unavoidable impacts to habitat from the construction and operation of the Project. This Plan describes the Companies' plan to compensate for those impacts, as modeled in the HEA, by providing adequate funding (see Section 2.1.1 regarding discussion on "project mix" and Section 3.1.1) for one or more projects that the agencies agree replace habitat services lost due to the Project.

3.1.1. Mitigation Scaling

The HEA quantified the permanent and interim loss of habitat services resulting from ground-disturbing activities, construction related traffic and noise, and the footprint of the physical structures as defined by a habitat services metric (Table 7, HEA, Attachment 1). The HEA used the same habitat services metric to quantify the habitat services to be gained by implementing different types of habitat improvement measures (measured in service-acre-years). The habitat improvement measures,

summarized in Table 8 of the HEA, Attachment 1, that were selected by the interagency HEA Technical Advisory Team to model in the HEA are:

- fence marking or removal;
- sagebrush restoration and enhancement;
- juniper removal;
- seeding of a forb and bunchgrass understory; and
- purchase of conservation easements.

The analysis also produced a cost per service-acre-year gained for each habitat improvement measure based on the average cost of project implementation in Wyoming and Idaho (HEA Table 8, Attachment 1).

Compensatory mitigation will be applied to offset the modeled sage-grouse habitat service losses so that there is no net loss as a result of project construction and operation. Per the recommendations of the USFWS, the majority of conservation will focus on the conservation of habitat, specifically on projects that enhance or maintain quality of habitat and reduce fragmentation. The majority of the mitigation package will consist of habitat conservation easements (at 100% baseline habitat service level credit), sagebrush restoration and enhancement, which includes juniper removal, and fence marking or removal.

The Companies commit to selecting a set of projects that fully replace the habitat services lost, based on the preferred alternative when it is selected by the BLM. These portions will be identified as percentages of the overall mitigation package and will be applied to the total habitat services lost and multiplied by the cost per service acre gained by each conservation measure to estimate the mitigation dollars allocated to each measure, and then summed across measures to estimate the total compensatory mitigation obligations (mitigation funding to be provided by the Companies). After the Companies compensatory mitigation obligations are met (mitigation funding is provided to be managed by in-lieu fee administrator), the breakdown of mitigation project types (project mix) at the time of implementation is subject to change (under guidance of the Oversight Committee and in-lieu fee administrator) depending upon project availability and project benefit to sage-grouse and their habitat. However, the mitigation funding provided is fixed.

An example of how mitigation will be portioned among project types to offset the total habitat-service-acre-years lost in a hypothetical project segment is provided in Appendix C.

3.1.2. Mitigation Project Types

Descriptions of the mitigation project types modeled in the HEA are provided below. These projects are consistent with recommendations provided by the USFWS. The Companies are not limited to these project types for mitigation credit. Table 7 in the HEA (Attachment 1) presents total habitat services lost which could be replaced by the following mitigation project types.

Fence Marking and Removal

Based on Christiansen (2009) it has been demonstrated that each mile of fence within 2 miles of leks kills up to 53 greater sage-grouse per year. This threat can be eliminated by removing fences or significantly reduced by increasing the visibility of fences. Christiansen (2009) estimated a 70% reduction in mortalities could be expected along marked sections of fence. Stevens (2011) similarly predicted that marking fences with vinyl reflectors (flight diverters) reduced collision rates by up to 74%.

To eliminate the threat of collisions, fences would be removed or marked with flight diverters similar to those used in the Christiansen (2009), Wolfe (2009), and Stevens (2011) studies to increase fence visibility to greater sage-grouse. Fences will be removed where possible. Where removal is not possible, two flight diverters would be installed between each fence span (4 m post-to-post). Priority areas for fence removal and/or marking would be:

- Sections of fence known to cause sage-grouse collisions,
- Fences within 2 km (1.2 mi) of leks (Braun 2006; Stevens 2011) or other high risk area,
- Fences in areas with low slope and terrain ruggedness (Stevens 2011), and
- Fence segments bounded by steel t-posts with spans greater than 4 m (Stevens 2011).

Once fences have been removed or marked, local annual mortality due to fence collisions will be substantially reduced. As described in Section 2.2, all mitigation projects will be sited in the same state where the impact occurred and in a manner consistent with the priorities identified in the BLM's IM 2008-204.

The HEA calculated that 51,634 service-acre-years would be created for every mile of fence marked (with annual maintenance) or fence removed over the lifetime of the project. The Companies anticipate that this component will represent no more than 25% of the total habitat services gained when calculating the overall mitigation projects.

Sagebrush Restoration and Enhancement

Sagebrush restoration and enhancement creates new habitat for sage-grouse and can be used to create corridors between existing patches of sagebrush patches to produce larger patches of contiguous habitat. As described in Section 1.3, habitat for sage-grouse consists of a mosaic of plant communities dominated by sagebrush and a diverse grass and forb understory across the landscape (Wyoming Greater Sage-grouse Conservation Plan. 2003). This conservation measure increases the quality and quantity of habitat within the landscape, contributing to the long-term survival and success of the greater sage-grouse.

New habitat for sage-grouse would be created by establishing sagebrush and understory grasses and forbs in disturbed areas (e.g., roads, unreclaimed pipeline corridors, well pads, burned areas, etc.). Treatment for mitigation credit is not planned for areas of Project disturbance, which will be restored as described in the plan of development, but in other pre-existing areas of disturbance. Sagebrush can be seeded, planted as seedlings, or transplanted (i.e., containerized stems). Because seeded sagebrush takes a long time to grow to a size that provides habitat for sage-grouse, the HEA determined that

planting containerized stems was the most economical option. Sagebrush restoration and enhancement projects will include understory (grass and forb) treatments.

Where possible, projects will be placed strategically to decrease habitat fragmentation by connecting existing occupied habitats. All treatments will include monitoring plans and funding to conduct monitoring. Criteria that define "restoration" and "success" will be developed in coordination with the Oversight Committee.

Stripping of topsoil will be avoided in potential restoration areas, as it decreases the likelihood of treatment success. Any topsoil that is stripped will be stored properly in order to maintain biological viability of soil microbes that are necessary for sagebrush survival and growth. Soil structure should be maintained if it is stripped, and should be maintained when placed back within restoration areas prior to seeding or planting.

The value of sagebrush restoration depends on the method used; methods that result in faster plant establishment have higher value. The HEA calculated that for every acre of disturbance seeded with sagebrush and bunchgrass, 1,751 service-acre-years would be created over the lifetime of the project. For every acre of disturbance planted with containerized sagebrush stems and seeded with bunchgrass, 4,556 service-acre-years would be created. For every acre of disturbance planted with sagebrush seedlings and seeded with bunchgrass, 1,935 service-acre-years would be created. Because of the uncertain and delayed success rate and relatively high cost, the Companies do not anticipate selecting a substantial proportion of seeding or planting projects unless a cost-effective partnership opportunity arises that meets the approval of the Oversight Committee. The Companies anticipate that this component will represent no more than 5% of the total habitat services gained when calculating the overall mitigation projects.

Juniper Removal

Fire suppression and other post-settlement conditions have allowed western juniper to spread into areas previously dominated by grasses, forbs, and shrubs. Miller et al. (2005) reports that many areas have experienced an estimated 10-fold increase in juniper over the last 130 years. The expansion of juniper and other conifer species reduces habitat for sage-grouse and other sagebrush obligate species that depend on large patches of sagebrush-dominated vegetation. Sagebrush cover decreases with juniper encroachment as the vegetation transitions into woodland.

Most juniper communities are still in a state of transition. Miller et al. (2005) characterized three stages of woodland succession:

- Phase I (early) – trees are present but shrubs and herbs are the dominant vegetation that influence ecological processes (hydrologic, nutrient, and energy cycles) on the site;
- Phase II (mid) – trees are co-dominant with shrubs and herbs and all three vegetation layers influence ecological processes on the site;
- Phase III (late) – trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

Sites in Phase I or II successional stages often retain a significant understory of sagebrush (i.e., grasses and forbs), so removal of Phase I or II can produce immediate habitat benefits for sage-grouse (NRCS 2010; USFWS recommendations).

Juniper/conifer removal projects used for mitigation will focus primarily on the early successive stages of conifer/juniper stands (i.e., Phase I or Phase II juniper) with no cheatgrass component. Removal of juniper/conifer will be done by mechanical means without the use of fire or chemicals:

- Phase I juniper/conifer will be treated by having a field crew walk from tree-to-tree, cutting them into pieces and scattering them on-site (lop and scatter).
- Phase II juniper/conifer will be treated by using a masticator, a large mechanical device that goes from tree-to-tree and demolishes the tree with whirling blades; debris is then left on site (mastication).

All juniper/conifer removal projects will include understory treatment, where needed, and vegetation monitoring until the understory vegetation is established. Locations of removal projects will be selected by the Companies with guidance from the Oversight Committee so that each treatment site provides value to the local sage-grouse population.

The value of juniper/conifer removal in the HEA depended on the successional stage of juniper removed (i.e., Phase I, Phase II, or Phase III juniper). The HEA calculated that 1,108 service-acre-years are created for every acre of Phase I juniper treated, 1,481 service-acre-years for every acre of Phase II juniper treated, and 1,751 service-acre-years for every acre of Phase III juniper treated with understory seeding over the lifetime of the project. Juniper The Companies anticipate that this component will represent approximately 30% of the total habitat services gained when calculating the overall mitigation projects.

Seeding of a Forb and Bunchgrass Understory

Bunchgrasses, as opposed to rhizomatous grasses, are recognized as an important component of sage-grouse nesting and brood-rearing habitats (Connelly et al. 2000; Crawford et al. 2004). The structure and abundance of bunchgrasses influence the quality of a sagebrush/bunchgrass community site for nesting sage-grouse. Tall, dense, residual grass in nesting habitat improves hatching success by providing cover for incubating females (Cagney et al. 2009). Herbaceous cover may provide scent, visual, and physical barriers to potential predators (DeLong et al. 1995, as cited in Connelly et al. 2000). In addition to providing cover from predators, forbs are an important food source for sage-grouse broods.

Sage-grouse nesting and brood-rearing habitat is improved by seeding native bunchgrasses and forbs into existing sagebrush stands or into adjacent disturbance, increasing nest and brood success. Understory seeding project sites will be selected by the Companies in coordination with the Oversight Committee to maximize the benefit of these projects for sage-grouse. Objectives for these projects and criteria for success will be developed in coordination with the Oversight Committee.

The HEA calculated that 56 service-acre-years are created for every acre of sage-brush vegetation that is overseeded with bunchgrass over the lifetime of the project. A greater number of service-acre-years are created when areas of disturbance (i.e., no vegetation) are seeded with bunchgrass: 282 per acre

seeded over the lifetime of the project. Because of the low habitat services gained, the uncertain and delayed success rate, and relatively high cost, the Companies do not anticipate using forb and bunchgrass understory seeding projects unless a cost-effective partnership opportunity arises that meets the approval of the Oversight Committee. The Companies anticipate that this component will represent no more than 5% of the total habitat services gained when calculating the overall mitigation projects.

Purchase of Conservation Easements

Conservation easements may be purchased and managed to remove the threats of specific land uses to sage-grouse. The purchase of easements can prevent future sage-grouse habitat destruction or degradation near urban areas or oil and gas development. With appropriate management, conservation easements can reduce fragmentation in species core areas and key habitats.

Conservation easements purchased for mitigation will be used in a strategic way with focus on areas/locations of highest demonstrable need leading to a reduction in habitat fragmentation. Conservation easements will be developed by the Companies in coordination with the Oversight Committee. Specific locations of conservation easements will depend on availability of easements for purchase. The Companies anticipate that this component will represent approximately 35% of the total habitat services gained when calculating the overall mitigation projects.

The HEA calculated that, on average, 747 service-acre-years would be created per acre of conservation easement purchased, assuming the easement is maintained over the life of the project. This total does not include the value of any subsequent habitat improvements to the property and assumes the Companies receive 100% credit for the baseline habitat-service level of the property.

3.1.3. Specific Mitigation Projects

Specific projects will be selected by the Oversight Committee in coordination with the in-lieu fee administrator as project applications/proposals are received or following the recommendations and guidelines provided by the states, BLM, and USFWS. They may be located on either public or private land. Although only five mitigation measures are modeled, utilization of the compensatory mitigation funding provided by the Companies is not bound to only those project types. However, other project types must be recognized by the Oversight Committee as providing sage-grouse population or habitat benefits.

Minimum Mitigation Project Criteria

The benefit of potential mitigation projects to sage-grouse will vary by type and location. The Oversight Committee will consider the criteria and strategy set forth in Sections 1.4, 1.5 and 2.2 of this plan in addition to the following priorities when selecting projects for implementation:

1. Implement activities to protect and maintain existing occupied habitats.
    a. Enhance existing occupied habitats.
2. Implement activities to conserve potential habitat and populations
    a. Enhance potential habitat that adjoins known habitat so that it can support sage-grouse, thereby increasing habitat patch size and overall habitat availability.

   b. Create vegetative corridors to reconnect occupied habitats and decrease habitat fragmentation.
   c. Restore degraded habitats that could support greater sage-grouse use.
3. Potential mitigation sites will be evaluated to determine their current state, the type of mitigation project that would be most beneficial, and the potential for that project to meet the success criteria defined by the Oversight Committee. Projects that confer the greatest potential benefit to sage-grouse and have a high probability of success will be given priority.

3.1.4. In lieu fees

The State of Wyoming, the State of Idaho (still under consideration), and the BLM provide a potential option for the Companies to employ an in-lieu fee approach to mitigation. The Companies can pay mitigation fees into accounts (managed by an in-lieu fee administrator) that will fund projects that will benefit sage-grouse and their habitats. Refer to Section 2.2 for general/minimum criteria for selection of mitigation projects that would utilize in-lieu fees.

As previously stated, the Companies will provide in-lieu fees to be utilized by projects proposed by other entities if they meet the required criteria. The habitat services gained by the in-lieu fee projects will be added to the services gained by any projects funded by the Companies to total the habitat services modeled as lost through construction and operation of the Project.

The Companies will work with the Oversight Committee to identify the appropriate organizations to receive and manage in-lieu fees (in-lieu fee administrator) in each state, as well as to set standards for the projects funded by those fees.

In-lieu Fee Administration

In Idaho, the Idaho SAC framework that describes the general outline for a sage-grouse compensatory mitigation program in Idaho is still in development. This program includes an “in-lieu fee” approach to compensatory mitigation through which a project developer would pay funds into an account managed by the mitigation program for performance of mitigation actions that provide measureable benefits for sage-grouse and their habitats within Idaho. The Companies will incorporate details from the SAC framework into this mitigation plan once it is finalized.

In Wyoming, entities such as the Wyoming Wildlife and Natural Resource Trust (WWNRT) have been identified as a potential organization that could receive and manage in-lieu fees for the Project. The WWNRT is an independent state agency governed by a nine-member citizen board appointed by the Governor and works closely with the WGFD and Wyoming state government. Opportunities with other entities such as the Intermountain West Joint Venture will be explored.

Requests for in-lieu funds (compensatory mitigation funding provided by Companies) must specify, at a minimum, the following:

- Objectives of the project, including specifically how the project will improve habitat for greater sage-grouse at the proposed location with specific and measurable success criteria.

- Discussion and documentation that the group requesting the in-lieu funds can successfully implement the mitigation project.
- Maps and descriptions of the geographic area of the mitigation project, including baseline habitat quality for sage-grouse and surrounding land uses. Maps should identify whether the project will be in a state-identified greater sage-grouse habitat (Core in Wyoming, Key/Restoration in Idaho).
- Detailed written specifications and work descriptions, including: timing and sequence, methods for establishing or enhancing vegetation, plans to control invasive plant species, erosion control measures, long-term maintenance, monitoring and reporting requirements, etc.
- Performance standards, including an adaptive management plan if performance standards are not met.

4. Monitoring and maintenance

For direct impacts, monitoring the success of mitigation measures and maintaining each measure to ensure continued success are important elements of the Companies' mitigation strategy. The HEA incorporated monitoring and maintenance costs. Each project that is selected for mitigation will require a monitoring and mitigation entity. This role could be filled by agencies, private landowners, NGOs, managers of conservation easements, environmental or reclamation contractors, the entity applying for funding or other appropriate monitoring entities.

The final monitoring and maintenance approach for each mitigation project will be formalized in a monitoring and maintenance strategy that will be reviewed annually, or as necessary, by the Oversight Committee with involvement of the monitoring entity. Monitoring duration will vary for each mitigation project type. Results of monitoring will be provided to the Oversight Committee. Frequencies of these reports may vary between project types and will be determined by the Oversight Committee. The monitoring and maintenance strategy will also include success criteria for each project and project type. Examples of success criteria might include:

- Increase in desired vegetation characteristics in a treated or enhanced area when compared to a suitable control area (trending towards desirable vegetation structure and composition with measurable goals)
- Adherence to conservation easement contract terms
- Removal of stated acreage of encroaching juniper stands
- Miles of fence marked

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Appendix A: Key Participants in Gateway West HEA

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Appendix B: U.S. Fish and Wildlife Service Recommendations on Mitigation for Impacts to Greater Sage-grouse Associated With the Gateway West Interstate Transmission Line

The U.S. Fish and Wildlife Service (Service) provides the following recommendations regarding development and implementation of a mitigation plan to address impacts of Gateway West Interstate Transmission Line on the Greater Sage-grouse and its habitat. These recommendations should not be construed as approval for any mitigation plan, nor do they shift the responsibility of successful mitigation for project-related impacts from the project proponent. Rather, these recommendations provided to the project proponents are guidelines that the Service believes will increase the likelihood that mitigation will succeed in off-setting project-related impacts to Sage-grouse habitat.

General Approach

1) The Habitat Equivalency Analysis (HEA) will provide a dollar figure estimate of cost to replace habitat services lost, on a one-to-one mitigation ratio basis. We recommend that the Project Proponent use that cost estimate to provide a general allocation of how it will be spent on mitigation in terms of specific actions or projects proposed for implementation. For example, a general breakdown should be provided regarding the amount of money going toward conservation easements, habitat enhancement projects, fence marking, research, etc.

The Service recommends that the majority of mitigation focus on conservation of habitat—projects that enhance or maintain quality of habitat and reduce fragmentation. Components of habitat conservation include preservation through easements, enhancements, and restoration. These habitat conservation projects may then be supplemented by a smaller portion of projects such as fence-marking, focused research in designated areas following specific guidelines, water developments, or others.

2) The HEA provides a standardized basis for a one-to-one ratio for habitat services lost/ habitat services mitigated. However, the following biological factors may provide justification for adjusting the minimal mitigation ratio beyond one-to-one.

(a) According to the best available science on the relative value of Sage-grouse populations, some local populations may contribute more to long-term species viability than others, justifying higher mitigation ratios. Such populations are located in: southwestern ID, central and northwestern NV, eastern OR, and WY populations contribute most to the long-term viability of the species;

(b) Regarding individual birds contributing to populations, hens have a much higher biological value than males;

(c) Localized habitats of high ecological value such as (but not limited to) those serving key functions in demographic, genetic, or seasonal connectivity, important wintering areas, or leks;

(d) Time lags for mitigation success such that habitat services in treatment areas are not immediately available to Sage-grouse.

3) The project proponent should follow specific recommendations listed below when implementing mitigation projects to ensure successful completion of such projects that contribute to Sage-grouse habitat conservation.

4) Mitigation will be implemented in a collaborative manner by working with members of an "oversight team" composed of biologists working for BLM, Service, Idaho Department of Fish and Game, and Wyoming Game and Fish Department. The role of this team is to provide guidance and biological advice concerning the accomplishment of successful mitigation on the ground.

SPECIFIC RECOMMENDATIONS- The following list is not exhaustive, and includes only projects that have been suggested as potential mitigation to date. Recommendations on other project types offered as mitigation will be made on a case by case basis as needed, and must be coordinated with oversight team (number 4 above).

Fence marking

At this time, there are only preliminary data that suggest the beneficial effects of fence marking on Sage-grouse. These data suggest that fence marking can be effective in specific problem areas within Sage-grouse habitat. So, while we support the use of fence marking on a limited and site-specific basis, fence marking should not be central focus of mitigation.

Sage-grouse habitat restoration

While restoration of sagebrush/Sage-grouse habitat can be accomplished with seeding and transplanting, all habitat restoration treatments must include consideration of understory (grass and forb) treatments. All restorations must have a short- and long-term follow-up treatment and monitoring plan to ensure success, and must be accompanied by adequate funding for implementation of these monitoring plans. Criteria that define “restoration” and “success” should be developed in coordination with the oversight team.

If top soil must be stripped from potential restoration areas, likelihood of success will be much lower and, therefore, should be avoided. All topsoil that is stripped must be stored properly in order to maintain biological viability of soil microbes that are necessary for sagebrush survival and growth. Soil structure should be maintained if it is stripped, and should be maintained when placed back within restoration areas prior to seeding or planting.

Conifer/juniper removal

There has been little scientific evidence (one study to our knowledge) that definitively shows positive response of Sage-grouse habitat to conifer/juniper removal. Evidence suggests that if removal occurs during the early growth stage of plants—that is, in an earlier stage of ecological succession within the conifer/juniper stand with little to now cheatgrass component—treatment will be more effective as the habitat is less likely to have been ecologically altered. While we are aware that NRCS did a study in 2011, no data from this study is currently available. There should be a clear justification regarding the value of such a treatment within any given conifer/juniper removal site in terms of beneficial effects to Sage-grouse habitat. Such treatments also should include a plan for active understory treatment to develop suitable habitat.

If conifer/juniper removal is done, all such treatment should be mechanical and without the use of fire to preclude loss of sagebrush. Slash removal also should be done without use of fire.

Grass/forb enhancement
All grass/forb restoration and/or enhancement should use native plant species. The primary objective of all such treatments must be on Sage-grouse habitat; i.e., there must be a demonstrable need on a site-specific basis concerning benefits to Sage-grouse habitat. While use of such enhancement sites may include other wildlife and livestock, all such uses remain as secondary priorities only, and should not drive any such restoration/enhancement mitigation projects.
Details of "enhancement", and criteria for success, should be developed in coordination with oversight team.

Fire reduction
Use of fire breaks for fire reduction should only be used in a focused, site-specific manner only. Fire reduction through the use of fire breaks should only be used in high fire risk areas, and not universally applied across the project area. The value of fire reduction through fuel breaks should be clearly demonstrated on any site where this treatment is being considered as mitigation. While fire breaks may include use of non-native vegetation, such non-natives are only justified in areas where the risk of fire is demonstrably high, and where native vegetation would compromise the value of the fire break. All fire breaks should be designed minimize habitat fragmentation, taking into consideration contours and characteristics of the natural landscape, and a review of other habitat fragmentation activities on the landscape. The density of firebreaks should not result in habitat fragmentation that negatively affects Sage-grouse.

Conservation easements
Conservation easements with appropriate management can reduce fragmentation in core areas. Easements should be used in a strategic way with focus on areas/locations of highest demonstrable need leading to a reduction in habitat fragmentation, and should be developed in coordination with the oversight team.

Water Development
Water developments are not necessarily good for Sage-grouse, and water development in areas where naturally-occurring water has not historically existed is not recommended. Any water development should have a clear need-based, site-specific justification in terms of benefits to local Sage-grouse, and should be accompanied by a plan to protect naturally-occurring wetland and riparian habitats. Certain types of developments may be more beneficial and appropriate for areas than others: for example, fencing off wetland or wet meadow habitat and replacing with upland water developments to keep livestock out of sensitive habitats susceptible to disturbance. Creating ponds and open water, on the other hand, could be more detrimental than beneficial if they facilitate mosquito reproduction and the spread of West Nile Virus. Thus, all water development projects need to be thought through in terms of site-specific needs for local Sage-grouse and clearly show how they benefit those birds, and coordinated with oversight team.

Herbicide Treatments
Any treatment of Sage-grouse habitat by herbicides must include a detailed, site-specific justification with clearly articulated objectives showing benefits to the Sage-grouse.

Larvicide Treatment
Use of larvicides could be considered in areas at high risk for West Nile virus.

Prescribed burning

Not recommended as mitigation.

[Prescribed burning must be approached very cautiously and conservatively, and only used on a strictly localized basis after analysis clearly shows a real need and benefit to Sage-grouse. For example, there may be some high elevation, mountain big sagebrush habitats in need of native grass and/or forb understory development. Generally, burning within Sage-grouse habitat is not supported by the Service, requiring a detailed site-specific analysis and justification regarding demonstrable benefits to Sage-grouse.]

Appendix C: Hypothetical Example of Scaling Mitigation

A hypothetical example of project scaling is provided to illustrate the process of balancing habitat-service losses with habitat-service gains from habitat conservation projects within the framework of the HEA. The Companies cannot commit to specific projects until the BLM has chosen a preferred alternative, design engineering has been completed, and the Project schedule has been finalized.

In the hypothetical Segment X, a total of 528,294 service-acre-years were lost in the analysis area over the lifetime of the project. This is the mean loss among the actual project segments based on the HEA. Within 18 km of the transmission line, there are opportunities for all of the conservation measures described in Table 6 of the HEA. As described in Section 3.1.1 of this plan, projects selected will focus on the conservation of habitat, specifically on projects that enhance or maintain quality of habitat and reduce fragmentation. Habitat conservation easements (at 100% baseline habitat service level credit) will make up the majority of the mitigation package, followed by sagebrush restoration and enhancement, including juniper removal. To a lesser degree, the remaining portion of the package will be split among fence marking and removal, and understory seeding for planning purposes.

The Companies and Oversight Committee worked together to allocate conservation projects in a way that is most beneficial to the sage-grouse habitat quality in Segment X (see Table D.1). In practice, the percentages allocated to each conservation measure would differ among segments to account for differences in project availability and to allow the Oversight Committee to select the most beneficial project types for a specific segment. Project sizes are calculated by dividing the habitat services to be replaced by a measure (Table D.1) by the habitat services created by that measure over the lifetime of the project. The HEA assumed that funding for mitigation projects would be provided in the first year of construction with projects completed 1-5 years after funding is received. If mitigation funding were provided later, the total mitigation package would increase.

The costs to implement each of the conservation measures can be most accurately calculated by multiplying the number of habitat services to be replaced by this measure by the cost per services gained. The cost to mitigate Segment X for direct and indirect impacts that were modeled in the HEA would be $653,763 (Table D.2). If suitable projects cannot be found to satisfy the project sizes specified in Table D.1, the remaining funds may be allocated to a different conservation measure.

Table D.1. Habitat conservation projects selected to offset impacts modeled in the HEA for Hypothetical Segment X.

Conservation Measure	General Method	Percent of Total Mitigation for Segment X	Habitat Services to Be Replaced by this Measure (service-acre-years)	Project Sizes Needed to Offset Loss
Fence removal and marking with flight diverters	Fence marking within 2 km of leks	5%	26,415	1 mile
Sagebrush restoration and improvement projects	Planting seedlings and seeding bunchgrass understory	20%	105,659	55 acres
Juniper/conifer removal	Cut-pile-cover or mastication of Phase II[2] juniper	20%	105,659	71 acres
Bunchgrass seeding projects	Seeding disturbed habitat to create grassland	5%	26,415	94 acres
Conservation easements	Land purchase 100 % service credit	50%	264,147	354 acres

Table D.2. Budget to implement projects selected for mitigation in Hypothetical Segment X.

Conservation Measure	General Method	Project Sizes Needed to Offset Loss	Estimated Cost to Implement Measure* (from Project HEA Report [SWCA 2012])	Estimated Project Costs
Fence removal and marking with flight diverters	Fence marking within 2 km of leks	1 mile	$1,400/mile for initial installation (materials, labor, and estimated indirect costs) plus $300/mile every year for maintenance (materials and labor)	$17,170
Sagebrush restoration and improvement projects	Planting seedlings and seeding bunchgrass understory	55 acres	$4,200/acre to grow and plant seedlings at one per 5 m^2 (materials and labor + 50% indirect costs)	$229,279
Juniper/conifer removal	Cut-pile-cover or mastication of Phase II^2 juniper	71 acres	$650/acre (materials, labor, and estimated indirect costs)	$46,490
Bunchgrass seeding projects	Seeding disturbed habitat to create grassland	94 acres	$1,200/acre (materials, labor, and indirect costs)	$112,527
Conservation easements	Land purchase 100 % service credit	354 acres	$580/acre average purchase price + $2,500/year for maintenance	$248,298
Total				$653,763

* Cost of implementation includes a 50% markup for indirect costs, which include contract writing, supervision, clearances, monitoring, inspections, and vehicle costs.

Appendix D: Idaho Power Letter to U.S. Fish and Wildlife Service concerning Greater Sage-Grouse Information Request

June 25, 2008

Brian Kelly, Field Supervisor
Wyoming Field Office
U.S. Fish and Wildlife Service
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

Subject: Greater sage grouse information request

Dear Mr. Kelly:

Idaho Power Company (Idaho Power) submits this letter in response to the U.S. Fish and Wildlife Service's status review of the greater sage grouse. Idaho Power's service territory intersects much of the sage grouse habitat in southern Idaho. Electrical power lines have been identified as potential threats to sage grouse. As such, Idaho Power has evaluated the status of sage grouse in relation to our power grid—both transmission and distribution lines. In the following, I have summarized our findings.

Power lines are commonly hypothesized to result in the following impacts to sage grouse: 1) increased predation as a result of enhanced perching and nesting opportunities for raptors and corvids; 2) abandonment of leks because of an avoidance response to tall structures; and 3) habitat fragmentation. These perceptions, even in the absence of peer-reviewed journal publications supporting such effects, have resulted in regulatory and land management agencies proposing and adopting a variety of protection measures (e.g., buffers from leks, perch diverters, etc.)

In an attempt to evaluate the efficacy of these impacts associated within our service territory we used a geographic information system to evaluate our power lines in relation to sage grouse leks (the most complete sage grouse data available.) These analyses used current lek data from the Idaho Department of Fish and Game and Idaho Power data on power pole locations.

Lek Proximity to Power Lines

Establishing buffers between leks and power lines are a commonly used or suggested as measures to protect sage grouse. Theoretically, a buffer would address two hypothesized threats to sage grouse: 1) abandonment of leks because of the proximity of a tall structure and 2) increased predation of sage grouse on leks by raptors using perch substrated afforded by power line structures. Idaho Power hypothesized that if power lines would affect sage grouse leks, we would see fewer active leks proximate to our power lines.

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. All reported leks in Idaho Power's service territory are within 18 km of a power line. There are a number data quality issues with 'unkown leks' that limits the usefulness of these data (e.g., location accuracy, survey frequency.)

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Forty-two active leks occur within 1 km of a power line and 28 inactive leks (Table 1). Of those leks within 1 km, and of known status, 60% are active. Between 1 and 5 km of a power line, there were 136 active leks and 62 inactive leks. However, the percentage of leks classified as inactive (25.5%) was highest in the 0-1 km distance category. Twenty-five active leks within 1 km of power line structures occur along power lines that have been present for more than 40 years (Table 2). Of the inactive leks within 1 km, 11 of the 28 leks were active for more than 20 years after the line was built. Another 8 were active for more than 10 years before being designated inactive.

Table 1. Lek status by distance from nearest power pole (percentage in parentheses).

	Distance from nearest power pole				
Lek Status[1]	0-1km	1-5km	5-10 km	10-18 km	Total
Active	42 (38.9)	136 (39.1)	52 (41.6)	8 (47.1)	238
Inactive	28 (25.9)	61 (17.5)	24 (19.2)	2 (11.8)	115
Unknown	38 (35.2)	151 (43.4)	49 (39.2)	7 (41.18)	245
Total	108	348	125	17	598

[1] As defined by Idaho Department of Fish and Game

Table 2. Number of leks, and status, within 1 km of power lines in relation to years since construction.

	Lek status		
Years	Active	Inactive[1]	Unknown
0-10	4	6	3
10-20	4	8	6
20-30	7	5	6
30-40	2	1	6
>40	25	5	9
Built after last active lek count[2]		3	8
Total	42	28	38

[1] The number of years a lek was active after construction of a line before becoming inactive.
[2] Line built after the last known active status date was established.

The average number of males observed at active leks (5-year average) was similar among the distance categories (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	Males/active lek
0-1 km	15.2
1-5 km	14.0
5-10	14.2
10-18 km	10.6
>18 km	

Observations

While we recognize that these analyses and results have not been peered reviewed, we offer the following observations for your consideration:

- The presence of power lines are not causing lek abandonment
- Hypotheses concerning causal mechanisms related to power lines, such as tall structures and raptor predation, are not validated by these data.

The loss and modification of sagebrush habitat, in terms of quantity and quality, is broadly recognized as a leading threat to sage grouse populations, and most likely the cause of historical population declines. Power lines are highly correlated with, and built in response to, economic development and expansion in wildlands, including the expansion of agriculture through development of irrigation projects, urban expansion, and the proliferation of ranchettes on the rural landscape, all of which convert sagebrush habitat and result in habitat fragmentation.

The factors affecting sage grouse populations are complex and variable. Idaho Power suggests, based on empirical evidence in southern Idaho presented here, that power lines alone do not impact the persistence of sage grouse lekking areas.

About Idaho Power

Idaho Power is an investor-owned utility with a service territory that covers a 24,000 square mile area in southern Idaho and eastern Oregon, with an estimated population of 982,000. IPC holds franchises in 71 cities in Idaho and nine cities in Oregon and holds certificates from the respective public utility regulatory authorities to serve all or a portion of 25 counties in Idaho and three counties in Oregon. As of December 31, 2007, IPC supplied electric energy to approximately 482,000 customers.

Thank you for the opportunity to comment on the Greater sage grouse status review. If you should have any questions regarding our comments, feel free to contact me at (208) 388-2330 or bdumas@idahopower.com.

Respectfully,

Brett Dumas
Environmental Supervisor

cc: Susan Giannettino, Idaho BLM
Walt George, Wyoming BLM
Tom Hemker, IDFG
Rick Loughery, EEI

Appendix D

Large Format Data Tables

These tables compare the Proposed and Alternative Routes across many resources, regardless of the need for plan amendments or the likelihood that they would be approved.

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Table D.11-13. (This table has been removed as it is no longer relevant to the Environmental Impact Statement)

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Table D.15-1. Analysis of Soil Factors in Construction Disturbance Areas (in acres)

Table D.15-2. Analysis of Soil Factors in Operations Disturbance Areas (in acres)

Table D.15-3. Soil Impacts on National Forest-Construction Areas (in acres)

Table D.15-4. Soil Impacts on National Forest-Operations Areas (in acres)

Table D.16-1. Surface Water Road Crossings by Crossing Type
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Table D.16-5. Surface Water Diversions Within One-Half Mile Buffer of Transmission Lines
Table D.16-6. Number of Surface Water Road Crossings by Stream Type
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Table D.19-2. Airports and Heliports Within 1 Mile and 3 Miles of the Proposed Route

Table D.6-1. Miles of Vegetation Types Crossed by the Proposed Routes and Alternatives

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Natural Vegetation											Disturbed & Semi-natural Vegetation				Other Cover Types	Total Natural Vegetation	Total Disturbed and Semi-natural Vegetation	Total Other Cover Types	Grand Total
			Sagebrush	Saltbush	Greasewood	Dwarf Shrub	Other Shrub	Native Grass	Juniper	Deciduous Forest	Conifer Forest	Wetland & Riparian	Misc.	Disturbed Sagebrush	Disturbed Grassland	Agriculture	Disturbed/ Developed	Water				
1W	1W(a) Proposed – Total Length	73.8	49.3		2.1		0.5		1.2	1.3	0.3	1.3	t[1/]	4.6	6.8	2.1	0.3	0.1	56.3	13.8	0.1	**70.2**
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	4.8						t[1/]			0.4	t[1/]	2.1	6.8	2.1	0.1	t[1/]	5.3	11.1	t[1/]	**16.5**
	Alternative 1W(a)-B	20.9	11.1					5.0		0.1		0.2		1.4	2.8	t[1/]	0.2		16.4	4.5		**20.9**
	1W(c) Proposed – Total Length	73.6	51.0		1.0	0.8	0.1		0.5	1.8	3.3	1.6	0.2	5.4	5.5	t[1/]	0.7	0.2	60.4	11.6	0.2	**72.2**
2	Proposed – Total Length	91.9	48.9	3.2	8.9	11.3			0.2			0.9	0.5	6.1	t[1/]		0.7	0.8	74.0	6.9	0.8	**81.7**
	Proposed – Comparison portion for Alternative 2A	16.8	8.1		3.5	0.6						0.5		1.1			0.1	t[1/]	12.8	1.2	t[1/]	**14.1**
	Alternative 2A	16.0	7.0	1.9	4.4	0.1						0.5		1.8			0.1	t[1/]	13.9	1.9	t[1/]	**16.0**
	Proposed – Comparison portion for Alternative 2B	12.5	5.8		2.9	0.4						0.5		t[1/]			0.1	t[1/]	9.6	0.2	t[1/]	**9.8**
	Alternative 2B	12.2	5.3	0.6	4.7							0.7		0.7			0.2	t[1/]	11.2	0.9	t[1/]	**12.2**
3	Segment 3 Proposed – Total Length	45.9	10.4	4.9	13.3	11.4						0.3		3.5	t[1/]		1.0	0.1	40.4	4.5	0.1	**45.0**
	Segment 3A Proposed – Total Length	5.1	2.0		1.4							0.3		1.2			0.3		3.6	1.5		**5.1**
4[2/]	Proposed – Total Length	197.6	122.3	0.1	6.0	11.0	1.2	t[1/]	2.5	10.4	2.4	7.0	1.8	6.2	6.2	9.0	2.5	0.8	164.6	23.9	0.8	**189.3**
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	65.6		0.4	6.9	0.3		t[1/]	1.2		2.9	0.5	3.2	1.5	1.6	0.5	0.4	77.9	6.8	0.4	**85.2**
	Alternative 4B	100.2	78.5	t[1/]	0.6	8.1			t[1/]	t[1/]		1.8	0.3	3.8	1.2	4.7	0.8	0.3	89.5	10.4	0.3	**100.2**
	Alternative 4C	101.6	76.3	t[1/]	0.9	7.9			t[1/]			1.3	0.3	6.0	1.0	6.6	1.1	0.2	86.7	14.7	0.2	**101.6**
	Alternative 4D	100.8	78.8	t[1/]	0.6	8.4			0.1	t[1/]		1.8	0.3	3.8	1.2	4.7	0.7	0.3	90.2	10.4	0.3	**100.8**
	Alternative 4E	102.2	76.6	t[1/]	0.9	8.2			0.1	t[1/]		1.3	0.3	6.0	1.0	6.6	1.0	0.2	87.4	14.6	0.2	**102.2**
	Alternative 4F	87.5	68.1		0.4	6.6	0.1		t[1/]	1.2	1.1	2.6	0.5	3.1	1.6	1.4	0.4	0.2	80.8	6.5	0.2	**87.5**
5	Proposed – Total Length	55.7	24.4				0.4		5.2	4.2	3.6	0.3		2.1	3.8	10.9	0.7	0.2	38.0	17.5	0.2	**55.7**
	Proposed – Comparison portion for Alternatives 5A,B	22.3	10.8				0.3		0.7	2.3	3.6	t[1/]			0.7	3.9	t[1/]		17.7	4.6		**22.3**
	Alternative 5A	29.7	12.3				0.1		1.4	2.9	2.1	t[1/]			3.9	7.1	t[1/]		18.8	11.0		**29.7**
	Alternative 5B	40.4	16.4				0.6		1.8	1.8	1.1	t[1/]		3.7	2.2	12.6	0.1		21.8	18.6		**40.4**
	Proposed – Comparison portion for Alternative 5C	32.9	14.5				t[1/]		2.4	4.1	3.6	0.1		1.9	1.4	4.5	0.1		24.9	8.0		**32.9**
	Alternative 5C	26.0	5.6				0.6		2.5	1.7	t[1/]	0.2		9.1	0.7	5.2	0.1		10.8	15.1		**25.8**
	Proposed – Comparison portion for Alternative 5D	19.2	8.0						1.9	1.8		0.2		2.1	1.0	3.6	0.4	0.2	11.9	7.1	0.2	**19.2**
	Alternative 5D	17.0	2.3					0.1		3.5		0.3		5.1	0.9	4.4	0.3	t[1/]	6.2	10.7	t[1/]	**17.0**
	Proposed – Comparison portion for Alternative 5E	5.8	1.6						0.2			t[1/]		0.2	0.3	3.0	0.3	0.2	1.9	3.7	0.2	**5.8**
	Alternative 5E	5.3	0.7									t[1/]		0.1	0.4	2.3	1.5	0.2	0.7	4.4	0.2	**5.3**
6	Proposed – Total Length	0.5	0.2												0.3		t[1/]	t[1/]	0.2	0.3	t[1/]	**0.5**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] "t" indicates only a trace amount (<0.1 mile) crossed

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.6-1. Miles of Vegetation Types Crossed by the Proposed Routes and Alternatives cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Natural Vegetation											Disturbed & Semi-natural Vegetation				Other Cover Types	Total Natural Vegetation	Total Disturbed and Semi-natural Vegetation	Total Other Cover Types	Grand Total
			Sagebrush	Saltbush	Greasewood	Dwarf Shrub	Other Shrub	Native Grass	Juniper	Deciduous Forest	Conifer Forest	Wetland & Riparian	Misc.	Disturbed Sagebrush	Disturbed Grassland	Agriculture	Disturbed/ Developed	Water				
7	Proposed – Total Length	118.2	34.8		1.7		1.1	0.5	7.6	2.5	2.4	0.3		9.9	13.4	43.0	0.6	t[1/]	50.9	66.9	t[1/]	**117.9**
	Proposed – Comparison portion for Alternatives 7A,B	35.1	12.7				1.1	0.4	2.1	2.5	2.4	t[1/]		1.1	2.7	10.0	t[1/]		21.3	13.8		**35.1**
	Alternative 7A	37.7	16.6						1.1	2.8	3.1	0.6		3.8	2.0	7.5	0.2		24.2	13.5		**37.7**
	Alternative 7B	46.2	22.8				0.5		1.0	1.1	1.5	t[1/]		5.4	0.3	13.4	0.3		26.9	19.3		**46.2**
	Proposed – Comparison portion for Alternative 7C	20.1	4.0		1.7									4.6	1.6	8.1	t[1/]	t[1/]	5.7	14.4	t[1/]	**20.1**
	Alternative 7C	20.3	0.8											7.8	6.5	4.8	0.2	t[1/]	0.8	19.4	t[1/]	**20.3**
	Proposed – Comparison portion for Alternative 7D	6.2	1.4					0.1	0.3			t[1/]		1.0	2.3	1.0	0.1	t[1/]	1.8	4.4	t[1/]	**6.2**
	Alternative 7D	6.8	1.7						0.3			t[1/]		1.3	2.1	1.3	0.1	t[1/]	2.0	4.8	t[1/]	**6.8**
	Proposed – Comparison portion for Alternative 7E	3.8	2.0						0.5						1.1	0.2	t[1/]		2.5	1.3		**3.8**
	Alternative 7E	4.5	2.3						0.7					0.5	1.0	t[1/]	t[1/]		3.0	1.5		**4.5**
	Proposed – Comparison portion for Alternative 7F	10.5	3.6						2.8					t[1/]	1.9	2.2	t[1/]		6.4	4.1		**10.5**
	Alternative 7F	10.8	2.7						2.9					1.6	1.9	1.7	t[1/]		5.6	5.1		**10.8**
	Proposed – Comparison portion for Alternative 7G	3.3	2.1											0.7	t[1/]	0.4			2.1	1.2		**3.3**
	Alternative 7G	3.4	0.8											1.6	t[1/]	0.9			0.8	2.5		**3.4**
	Proposed – Comparison portion for Alternative 7K	118.2	34.8		1.7		1.1	0.5	7.6	2.5	2.4	0.3		9.9	13.4	43.0	0.6	t[1/]	50.9	66.9	t[1/]	**117.9**
	Alternative 7K	148.1	48.8	5.2	6.1		3.0	0.9	17.7	4.5	4.6	0.6		25.5	18.4	12.1	0.6		91.5	56.7		**148.1**
8	Proposed – Total Length	131.5	38.1	2.9	0.8			0.4				0.7	0.3	30.0	44.6	12.6	0.8	0.2	43.3	88.0	0.2	**131.5**
	Proposed – Comparison portion for Alternative 8A	51.9	21.8	t[1/]	t[1/]							0.1		6.3	11.2	11.8	0.4	0.2	22.1	29.7	0.2	**51.9**
	Alternative 8A	53.6	3.2	0.1								0.3		19.8	13.2	15.7	1.0	0.3	3.6	49.7	0.3	**53.6**
	Proposed – Comparison portion for Alternative 8B	45.3	5.4	2.8	0.8							0.2	0.2	16.6	18.5	0.4	0.3	t[1/]	9.3	35.9	t[1/]	**45.3**
	Alternative 8B	45.8	7.1	0.5								0.3		9.2	12.0	12.8	3.8	0.1	7.9	37.8	0.1	**45.8**
	Proposed – Comparison portion for Alternative 8C	6.5	0.8									t[1/]		2.7	2.9		t[1/]		0.9	5.7		**6.5**
	Alternative 8C	6.4	2.2	t[1/]										0.2	3.9		t[1/]		2.2	4.2		**6.4**
	Proposed – Comparison portion for Alternative 8D	6.9												0.6	6.3		t[1/]		0.0	6.9		**6.9**
	Alternative 8D	8.1												0.5	6.1	1.4	t[1/]		0.0	8.1		**8.1**
	Proposed – Comparison portion for Alternative 8E	7.0	0.5									0.1		3.7	2.1	0.4	0.1	t[1/]	0.6	6.3	t[1/]	**7.0**
	Alternative 8E	18.3	1.7											9.4	6.6		t[1/]	t[1/]	1.7	16.0	t[1/]	**17.8**
9	Proposed – Total Length	162.2	33.8	19.5	3.5	t[1/]		2.9	t[1/]			0.5	0.7	27.8	57.7	13.9	1.8	0.2	60.9	101.1	0.2	**162.2**
	Proposed – Comparison portion for Alternative 9A	7.8	1.5									t[1/]		2.1	4.0		0.2	t[1/]	1.5	6.3	t[1/]	**7.8**
	Alternative 9A	7.7	1.4									t[1/]		4.0	1.7	t[1/]	0.5	t[1/]	1.4	6.2	t[1/]	**7.7**
	Proposed – Comparison portion for Alternative 9B	49.1	11.2		t[1/]			0.5	t[1/]			t[1/]	0.3	10.5	25.8	t[1/]	0.6		12.1	37.0		**49.1**
	Alternative 9B	52.3	2.8	3.4				0.2				t[1/]		10.6	24.5	10.6	0.2	t[1/]	6.5	45.8	t[1/]	**52.3**
	Proposed – Comparison portion for Alternative 9C	14.4	6.5					0.5	t[1/]			t[1/]	0.3	1.0	5.7		0.3		7.4	7.0		**14.4**
	Alternative 9C	14.4						0.2				t[1/]		5.6	8.0	0.4	t[1/]	t[1/]	0.2	14.2	t[1/]	**14.4**
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	12.7	17.7	3.3	t[1/]						0.4	0.4	3.7	7.8	10.3	0.5	0.2	34.6	22.4	0.2	**57.2**
	Alternative 9D	60.1	8.5	1.1	0.4				t[1/]			0.1		17.0	29.9	1.5	0.9	0.2	10.1	49.3	0.2	**59.6**
	Alternative 9F	63.3	10.8	3.5	1.0							0.4		14.7	24.4	6.8	1.0	0.2	15.7	47.0	0.2	**62.8**
	Alternative 9G	57.8	6.7	2.2	0.4				t[1/]			0.1		18.8	26.6	1.5	1.0	0.3	9.5	47.9	0.3	**57.8**
	Alternative 9H	61.0	9.1	4.6	1.0							0.4		16.5	21.2	6.8	1.0	0.3	15.1	45.6	0.3	**61.0**
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	15.8	17.7	3.3	t[1/]						0.4	0.4	4.8	7.8	10.3	0.6	0.2	37.6	23.5	0.2	**61.3**
	Alternative 9E (revised)	70.6	29.4	10.2	1.8							0.2		17.2	11.0	0.3	0.4		41.7	28.9		**70.6**
10	Proposed – Total Length	34.4	2.0									0.1	t[1/]	7.3	8.0	15.6	1.1	0.4	2.1	31.9	0.4	**34.4**
	Total of All Proposed Segments (grey shaded areas)		**417.2**	**30.6**	**38.8**	**34.6**	**3.3**	**3.9**	**17.3**	**20.1**	**12.0**	**13.3**	**3.5**	**104.0**	**146.4**	**107.0**	**10.5**	**3.1**	**594.6**	**367.9**	**3.1**	**965.6**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] "t" indicates only a trace amount (<0.1 mile) crossed

Table D.6-2. Impacts (acres) to Vegetation from Construction

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Sagebrush	Saltbush	Greasewood	Dwarf Shrub	Other Shrub	Native Grass	Misc.	Conifer Forest			Deciduous Forest			Juniper			Wetland/Riparian		
										Construction Facilities	ROW Clearing[1/]	Total Impacts	Construction Facilities	ROW Clearing[1/]	Total Impacts	Construction Facilities	ROW Clearing[1/]	Total Impacts	Construction Facilities	ROW Clearing[1/]	Total Impacts
1W	1W(a) Proposed – Total Length	73.8	480		30		5	3	t[2/]	4	3	8	10	15	26	11	14	25	7.9	2.6	**10.5**
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	43		t[2/]			1	t[2/]							1	1	1	1.9	2.4	**4.4**
	Alternative 1W(a)-B	20.9	145	1				55					<1	2	2				<1		**<1**
	1W(c) Proposed – Total Length	73.6	626		29	9	<1		2	23	37	59	20	19	39	4	5	9	8.3	3.2	**11.5**
2	Proposed – Total Length	91.9	1052	72	159	205			4							2	5	7	8.8		**8.8**
	Proposed – Comparison portion for Alternative 2A	16.8	192		54	14													3.7		**3.7**
	Alternative 2A	16.0	179	30	72	6													13.3	3.9	**17.2**
	Proposed – Comparison portion for Alternative 2B	12.5	160		47	10													3.7		**3.7**
	Alternative 2B	12.2	125	6	46														18.0	2.8	**20.9**
3	Segment 3 Proposed – Total Length	45.9	277	72	231	161													3.5		**3.5**
	Segment 3A Proposed – Total Length	5.1	21		12														2.0		**2.0**
4[3/]	Proposed – Total Length	197.6	2470	28	149	183	20	1	24	31	58	89	147	230	377	28	57	86	122.0	4.3	**126.3**
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	1314	20	21	94	4		6				16	29	45	1	2	3	70.0	1.6	**71.6**
	Alternative 4B	100.2	1534	22	22	191			5				1	<1	1	1	2	3	49.4	0.5	**49.9**
	Alternative 4C	101.6	1479	22	24	194			5				<1		<1	1	2	3	46.4	0.5	**46.9**
	Alternative 4D	100.8	1550	22	24	199			5	1		1	2	2	4	1	2	3	49.5	0.5	**50.0**
	Alternative 4E	102.2	1475	22	26	203			5	1		1	1	2	3	1	2	3	46.6	0.5	**47.1**
	Alternative 4F	87.5	1340	20	21	90	1		6	21	24	45	16	28	44	1	2	3	56.2	2.6	**58.8**
5	Proposed – Total Length	55.7	496				8		<1	88	79	167	74	94	169	98	110	208	6.4		**6.4**
	Proposed – Comparison portion for Alternatives 5A,B	22.3	194				8		<1	92[4/]	76	168	40	52	92	29	12	41	<1		**<1**
	Alternative 5A	29.7	257				1			46	44	90	70	66	136	16	32	48	1.0	<1	**1.4**
	Alternative 5B	40.4	350				15			16	23	40	33	40	74	31	39	70	1.3	1.0	**2.2**
	Proposed – Comparison portion for Alternative 5C	32.9	289				4		<1	92	76	168	74	93	167	62	48	110	3.1		**3.1**
	Alternative 5C	26.0	94				11			3	3	6	27	36	63	39	55	94	5.8	1.0	**6.8**
	Proposed – Comparison portion for Alternative 5D	19.2	193							<1		<1	34	42	76	35	39	74	4.3		**4.3**
	Alternative 5D	17.0	70				1	1	t[2/]	2		2	81	74	155	t[2/]		t[2/]	2.4	1.2	**3.6**
	Proposed – Comparison portion for Alternative 5E	5.8	57													3	3	6	1.4		**1.4**
	Alternative 5E	5.3	44													<1		<1	<1		**<1**
6	Proposed – Total Length	0.5	17																		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

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[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

[4/] Disturbance acreage is greater than that in the Proposed Route due to an additional pulling and tensioning site

Table D.6-2. Impacts (acres) to Vegetation from Construction cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Sagebrush	Saltbush	Greasewood	Dwarf Shrub	Other Shrub	Native Grass	Misc.	Conifer Forest			Deciduous Forest			Juniper			Wetland/Riparian		
										Construction Facilities	ROW Clearing[1/]	Total Impacts	Construction Facilities	ROW Clearing[1/]	Total Impacts	Construction Facilities	ROW Clearing[1/]	Total Impacts	Construction Facilities	ROW Clearing[1/]	Total Impacts
7	Proposed – Total Length	118.2	601		20		16	4	t[2/]	78	55	133	49	55	105	115	163	278	6.1		**6.1**
	Proposed – Comparison portion for Alternatives 7A,B	35.1	258				16	2	t[2/]	67	55	122	48	55	104	40	47	87	<1		**<1**
	Alternative 7A	37.7	316				<1			63	62	125	67	64	131	20	24	44	8.6	<1	**8.9**
	Alternative 7B	46.2	423				11			20	35	55	20	24	44	24	21	45	1.5		**1.5**
	Proposed – Comparison portion for Alternative 7C	20.1	63		20														<1		**<1**
	Alternative 7C	20.3	11																		
	Proposed – Comparison portion for Alternative 7D	6.2	17					2								3	6	9	3.6		**3.6**
	Alternative 7D	6.8	21					1								3	5	8	3.9		**3.9**
	Proposed – Comparison portion for Alternative 7E	3.8	37													4	10	14			
	Alternative 7E	4.5	41													9	17	26			
	Proposed – Comparison portion for Alternative 7F	10.5	65													45	58	103	<1		**<1**
	Alternative 7F	10.8	53													50	61	111	<1		**<1**
	Proposed – Comparison portion for Alternative 7G	3.3	26																t[2/]		**t[2/]**
	Alternative 7G	3.4	20																1.1		**1.1**
	Proposed – Comparison portion for Alternative 7K	118.2	600		20		16	4	t[2/]	78	55	133	49	55	105	114	163	278	6.0		**6.0**
	Alternative 7K	148.1	964	75	71		53	9	t[2/]	86	109	195	80	95	176	253	396	649	15.1	1.3	**16.4**
8	Proposed – Total Length	131.5	772	63	20			4	3										8.9	t[2/]	**9.0**
	Proposed – Comparison portion for Alternative 8A	51.9	392																2.1	t[2/]	**2.1**
	Alternative 8A	53.6	74	2															2.2	4.8	**7.0**
	Proposed – Comparison portion for Alternative 8B	45.3	108	63	20				2										<1		**1.0**
	Alternative 8B	45.8	143	8	1														7.9	<1	**8.3**
	Proposed – Comparison portion for Alternative 8C	6.5	30																<1		**<1**
	Alternative 8C	6.4	40	<1															t[2/]		**t[2/]**
	Proposed – Comparison portion for Alternative 8D	6.9																	t[2/]		**t[2/]**
	Alternative 8D	8.1																	t[2/]		**t[2/]**
	Proposed – Comparison portion for Alternative 8E	7.0	14																		
	Alternative 8E	18.3	50																<1		**<1**
9	Proposed – Total Length	162.2	610	329	70	<1		61	6							<1	<1	<1	6.0	t[2/]	**6.0**
	Proposed – Comparison portion for Alternative 9A	7.8	16																<1		**<1**
	Alternative 9A	7.7	24																<1		**<1**
	Proposed – Comparison portion for Alternative 9B	49.1	207					38	4							<1	<1	<1	<1		**<1**
	Alternative 9B	52.3	68	68				12											<1	<1	**1.0**
	Proposed – Comparison portion for Alternative 9C	14.4	115					38	4							<1	<1	<1	<1		**<1**
	Alternative 9C	14.4						18													
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	236	292	66	<1			3										5.1		**5.1**
	Alternative 9D	60.1	167	16	3											<1	<1	<1	2.6		**2.6**
	Alternative 9F	63.3	205	53	16														6.7		**6.7**
	Alternative 9G	57.8	112	49	3											<1	<1	<1	4.0		**4.0**
	Alternative 9H	61.0	150	86	16														7.3		**7.3**
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	298	294	69	<1			3										5		**5**
	Alternative 9E (revised)	70.6	520	172	28				t[2/]										2		**2**
10	Proposed – Total Length	34.4	31																<1		**1.0**
Total of All Proposed Segments (grey shaded areas)			**7453**	**564**	**719**	**558**	**50**	**72**	**40**	**224**	**232**	**456**	**301**	**415**	**716**	**258**	**354**	**612**	**180.7**	**10.1**	**190.9**

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Table D.6-2. Impacts (acres) to Vegetation from Construction cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Disturbed Sagebrush	Disturbed Grassland	Disturbed/ Developed	Agriculture	Water	No Vegetation Data	Total Natural Vegetation			Total Disturbed and Semi-natural Vegatation	Total Other Cover Types	Grand Total		
									Construction Facilities	ROW Clearing[1/]	Total Impacts			Construction Facilities	ROW Clearing[1/]	Total Impacts
1W	1W(a) Proposed – Total Length	73.8	41	72	77	16	<1	18	552	35	587	206	18	777	35	**812**
	Proposed – Comparison portion for Alternative 1W-B	16.5	14	61	9	16		1	47	3	50	100	1	148	3	**151**
	Alternative 1W-B	20.9	12	44	14	t[2/]		<1	201	2	203	70	<1	271	2	**273**
	1W(c) Proposed – Total Length	73.6	69	116	21	1	3	26	721	64	784	208	29	957	64	**1,021**
2	Proposed – Total Length	91.9	134	2	50		13	80	1,502	5	1,507	186	93	1,780	5	**1,785**
	Proposed – Comparison portion for Alternative 2A	36.9	24	t[2/]	13		2	7	264		264	37	9	309		**309**
	Alternative 2A	16.0	37		10		<1	7	300	4	304	48	7	355	4	**359**
	Proposed – Comparison portion for Alternative 2B	12.5	2	t[2/]	9		2	4	220		220	12	6	238		**238**
	Alternative 2B	12.2	8		4		2	t[2/]	195	3	198	11	2	209	3	**212**
3	Segment 3 Proposed – Total Length	45.9	44	1	15		2	28	745		745	59	30	833		**833**
	Segment 3A Proposed – Total Length	5.1	14		11		<1	<1	34		34	25	<1	60		**60**
4[3/]	Proposed – Total Length	197.6	108	147	92	258	9	81	3,202	350	3,552	604	90	3,897	350	**4,247**
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	55	42	28	37	7	<1	1,545	33	1,578	162	7	1,714	33	**1,746**
	Alternative 4B	100.2	92	19	51	90	4	1	1,825	3	1,828	252	5	2,083	3	**2,086**
	Alternative 4C	101.6	119	17	49	112	4	1	1,771	3	1,774	297	4	2,073	3	**2,075**
	Alternative 4D	100.8	92	19	49	91	4	1	1,853	5	1,857	252	5	2,110	5	**2,115**
	Alternative 4E	102.2	119	17	47	113	4	1	1,779	4	1,784	297	5	2,081	4	**2,085**
	Alternative 4F	87.5	39	41	29	45	3	<1	1,571	57	1,628	154	3	1,728	57	**1,785**
5	Proposed – Total Length	55.7	55	52	46	251	2	1	771	283	1,054	405	3	1,179	283	**1,461**
	Proposed – Comparison portion for Alternatives 5A,B	22.3	2	6	3	85		1	363	140	504	97	1	461	140	**601**
	Alternative 5A	29.7	17	70	14	151		<1	392	142	534	252	<1	644	142	**786**
	Alternative 5B	40.4	72	45	9	268		2	447	103	550	394	2	843	103	**946**
	Proposed – Comparison portion for Alternative 5C	32.9	51	18	11	127		<1	524	217	741	207	<1	731	217	**949**
	Alternative 5C	26.0	230	12	6	81	t[2/]	2	180	95	274	328	2	509	95	**604**
	Proposed – Comparison portion for Alternative 5D	19.2	53	16	34	113	2	<1	266	81	348	215	2	484	81	**565**
	Alternative 5D	17.0	80	13	18	144	2	<1	159	75	234	255	2	416	75	**491**
	Proposed – Comparison portion for Alternative 5E	5.8	7	10	26	68	2	t[2/]	61	3	64	111	2	174	3	**177**
	Alternative 5E	5.3	4	8	43	62	2	1	45		45	117	3	165		**165**
6	Proposed – Total Length	0.5		26	12		9	<1	17		17	38	9	65		**65**

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Table D.6-2. Impacts (acres) to Vegetation from Construction cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Disturbed Sagebrush	Disturbed Grassland	Disturbed/ Developed	Agriculture	Water	No Vegetation Data	Total Natural Vegetation			Total Disturbed and Semi-natural Vegatation	Total Other Cover Types	Grand Total		
									Construction Facilities	ROW Clearing[1/]	Total Impacts			Construction Facilities	ROW Clearing[1/]	Total Impacts
7	Proposed – Total Length	118.2	201	244	55	841	<1	22	889	274	1,163	1,341	22	2,252	274	**2,526**
	Proposed – Comparison portion for Alternatives 7A,B	35.1	17	31	12	160		1	432	158	590	220	1	652	158	**810**
	Alternative 7A	37.7	62	48	20	169		<1	475	150	625	300	<1	775	150	**924**
	Alternative 7B	46.2	86	22	15	295		2	500	79	579	419	2	920	79	**999**
	Proposed – Comparison portion for Alternative 7C	20.1	100	28	2	159	<1	<1	83		83	289	<1	372		**372**
	Alternative 7C	20.3	137	115	4	95	<1	<1	11		11	351	<1	362		**362**
	Proposed – Comparison portion for Alternative 7D	6.2	25	33	4	46	t[2/]	t[2/]	26	6	31	107	t[2/]	132	6	**138**
	Alternative 7D	6.8	26	46	2	50	t[2/]	t[2/]	28	5	33	125	<1	153	5	**158**
	Proposed – Comparison portion for Alternative 7E	3.8		17	t[2/]	13		t[2/]	41	10	51	31	t[2/]	72	10	**82**
	Alternative 7E	4.5	12	19	1	13		t[2/]	50	17	67	46	t[2/]	96	17	**113**
	Proposed – Comparison portion for Alternative 7F	10.5	4	45	<1	65		1	110	58	168	114	1	225	58	**283**
	Alternative 7F	10.8	27	45	3	34		1	103	61	165	109	1	213	61	**275**
	Proposed – Comparison portion for Alternative 7G	118.2	23	2		14		t[2/]	26		26	38	t[2/]	64		**64**
	Alternative 7G	3.4	33	7		26		t[2/]	21		21	66	t[2/]	87		**87**
	Proposed – Comparison portion for Alternative 7K	118.2	201	244	55	841	<1	21	887	274	1,162	1,340	21	2,249	274	**2,523**
	Alternative 7K	148.1	445	437	63	264	3	41	1,607	602	2,208	1,209	43	2,859	602	**3,461**
8	Proposed – Total Length	131.5	548	782	44	267	3	5	870	t[2/]	871	1,641	7	2,518	t[2/]	**2,518**
	Proposed – Comparison portion for Alternative 8A	51.9	137	177	14	233	2	4	395	t[2/]	395	561	7	963	t[2/]	**963**
	Alternative 8A	53.6	375	185	14	324	<1	1	78	5	83	899	2	978	5	**983**
	Proposed – Comparison portion for Alternative 8B	45.3	287	365	21	30	<1	<1	195		195	704	<1	899		**899**
	Alternative 8B	45.8	211	226	47	271	2	<1	160	<1	160	754	2	916	<1	**916**
	Proposed – Comparison portion for Alternative 8C	6.5	56	74	3			t[2/]	30		30	133	t[2/]	163		**163**
	Alternative 8C	6.4	15	68	17			t[2/]	40		40	99	t[2/]	140		**140**
	Proposed – Comparison portion for Alternative 8D	6.9	11	130	7		t[2/]	t[2/]	t[2/]		t[2/]	147	t[2/]	147		**147**
	Alternative 8D	8.1	7	141	7	19	t[2/]	t[2/]	t[2/]		t[2/]	174	t[2/]	174		**174**
	Proposed – Comparison portion for Alternative 8E	7.0	51	47	3	10		t[2/]	14		14	111	t[2/]	124		**124**
	Alternative 8E	18.3	179	98	3	<1		3	50		50	281	3	334		**334**
9	Proposed – Total Length	162.2	496	1227	77	406	2	2	1,084	1	1,085	2,206	4	3,294	1	**3,294**
	Proposed – Comparison portion for Alternative 9A	7.8	40	71	19		<1	t[2/]	17		17	130	<1	147		**147**
	Alternative 9A	7.7	74	45	14	3	1	<1	25		25	137	1	162		**162**
	Proposed – Comparison portion for Alternative 9B	49.1	196	520	24	46	t[2/]	1	249	1	249	787	1	1,037	1	**1,037**
	Alternative 9B	52.3	161	417	11	224	4	<1	148	<1	148	813	4	965	<1	**965**
	Proposed – Comparison portion for Alternative 9C	14.4	12	117	15			1	158	1	159	145	1	304	1	**305**
	Alternative 9C	14.4	80	135	12	75	t[2/]	<1	18		18	301	<1	320		**320**
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	69	216	24	233	1	<1	602		602	542	1	1,145		**1,145**
	Alternative 9D	60.1	286	516	24	27	<1	4	189	1	190	853	5	1,047	1	**1,048**
	Alternative 9F	63.3	277	433	32	135	4	4	281		281	877	8	1,165		**1,165**
	Alternative 9G	57.8	340	486	23	36	2	3	168	1	169	884	6	1,058	1	**1,059**
	Alternative 9H	61.0	327	403	30	139	4	<1	259		259	899	4	1,163		**1,163**
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	90	215	24	233	1	1	668		668	562	2	1,232		**1,232**
	Alternative 9E (revised)	70.6	272	267	12	15		3	722		722	566	3	1,290		**1,290**
10	Proposed - Total Length	34.4	115	174	27	316	4	2	32		32	633	6	671		**671**
Total of All Proposed Segments (grey shaded areas)			**1,826**	**2,843**	**527**	**2,356**	**46**	**264**	**10,419**	**1,011**	**11,431**	**7,552**	**311**	**18,282**	**1,011**	**19,293**

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Table D.6-3. Impacts (acres) to Vegetation from Operation

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Sagebrush	Saltbush	Greasewood	Dwarf Shrub	Other Shrub	Native Grass	Misc.	Conifer Forest			Deciduous Forest			Juniper			Wetland / Riparian		
										Operations Facilities	ROW Maintenance[1]	Total Impacts	Operations Facilities	ROW Maintenance[1]	Total Impacts	Operations Facilities	ROW Maintenance[1]	Total Impacts	Operations Facilities	ROW Maintenance[1]	Total Impacts
1W	1W(a) Proposed – Total Length	73.8	97		14		1	1	t[2]	1	5	6	2	20	21	2	18	20	1.5	3.2	**4.7**
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	7		t[2]			<1	t[2]							t[2]	1	1	<1	3.1	**3.3**
	Alternative 1W(a)-B	20.9	24	<1				7					t[2]	2	2				t[2]		**t[2]**
	1W(c) Proposed – Total Length	73.6	77		7	1	t[2]		<1	4	49	52	2	26	29	1	7	8	1.0	4.0	**4.9**
2	Proposed – Total Length	91.9	124	5	32	29			1							<1	6	6	1.6		**1.6**
	Proposed – Comparison portion for Alternative 2A	16.8	15		5	1													<1		**<1**
	Alternative 2A	16.0	17	3	9	1													1.0	3.9	**4.4**
	Proposed – Comparison portion for Alternative 2B	12.5	12		5	<1													<1		**<1**
	Alternative 2B	12.2	10	1	5														<1	2.9	**3.0**
3	Segment 3 Proposed – Total Length	45.9	70	12	28	14													<1		**<1**
	Segment 3A Proposed – Total Length	5.1	2		2														<1		**<1**
4[3]	Proposed – Total Length	197.6	344	<1	39	20	2	t[2]	2	5	72	77	17	300	317	4	74	77	9.3	5.1	**14.4**
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	164		2	11	1		1				3	36	39	t[2]	3	3	4.4	2.3	**6.7**
	Alternative 4B	100.2	202	t[2]	2	28			1				<1	1	1	t[2]	3	3	2.5	1.0	**3.0**
	Alternative 4C	101.6	191	t[2]	2	30			1				t[2]		t[2]	t[2]	3	3	2.1	1.0	**2.6**
	Alternative 4D	100.8	207	t[2]	2	29			1	<1		<1	<1	3	3	t[2]	3	3	2.7	1.0	**3.3**
	Alternative 4E	102.2	192	t[2]	2	31			1	<1		<1	<1	2	2	t[2]	3	3	2.3	1.0	**2.8**
	Alternative 4F	87.5	171		2	10	<1		1	2	32	34	3	36	38	t[2]	3	3	2.6	3.0	**5.6**
5	Proposed – Total Length	55.7	93				2		t[2]	13	107	120	13	125	138	10	154	164	1.0		**1.0**
	Proposed – Comparison portion for Alternatives 5A,B	22.3	25				2		t[2]	13	107	120	7	71	78	3	20	23	t[2]		**t[2]**
	Alternative 5A	29.7	35				<1			6	59	65	12	87	99	2	41	43	<1	<1	**1.0**
	Alternative 5B	40.4	43				2			3	31	34	4	56	60	3	54	57	<1	1.0	**1.3**
	Proposed – Comparison portion for Alternative 5C	32.9	39				1		t[2]	13	107	120	13	124	137	6	73	78	1.0		**1.0**
	Alternative 5C	26.0	12				2			1	3	4	4	49	54	5	78	83	<1	1.3	**1.4**
	Proposed – Comparison portion for Alternative 5D	19.2	34							t[2]		t[2]	7	54	61	3	57	60	1.0		**1.0**
	Alternative 5D	17.0	20				<1	t[2]	t[2]	<1		<1	6	103	109	t[2]		t[2]	<1	1.4	**1.6**
	Proposed – Comparison portion for Alternative 5E	5.8	16													t[2]	4	4	t[2]		**t[2]**
	Alternative 5E	5.3	16																t[2]		**t[2]**
6	Proposed – Total Length	0.5	15																		

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Table D.6-3. Impacts (acres) to Vegetation from Operation cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Sagebrush	Saltbush	Greasewood	Dwarf Shrub	Other Shrub	Native Grass	Misc.	Conifer Forest			Deciduous Forest			Juniper			Wetland / Riparian		
										Operations Facilities	ROW Maintenance[1]	Total Impacts	Operations Facilities	ROW Maintenance[1]	Total Impacts	Operations Facilities	ROW Maintenance[1]	Total Impacts	Operations Facilities	ROW Maintenance[1]	Total Impacts
7	Proposed – Total Length	118.2	88		2		2	<1	t[2]	14	74	87	9	73	82	12	218	230	<1		**<1**
	Proposed – Comparison portion for Alternatives 7A,B	35.1	26				2	<1	t[2]	10	74	84	9	73	82	4	62	66	<1		**<1**
	Alternative 7A	37.7	38				t[2]			8	90	98	13	85	99	2	33	35	1.0	<1	**1.0**
	Alternative 7B	46.2	46				2			3	44	47	4	32	36	3	30	33	<1		**<1**
	Proposed – Comparison portion for Alternative 7C	20.1	7		2														t[2]		**t[2]**
	Alternative 7C	20.3	1																		
	Proposed – Comparison portion for Alternative 7D	6.2	2					<1								<1	8	8	t[2]		**t[2]**
	Alternative 7D	6.8	2					<1								<1	7	7	t[2]		**t[2]**
	Proposed – Comparison portion for Alternative 7E	3.8	3													<1	13	13			
	Alternative 7E	4.5	4													1	22	22			
	Proposed – Comparison portion for Alternative 7F	10.5	6													5	81	85	t[2]		**t[2]**
	Alternative 7F	10.8	5													5	85	90	t[2]		**t[2]**
	Proposed – Comparison portion for Alternative 7G	3.3	3																t[2]		**t[2]**
	Alternative 7G	3.4	1																t[2]		**t[2]**
	Proposed – Comparison portion for Alternative 7K	118.2	88		2		2	<1	t[2]	14	74	87	9	73	82	12	218	230	<1		**<1**
	Alternative 7K	148.1	139	7	9		9	2	t[2]	14	138	153	14	131	144	25	522	547	2.1	1.4	**3.5**
8	Proposed – Total Length	131.5	74	6	1			<1	<1										1.0	t[2]	**1.0**
	Proposed – Comparison portion for Alternative 8A	51.9	43																<1	t[2]	**<1**
	Alternative 8A	53.6	5	<1															<1	5.5	**5.9**
	Proposed – Comparison portion for Alternative 8B	45.3	9	6	1				<1										<1		**<1**
	Alternative 8B	45.8	12	1															<1	<1	**1.0**
	Proposed – Comparison portion for Alternative 8C	6.5	2																t[2]		**t[2]**
	Alternative 8C	6.4	3	t[2]															t[2]		**t[2]**
	Proposed – Comparison portion for Alternative 8D	6.9																			
	Alternative 8D	8.1																			
	Proposed – Comparison portion for Alternative 8E	7.0	1																		
	Alternative 8E	18.3	6																		
9	Proposed – Total Length	162.2	59	33	9	t[2]		8	1							t[2]	1	1	1.0	t[2]	**1.0**
	Proposed – Comparison portion for Alternative 9A	7.8	1																t[2]		**t[2]**
	Alternative 9A	7.7	2																t[2]		**t[2]**
	Proposed – Comparison portion for Alternative 9B	49.1	24					4								t[2]	1	1	t[2]		**t[2]**
	Alternative 9B	52.3	3	9				1											t[2]	<1	**<1**
	Proposed – Comparison portion for Alternative 9C	14.4	11					5								t[2]	1	1	t[2]		**t[2]**
	Alternative 9C	14.4						1													
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	22	31	8	t[2]			1										1.0		**1.0**
	Alternative 9D	60.1	15	1	<1											t[2]	1	1	t[2]		**t[2]**
	Alternative 9F	63.3	19	5	1														1.0		**1.0**
	Alternative 9G	57.8	7	4	<1											t[2]	1	1	<1		**<1**
	Alternative 9H	61.0	11	8	1														1.0		**1.0**
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	27	31	9	t[2]			1										0.9		**0.9**
	Alternative 9E (revised)	70.6	48	22	4														0.2		**0.2**
10	Proposed – Total Length	34.4	4																<1		**<1**
Total of All Proposed Segments (grey shaded areas)			**1048**	**56**	**135**	**63**	**6**	**10**	**4**	**36**	**306**	**342**	**43**	**544**	**588**	**28**	**478**	**506**	**16.8**	**12.3**	**29.2**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

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[2] "t" indicates only a trace amount (<0.1 acre) of impact

Table D.6-3. Impacts (acres) to Vegetation from Operation cont.

Segment Number	Proposed or Alternative Name	Disturbed Sagebrush	Disturbed Grassland	Disturbed / Developed	Agriculture	Water	No Vegetation Data	Total Natural Vegetation			Total Disturbed and Semi-natural Vegatation	Total Other Cover Types	Grand Total		
								Operations Facilities	ROW Maintenance[1/]	Total Impacts			Operations Facilities	ROW Maintenance[1/]	Total Impacts
1W	1W(a) Proposed – Total Length	8	18	25	3	t[2/]	5	118	46	164	54	5	177	46	**223**
	Proposed – Comparison portion for Alternative 1W-A	2	12	3	3		<1	8	4	11	20	<1	27	4	**31**
	Alternative 1W-A	2	7	4			t[2/]	31	2	33	12	t[2/]	44	2	**46**
	1W(c) Proposed – Total Length	8	11	6	t[2/]	<1	6	92	86	178	25	7	124	86	**210**
2	Proposed – Total Length	17	<1	15		1	20	192	6	198	33	20	245	6	**251**
	Proposed – Comparison portion for Alternative 2A	2	t[2/]	3			2	21		21	5	2	28		**28**
	Alternative 2A	4		3		t[2/]	2	31	4	34	7	2	40	4	**44**
	Proposed – Comparison portion for Alternative 2B	1	t[2/]	2			1	17		17	3	1	21		**21**
	Alternative 2B	1		1				15	3	18	2		17	3	**20**
3	Proposed – Total Length	4	t[2/]	3		<1	8	125		125	7	9	140		**140**
3A	Proposed – Total Length	4		4		t[2/]	t[2/]	4		4	8	<1	12		**12**
4[3/]	Proposed – Total Length	16	14	24	16	1	16	442	451	893	70	17	530	451	**981**
	Proposed – Comparison portion for Alternatives 4A-4F	9	7	8	3	1		186	41	226	26	1	213	41	**253**
	Alternative 4B	15	3	12	8	<1	t[2/]	235	4	239	38	<1	273	4	**277**
	Alternative 4C	17	3	11	9	<1	t[2/]	225	3	229	40	<1	265	3	**269**
	Alternative 4D	15	3	11	8	<1	t[2/]	242	6	249	38	<1	280	6	**287**
	Alternative 4E	17	3	11	10	<1	t[2/]	229	6	235	40	<1	269	6	**275**
	Alternative 4F	5	7	8	3	t[2/]		192	73	265	23	t[2/]	214	73	**288**
5	Proposed – Total Length	5	5	6	19	1	<1	132	385	517	35	2	169	385	**554**
	Proposed – Comparison portion for Alternatives 5A,B	1	1	1	7		<1	49	197	246	9	<1	58	197	**256**
	Alternative 5A	1	5	5	13			55	188	243	25		80	188	**268**
	Alternative 5B	8	2	3	24			54	142	196	37		92	142	**234**
	Proposed – Comparison portion for Alternative 5C	5	2	3	10			73	303	376	20		94	303	**396**
	Alternative 5C	21	1	2	7		<1	24	131	155	31	<1	56	131	**187**
	Proposed – Comparison portion for Alternative 5D	5	1	4	8	1		44	111	155	18	1	63	111	**175**
	Alternative 5D	9	2	4	11	1		26	105	131	25	1	53	105	**157**
	Proposed – Comparison portion for Alternative 5E	<1	<1	2	4	1		16	4	20	7	1	24	4	**28**
	Alternative 5E	<1	<1	4	2	1	t[2/]	16		16	7	1	24		**24**
6	Proposed – Total Length		25	11		9		15		15	37	9	61		**61**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

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[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.6-3. Impacts (acres) to Vegetation from Operation cont.

Segment Number	Proposed or Alternative Name	Disturbed Sagebrush	Disturbed Grassland	Disturbed / Developed	Agriculture	Water	No Vegetation Data	Total Natural Vegetation			Total Disturbed and Semi-natural Vegetation	Total Other Cover Types	Grand Total		
								Operations Facilities	ROW Maintenance[1]	Total Impacts			Operations Facilities	ROW Maintenance[1]	Total Impacts
7	Proposed – Total Length	20	21	12	78	t[2]	5	128	365	492	132	5	265	365	**630**
	Proposed – Comparison portion for Alternatives 7A,B	1	3	3	12		<1	52	208	260	20	<1	71	208	**280**
	Alternative 7A	8	4	4	15			61	209	270	32		93	209	**302**
	Alternative 7B	11	<1	3	24			58	106	164	38		96	106	**202**
	Proposed – Comparison portion for Alternative 7C	13	3	<1	11			9		9	27		36		**36**
	Alternative 7C	12	8	1	6	t[2]		1		1	27	t[2]	28		**28**
	Proposed – Comparison portion for Alternative 7D	2	4	1	2	t[2]		3	8	10	9	t[2]	11	8	**19**
	Alternative 7D	2	5	1	2	t[2]		3	7	10	10	t[2]	13	7	**20**
	Proposed – Comparison portion for Alternative 7E		1	t[2]	<1			4	13	16	2		5	13	**18**
	Alternative 7E	1	2	<1	<1			5	22	27	4		9	22	**30**
	Proposed – Comparison portion for Alternative 7F	<1	4	t[2]	7			11	81	92	12		23	81	**103**
	Alternative 7F	3	5	1	5			9	85	95	14		23	85	**109**
	Proposed – Comparison portion for Alternative 7G	1	<1		2			3		3	3		6		**6**
	Alternative 7G	2	<1		3			1		1	5		6		**6**
	Proposed – Comparison portion for Alternative 7K	20	21	12	78	t[2]	5	128	365	492	132	5	264	365	**629**
	Alternative 7K	61	36	15	38	1	10	221	792	1,013	150	11	382	792	**1,173**
8	Proposed – Total Length	63	75	10	16	<1	1	83	t[2]	83	164	1	249	t[2]	**249**
	Proposed – Comparison portion for Alternative 8A	17	22	3	15	<1	1	43	t[2]	43	57	1	102	t[2]	**102**
	Alternative 8A	42	28	4	23	t[2]	1	5	6	11	97	1	103	6	**108**
	Proposed – Comparison portion for Alternative 8B	32	31	6	<1	t[2]		17		17	70	t[2]	87		**87**
	Alternative 8B	22	19	4	11	t[2]	t[2]	13	<1	14	56	t[2]	69	<1	**69**
	Proposed – Comparison portion for Alternative 8C	7	6	<1				2		2	13		15		**15**
	Alternative 8C	4	9	1				3		3	13		16		**16**
	Proposed – Comparison portion for Alternative 8D	1	12	2		t[2]					15	t[2]	15		**15**
	Alternative 8D	1	11	2	2	t[2]					15	t[2]	15		**15**
	Proposed – Comparison portion for Alternative 8E	5	3	<1	<1			1		1	9		10		**10**
	Alternative 8E	13	7	<1			t[2]	6		6	20	t[2]	26		**26**
9	Proposed – Total Length	71	131	12	35	<1	1	111	1	112	248	1	360	1	**361**
	Proposed – Comparison portion for Alternative 9A	4	8	2		t[2]		1		1	13	t[2]	15		**15**
	Alternative 9A	7	4	1	1	<1	t[2]	2		2	13	<1	14		**14**
	Proposed – Comparison portion for Alternative 9B	29	60	3	<1	t[2]	1	28	1	29	93	1	122	1	**123**
	Alternative 9B	19	36	1	14	<1		12	<1	13	71	<1	83	<1	**84**
	Proposed – Comparison portion for Alternative 9C	2	7	2			1	15	1	16	11	1	27	1	**28**
	Alternative 9C	9	10	2	4	t[2]	t[2]	1		1	25	t[2]	26		**26**
	Proposed – Comparison portion for Alternatives 9D,F,G,H	9	16	5	14	<1		62		62	44	<1	106		**106**
	Alternative 9D	24	38	4	2		<1	16	1	18	67	<1	84	1	**85**
	Alternative 9F	22	33	5	8	t[2]	t[2]	26		26	67	<1	93		**93**
	Alternative 9G	31	37	4	3	t[2]	<1	11	1	13	75	<1	87	1	**88**
	Alternative 9H	29	33	5	9	t[2]	t[2]	21		21	75	<1	96		**96**
	Proposed – Comparison portion for Alternative 9E (revised)	13	16	5	14	<1	t[2]	69		69	47	1	116		**116**
	Alternative 9E (revised)	33	24	3	1		t[2]	74		74	61	t[2]	135		**135**
10	Proposed – Total Length	9	16	11	33	<1	<1	4		4	69	1	74		**74**
Total of All Proposed Segments (grey shaded areas)		**224**	**318**	**139**	**200**	**13**	**64**	**1,446**	**1,340**	**2,786**	**882**	**76**	**2,404**	**1,340**	**3,744**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Table D.6-5. Construction Impacts to Vegetation (in acres) on Federal Lands

Segment Number	Proposed or Alternative Name	Bureau of Land Management Field Office	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Construction Facilities	ROW Clearing	Construction Facilities	ROW Clearing			
1W	1W(a) Proposed – Total Length	Casper	51	<1	1	0.2			4	**57**
		Rawlins	193			0.3			35	**228**
	Alternative 1W(a)-B	Casper	<1							**<1**
	1W(c) Proposed – Total Length	Casper	32	7	12	0.1			1	**53**
		Rawlins	235			0.4		11	10	**256**
2	Proposed – Total Length	Rawlins	669	<1	4	2.0		1	47	**724**
	Proposed – Comparison portion for Alternative 2A	Rawlins	104					t[1/]	7	**111**
	Alternative 2A	Rawlins	122			2.5			6	**130**
	Proposed – Comparison portion for Alternative 2B	Rawlins	93					t[1/]	5	**98**
	Alternative 2B	Rawlins	62						2	**65**
3	Segment 3 Proposed – Total Length	Rawlins	180			0.5			9	**190**
		Rock Springs	188			0.3			10	**198**
	Segment 3A Proposed – Total Length	Rock Springs	22			0.3			4	**26**
4[2/]	Proposed – Total Length	Kemmerer	759	12	21	7.5	1.2	13	14	**828**
		Pocatello	87	10	12	1.6		1	10	**122**
		Rock Springs	427			1.6			15	**444**
	Proposed – Comparison portion for Alternatives 4B-4F	Kemmerer	759	12	21	7.3	1.2	13	14	**828**
		Pocatello	24			t[1/]			<1	**24**
		Rock Springs	18						3	**22**
	Alternative 4B	Kemmerer	847	2	3	1.5		1	15	**870**
		Pocatello	58			0.9		2	<1	**61**
		Rock Springs	78			t[1/]		t[1/]	1	**79**
	Alternative 4C	Kemmerer	806	1	2	1.3		1	15	**828**
		Pocatello	44			0.9		2	<1	**47**
		Rock Springs	78			t[1/]		t[1/]	1	**79**
	Alternative 4D	Kemmerer	897	4	4	1.2		1	14	**922**
		Pocatello	58			0.9		2	<1	**61**
		Rock Springs	79			t[1/]		t[1/]	1	**81**
	Alternative 4E	Kemmerer	845	3	4	1.0		1	15	**868**
		Pocatello	41			0.9		2	<1	**45**
		Rock Springs	79			t[1/]		t[1/]	1	**81**
	Alternative 4F	Kemmerer	752	37	52	7.1	1.9	13	16	**879**
		Pocatello	32			t[1/]			<1	**33**
		Rock Springs	18						3	**22**
5	Proposed – Total Length	Burley	23						2	**24**
		Pocatello	69	102	144	t[1/]		6	7	**328**
	Proposed – Comparison portion for Alternatives 5A,B	Pocatello	34	76	87				2	**200**
	Alternative 5A	Pocatello	77	102	109	t[1/]			2	**290**
	Alternative 5B	Pocatello	113	53	66	0.4			4	**237**
	Proposed – Comparison portion for Alternative 5C	Pocatello	43	88	109				4	**244**
	Alternative 5C	Pocatello	<1	4					t[1/]	**4**
	Proposed – Comparison portion for Alternative 5D	Burley	23		21				2	**46**
		Pocatello	9	11		t[1/]			3	**23**
	Alternative 5D	Burley	2						<1	**2**
	Proposed – Comparison portion for Alternative 5E	Burley	23						2	**24**
		Pocatello				t[1/]			t[1/]	**t[1/]**
	Alternative 5E	Burley	12			t[1/]			3	**15**
6	Proposed – Total Length	No BLM Land Crossed								

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of occupancy

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.6-5. Construction Impacts to Vegetation (in acres) on Federal Lands cont.

Segment Number	Proposed or Alternative Name	Bureau of Land Management Field Office	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Construction Facilities	ROW Clearing	Construction Facilities	ROW Clearing			
7	Proposed – Total Length	Burley	242	35	37	t[1/]		39	14	**367**
		Pocatello	66	83	85			t[1/]	1	**235**
	Proposed – Comparison portion for Alternatives 7A,B	Pocatello	49	83	85			t[1/]	<1	**218**
	Alternative 7A	Pocatello	45	102	100	0.6		<1	2	**249**
	Alternative 7B	Pocatello	107	33	40	0.4			5	**184**
	Proposed – Comparison portion for Alternative 7C	Burley	147					15	1	**162**
	Alternative 7C	Burley	106					18	1	**125**
	Proposed – Comparison portion for Alternative 7D	Burley	1		1	t[1/]		18	1	**20**
	Alternative 7D	Burley						9	t[1/]	**9**
	Proposed – Comparison portion for Alternative 7E	Burley	3	2	4				<1	**10**
	Alternative 7E	Burley	24	2	7			1	1	**35**
	Proposed – Comparison portion for Alternative 7F	Burley	3	24	19			t[1/]	<1	**46**
	Alternative 7F	Burley	22	35	41			27	1	**125**
	Proposed – Comparison portion for Alternative 7G	Burley	45						<1	**45**
	Alternative 7G	Burley	45						2	**48**
	Proposed – Comparison portion for Alternative 7K	Burley	242	35	37	t[1/]		39	14	**367**
		Pocatello	66	83	85			t[1/]	1	**235**
	Alternative 7K	Burley	669	180	311	2.1		232	65	**1459**
		Pocatello	88	28	33	1.4	0.9		t[1/]	**151**
8	Proposed – Total Length	Four Rivers	617			0.4		450	26	**1094**
		Owyhee	72			0.1		10	<1	**83**
		Shoshone	311			0.1		116	14	**442**
	Proposed – Comparison portion for Alternative 8A	Four Rivers	89			t[1/]			1	**90**
		Shoshone	311			0.1		116	14	**442**
	Alternative 8A	Four Rivers	76			0.6		3	<1	**81**
		Jarbidge	175				0.3	66	6	**247**
		Shoshone	66					52	4	**122**
	Proposed – Comparison portion for Alternative 8B	Four Rivers	327			0.3		321	21	**669**
		Owyhee	72			0.1		10	<1	**83**
	Alternative 8B[3/]	Four Rivers	211			0.2		116	14	**342**
		Owyhee	1						t[1/]	**1**
	Proposed – Comparison portion for Alternative 8C	Four Rivers	64			0.1		64	3	**131**
	Alternative 8C	Four Rivers	34					14	2	**49**
	Proposed – Comparison portion for Alternative 8D	Four Rivers	10					126	6	**142**
	Alternative 8D	Four Rivers	4					100	6	**109**
	Proposed – Comparison portion for Alternative 8E	Four Rivers	46					37	3	**86**
	Alternative 8E	Four Rivers	223			0.2		97	4	**324**
9	Proposed – Total Length	Bruneau	215					89	17	**321**
		Burley	212			t[1/]		298	10	**520**
		Four Rivers	101			0.7		166	3	**271**
		Jarbidge	378	1	1	0.4		600	25	**1005**
		Owyhee	367			t[1/]		4	4	**375**
	Proposed – Comparison portion for Alternative 9A	Burley	42					62	4	**109**
	Alternative 9A	Burley	70					33	4	**107**
	Proposed – Comparison portion for Alternative 9B	Burley	6					21	t[1/]	**28**
		Jarbidge	376	1	1	0.4		506	25	**909**
	Alternative 9B	Burley	40					14	<1	**54**
		Jarbidge	219			0.1	0.3	285	18	**522**
	Proposed – Comparison portion for Alternative 9C	Burley	6					22	t[1/]	**28**
		Jarbidge	111	1	1	0.3		119	17	**248**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of occupancy

[3/] The actual route along Alternative 8B would avoid federal lands; therefore, reported impact acreages along Alternative 8B are conservative

Table D.6-5. Construction Impacts to Vegetation (in acres) on Federal Lands cont.

Segment Number	Proposed or Alternative Name	Bureau of Land Management Field Office	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Construction Facilities	ROW Clearing	Construction Facilities	ROW Clearing			
9 (cont.)	Alternative 9C	Burley	40					20	<1	**61**
		Jarbidge	t[1/]					54	7	**61**
	Proposed – Comparison portion for Alternatives 9D,F,G,H	Bruneau	215					89	17	**321**
		Four Rivers	87			0.7		49	3	**139**
		Jarbidge	1					14	t[1/]	**15**
		Owyhee	235			t[1/]		4	2	**241**
	Alternative 9D	Bruneau	3						t[1/]	**3**
		Four Rivers	414	1	1	1.3		449	32	**897**
		Owyhee	9						t[1/]	**9**
	Alternative 9F	Bruneau	91					67	11	**169**
		Four Rivers	364			2.0		260	21	**647**
		Jarbidge	1					14	t[1/]	**15**
		Owyhee	9						t[1/]	**9**
	Alternative 9G	Bruneau	3						t[1/]	**3**
		Four Rivers	413	1	1	1.1		398	31	**844**
		Owyhee	12					16	t[1/]	**27**
	Alternative 9H	Bruneau	91					67	11	**169**
		Four Rivers	363			1.8		210	20	**595**
		Jarbidge	1					14	t[1/]	**15**
		Owyhee	12					16	t[1/]	**27**
	Proposed – Comparison portion for Alternative 9E (revised)	Bruneau	215					89	18	**321**
		Four Rivers	92			1		49	3	**144**
		Jarbidge	1					14	t[1/]	**15**
		Owyhee	318			t[1/]		4	3	**324**
	Alternative 9E (revised)	Bruneau	412			1		142	5	**560**
		Four Rivers	82			1		53	3	**139**
		Jarbidge	24					21	t[1/]	**45**
		Owyhee	404			t[1/]		36	3	**443**
10	Proposed – Total Length	Shoshone	131					159	23	**314**
Total of All Proposed Segments (grey shaded areas)			**5,649**	**251**	**316**	**16.9**	**1.2**	**1,964**	**306**	**8,504**

Segment Number	Proposed or Alternative Name	National Forest	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Construction Facilities	ROW Clearing	Construction Facilities	ROW Clearing			
1W	Wa Proposed – Total Length	Medicine Bow-Routt	17	1	1	t[1/]			t[1/]	**18**
	Wc Proposed – Total Length	Medicine Bow-Routt	18	11	16				t[1/]	**46**
4	Proposed – Total Length	Caribou-Targhee	22	118	179	t[1/]	2.0	12	7	**328**
7	Alternative 7K	Sawtooth	117	109	155	2.1		7	8	**398**
Total of All Proposed Segments (grey shaded areas)			**56**	**124**	**200**	**0.3**	**0.8**	**12**	**5**	**399**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

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Table D.6-5. Construction Impacts to Vegetation (in acres) on Federal Lands cont.

Segment Number	Proposed or Alternative Name	Other Federal Lands	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Construction Facilities	ROW Clearing	Construction Facilities	ROW Clearing			
4[2/]	Proposed – Total Length	Bureau of Reclamation	72			0.3			<1	**73**
	Proposed – Comparison portion for Alternatives 4B-4F	Bureau of Reclamation	72			0.3			<1	**73**
	Alternative 4B	Bureau of Reclamation	17						<1	**17**
		Fish and Wildlife Service	1						t[1/]	**1**
	Alternative 4C	Bureau of Reclamation	17						<1	**17**
		Fish and Wildlife Service	<1			1.6			32	**34**
	Alternative 4D	Bureau of Reclamation	17						<1	**17**
		Fish and Wildlife Service	1						t[1/]	**1**
	Alternative 4E	Bureau of Reclamation	17						<1	**17**
		Fish and Wildlife Service	<1			1.6			32	**34**
	Alternative 4F	Bureau of Reclamation	72			0.3			<1	**73**
5	Alternative 5C	Indian Reservation	235	25	31	5.4		3	3	**302**
8	Proposed – Total Length	Bureau of Reclamation	44					15	<1	**60**
	Proposed – Comparison portion for Alternative 8B	Bureau of Reclamation	31					10	<1	**41**
	Alternative 8B	Bureau of Reclamation	16			t[1/]		13	<1	**29**
	Proposed – Comparison portion for Alternative 8C	Bureau of Reclamation	6					1	<1	**7**
	Alternative 8C	Bureau of Reclamation	<1					1		**1**
	Proposed – Comparison portion for Alternative 8E	Bureau of Reclamation	19					9	t[1/]	**28**
9	Proposed – Total Length	Military Reservations/Corps of Engineers	4					3		**7**
	Alternative 9G	Bureau of Reclamation	26						t[1/]	**26**
	Alternative 9H	Bureau of Reclamation	26						t[1/]	**26**
Total of All Proposed Segments (grey shaded areas)			**121**			**0.3**		**18**	**1**	**140**

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

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[1/] "t" indicates only a trace amount (<0.1 acre) of occupancy

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.6-6. Operations Impacts to Vegetation (in acres) on Federal Lands

Segment Number	Proposed or Alternative Name	Bureau of Land Management Field Office	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Operations Facilities	ROW Maintenance	Operations Facilities	ROW Maintenance			
1W	1W(a) Proposed – Total Length	Casper	11	t[1/]	1	t[1/]			1	**13**
		Rawlins	38			t[1/]			11	**49**
	Alternative 1W(a)-B	Casper	t[1/]							**t[1/]**
	1W(c) Proposed – Total Length	Casper	6	1	16	t[1/]			<1	**24**
		Rawlins	26			t[1/]		4	2	**32**
2	Proposed – Total Length	Rawlins	69	t[1/]	5	0.2		<1	10	**84**
	Proposed – Comparison portion for Alternative 2A	Rawlins	7					t[1/]	1	**8**
	Alternative 2A	Rawlins	11			0.3			2	**13**
	Proposed – Comparison portion for Alternative 2B	Rawlins	5					t[1/]	1	**6**
	Alternative 2B	Rawlins	5						1	**6**
3	Segment 3 Proposed – Total Length	Rawlins	16			t[1/]			3	**19**
		Rock Springs	25			t[1/]			2	**28**
	Segment 3A Proposed – Total Length	Rock Springs	4			t[1/]			<1	**5**
4[2/]	Proposed – Total Length	Kemmerer	97	3	26	0.9	1.4	1	3	**132**
		Pocatello	9	1	17	t[1/]		t[1/]	3	**31**
		Rock Springs	44			0.2			2	**46**
	Proposed – Comparison portion for Alternatives 4B-4F	Kemmerer	97	3	26	0.9	1.4	1	3	**132**
		Pocatello	3			t[1/]			<1	**3**
		Rock Springs	4						<1	**4**
	Alternative 4B	Kemmerer	114	<1	4	0.2		<1	4	**123**
		Pocatello	6			t[1/]		<1	<1	**7**
		Rock Springs	9			t[1/]		t[1/]	<1	**10**
	Alternative 4C	Kemmerer	106	t[1/]	3	0.2		<1	4	**114**
		Pocatello	6			t[1/]		<1	<1	**6**
		Rock Springs	9			t[1/]		t[1/]	<1	**10**
	Alternative 4D	Kemmerer	122	1	6	0.3		<1	4	**133**
		Pocatello	6			t[1/]		<1	<1	**7**
		Rock Springs	10			t[1/]		t[1/]	<1	**10**
	Alternative 4E	Kemmerer	112	<1	5	0.2		<1	4	**123**
		Pocatello	5			t[1/]		<1	<1	**5**
		Rock Springs	10			t[1/]		t[1/]	<1	**10**
	Alternative 4F	Kemmerer	99	5	68	0.6	2.2	1	4	**179**
		Pocatello	4			t[1/]			<1	**4**
		Rock Springs	4						<1	**4**
5	Proposed – Total Length	Burley	<1						t[1/]	**1**
		Pocatello	10	13	193			1	<1	**217**
	Proposed – Comparison portion for Alternatives 5A,B	Pocatello	6	9	121				<1	**136**
	Alternative 5A	Pocatello	10	15	147	t[1/]			1	**172**
	Alternative 5B	Pocatello	15	6	95	t[1/]			1	**117**
	Proposed – Comparison portion for Alternative 5C	Pocatello	7	10	149				<1	**167**
	Alternative 5C	Pocatello	t[1/]	1						**1**
	Proposed – Comparison portion for Alternative 5D	Burley	<1		28				t[1/]	**28**
		Pocatello	2	1					<1	**3**
	Alternative 5D	Burley	<1						t[1/]	**<1**
	Proposed – Comparison portion for Alternative 5E	Burley	<1						t[1/]	**1**
	Alternative 5E	Burley	1			t[1/]			<1	**1**
6	Proposed – Total Length	No BLM Land Crossed								

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Blank cells indicate zero acres or null value

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[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.6-6. Operations Impacts to Vegetation (in acres) on Federal Lands cont.

Segment Number	Proposed or Alternative Name	Bureau of Land Management Field Office	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Operations Facilities	ROW Maintenance	Operations Facilities	ROW Maintenance			
7	Proposed – Total Length	Burley	26	2	53	t[1/]		4	3	**88**
		Pocatello	7	13	114				<1	**134**
	Proposed – Comparison portion for Alternatives 7A,B	Pocatello	6	13	114				t[1/]	**133**
	Alternative 7A	Pocatello	7	16	138	t[1/]		t[1/]	1	**163**
	Alternative 7B	Pocatello	15	5	53	t[1/]			1	**75**
	Proposed – Comparison portion for Alternative 7C	Burley	17					2	t[1/]	**18**
	Alternative 7C	Burley	10					1	t[1/]	**11**
	Proposed – Comparison portion for Alternative 7D	Burley	t[1/]		1	t[1/]		2	t[1/]	**3**
	Alternative 7D	Burley						1		**1**
	Proposed – Comparison portion for Alternative 7E	Burley	<1	<1	5				t[1/]	**6**
	Alternative 7E	Burley	3	<1	8			<1	t[1/]	**12**
	Proposed – Comparison portion for Alternative 7F	Burley	<1	2	31			t[1/]	t[1/]	**33**
	Alternative 7F	Burley	3	3	57			2	<1	**65**
	Proposed – Comparison portion for Alternative 7G	Burley	3						t[1/]	**3**
	Alternative 7G	Burley	2						<1	**3**
	Proposed – Comparison portion for Alternative 7K	Burley	26	2	53	t[1/]		4	3	**88**
		Pocatello	7	13	114				<1	**134**
	Alternative 7K	Burley	86	21	403	0.5		21	18	**549**
		Pocatello	13	5	44	0.3	1.0		t[1/]	**63**
8	Proposed – Total Length	Four Rivers	54			t[1/]		39	6	**99**
		Owyhee	5			t[1/]		1	t[1/]	**6**
		Shoshone	36			t[1/]		11	3	**50**
	Proposed – Comparison portion for Alternative 8A	Four Rivers	8			t[1/]			<1	**8**
		Shoshone	36			t[1/]		11	3	**50**
	Alternative 8A	Four Rivers	7			0.2		<1	t[1/]	**8**
		Jarbidge	15				0.3	9	1	**25**
		Shoshone	6					6	1	**13**
	Proposed – Comparison portion for Alternative 8B	Four Rivers	32			t[1/]		27	6	**65**
		Owyhee	5			t[1/]		1	t[1/]	**6**
	Alternative 8B[3/]	Four Rivers	20			t[1/]		9	2	**31**
		Owyhee	t[1/]							**t[1/]**
	Proposed – Comparison portion for Alternative 8C	Four Rivers	6					5	<1	**11**
	Alternative 8C	Four Rivers	4					3	<1	**8**
	Proposed – Comparison portion for Alternative 8D	Four Rivers	1					12	2	**14**
	Alternative 8D	Four Rivers	t[1/]					7	2	**9**
	Proposed – Comparison portion for Alternative 8E	Four Rivers	4					3	<1	**7**
	Alternative 8E	Four Rivers	18					7	<1	**26**
9	Proposed – Total Length	Bruneau	27					8	2	**37**
		Burley	22					33	2	**57**
		Four Rivers	11			0.2		17	1	**29**
		Jarbidge	51	t[1/]	1	t[1/]		70	4	**126**
		Owyhee	38			t[1/]		<1	1	**39**
	Proposed – Comparison portion for Alternative 9A	Burley	4					6	1	**12**
	Alternative 9A	Burley	6					4	1	**10**
	Proposed – Comparison portion for Alternative 9B	Burley	<1					1		**1**
		Jarbidge	51	t[1/]	1	t[1/]		61	4	**116**
	Alternative 9B	Burley	6					1	t[1/]	**7**
		Jarbidge	21			t[1/]	0.3	26	2	**49**
	Segment 9 Proposed - Comparison portion for Alternative 9C	Burley	<1					1		**1**
		Jarbidge	11	t[1/]	1	t[1/]		10	2	**25**
	Alternative 9C	Burley	6					1	t[1/]	**7**
		Jarbidge	t[1/]					4	1	**5**

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Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of occupancy
[3/] The actual route along Alternative 8B would avoid federal lands; therefore, reported impact acreages along Alternative 8B are conservative

Table D.6-6. Operations Impacts to Vegetation (in acres) on Federal Lands cont.

Segment Number	Proposed or Alternative Name	Bureau of Land Management Field Office	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Operations Facilities	ROW Maintenance	Operations Facilities	ROW Maintenance			
9 (cont.)	Proposed – Comparison portion for Alternatives 9D,F,G,H	Bruneau	27					8	2	**37**
		Four Rivers	7			0.2		3	1	**11**
		Jarbidge	<1					1		**1**
		Owyhee	24			t[1/]		<1	<1	**25**
	Alternative 9D	Bruneau	<1							**<1**
		Four Rivers	36	t[1/]	1	t[1/]		32	5	**74**
		Owyhee	<1							**<1**
	Alternative 9F	Bruneau	8					6	1	**15**
		Four Rivers	32			0.2		19	4	**55**
		Jarbidge	<1					1		**1**
		Owyhee	<1							**<1**
	Alternative 9G	Bruneau	<1							**<1**
		Four Rivers	35	t[1/]	1	t[1/]		30	4	**70**
		Owyhee	1					2		**3**
	Alternative 9H	Bruneau	8					6	1	**15**
		Four Rivers	31			0.2		17	3	**51**
		Jarbidge	<1					1		**1**
		Owyhee	1					2		**3**
	Proposed – Comparison portion for Alternative 9E (revised)	Bruneau	27					8	18	**52**
		Four Rivers	8			0.2		3	3	**15**
		Jarbidge	<1					1	t[1/]	**1**
		Owyhee	33			t[1/]		<1	3	**36**
	Alternative 9E (revised)	Bruneau	42			t[1/]		12	5	**59**
		Four Rivers	7			t[1/]		4	3	**14**
		Jarbidge	2					2	t[1/]	**4**
		Owyhee	46			t[1/]		3	3	**53**
10	Proposed – Total Length	Shoshone	11					11	2	**24**
Total of All Proposed Segments (grey shaded areas)			**643**	**33**	**426**	**1.9**	**1.4**	**201**	**62**	**1,369**

Segment Number	Proposed or Alternative Name	National Forest	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Operations Facilities	ROW Maintenance	Operations Facilities	ROW Maintenance			
1W	Wa Proposed – Total Length	Medicine Bow-Routt	3	<1	1	t[1/]				**4**
	Wc Proposed – Total Length	Medicine Bow-Routt	1	2	22					**25**
4	Proposed – Total Length	Caribou-Targhee	2	16	235	t[1/]	2.0		2	**257**
7	Alternative 7K	Sawtooth	13	17	207	0.6	t[1/]	1	2	**241**
Total of All Proposed Segments (grey shaded areas)			**6**	**15**	**259**	**t[1/]**	**0.8**		**2**	**282**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of occupancy

Table D.6-6. Operations Impacts to Vegetation (in acres) on Federal Lands cont.

Segment Number	Proposed or Alternative Name	Other Federal Lands	Shrubland	Forest/Woodland		Wetland/Riparian		Grassland	Other Cover Types	Total Impacts
				Operations Facilities	ROW Maintenance	Operations Facilities	ROW Maintenance			
4[2/]	Proposed – Total Length	Bureau of Reclamation	9			t[1/]			<1	**9**
	Proposed – Comparison portion for Alternatives 4B-4F	Bureau of Reclamation	9			t[1/]			<1	**9**
	Alternative 4B	Bureau of Reclamation	1						t[1/]	**1**
		Fish and Wildlife Service	<1							**<1**
	Alternative 4C	Bureau of Reclamation	1						t[1/]	**1**
		Fish and Wildlife Service	t[1/]			t[1/]			1	**1**
	Alternative 4D	Bureau of Reclamation	1						t[1/]	**1**
		Fish and Wildlife Service	<1							**<1**
	Alternative 4E	Bureau of Reclamation	1						t[1/]	**1**
		Fish and Wildlife Service	t[1/]			t[1/]			1	**1**
	Alternative 4F	Bureau of Reclamation	9			t[1/]			<1	**9**
5	Alternative 5C	Indian Reservation	26	3	46	0.1		1	1	**76**
8	Proposed – Total Length	Bureau of Reclamation	4					2	<1	**6**
	Proposed – Comparison portion for Alternative 8B	Bureau of Reclamation	3					1	<1	**3**
	Alternative 8B	Bureau of Reclamation	1			t[1/]		1	t[1/]	**2**
	Proposed – Comparison portion for Alternative 8C	Bureau of Reclamation	<1					<1	t[1/]	**1**
	Alternative 8C	Bureau of Reclamation	t[1/]					<1		**<1**
	Proposed – Comparison portion for Alternative 8E	Bureau of Reclamation	2					<1		**2**
9	Proposed – Total Length	Military Reservations/Corps of Engineers	1					1		**2**
	Alternative 9G	Bureau of Reclamation	1						t[1/]	**1**
	Alternative 9H	Bureau of Reclamation	1						t[1/]	**1**
Total of All Proposed Segments (grey shaded areas)			**14**			**t[1/]**		**3**	**<1**	**17**

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

Blank cells indicate zero acres or null value

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[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.6-7. Wildland Fires Within the Analysis Area

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Name of Fire	Date of Fire	Total Acres of Fire	Acres of Analysis Area Disturbed by the Fire
1W	1W(a) Proposed – Total Length	73.8	Shirley Basin	7/11/2010	2,428	t[1/]
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5				
	Alternative 1W(a)-B	20.9				
	1W(c) Proposed – Total Length	73.6				
2	Proposed – Total Length	91.9				
	Proposed – Compare to Alternative 2A	16.8				
	Alternative 2A	16.0				
	Proposed – Compare to Alternative 2B	12.5				
	Alternative 2B	12.2				
3	Segment 3 Proposed – Total Length	45.9				
	Segment 3A Proposed – Total Length	5.1				
4	Proposed – Total Length	197.6				
	Proposed – Compare to Alternatives 4B-4F	85.2				
	Alternative 4B	100.2	Cigar 2	9/20/2011	1	<1
	Alternative 4C	101.6	Cigar 2	9/21/2011	1	<1
	Alternative 4D	100.8	Cigar 2	9/22/2011	1	<1
	Alternative 4E	102.2	Cigar 2	9/23/2011	1	<1
	Alternative 4F	87.5				
5	Proposed – Total Length	55.7	Bowen	8/25/2010	6,662	71
			Downey West	7/29/2012	130	<1
	Proposed – Compare to Alternatives 5A,B	22.3	Bowen	8/25/2010	6,662	71
	Alternative 5A	29.7	Bowen	8/25/2010	6,662	2
	Alternative 5B	40.4				
	Proposed – Compare to Alternative 5C	32.9	Bowen	8/25/2010	6,662	71
	Alternative 5C	26.0	Bowen	8/25/2010	6,662	39
	Proposed – Compare to Alternative 5D	19.2				
	Alternative 5D	17.0				
	Proposed – Compare to Alternative 5E	5.8				
	Alternative 5E	5.3				
6	Proposed – Total Length	0.5				

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of impact

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.6-7. Wildland Fires Within the Analysis Area cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Name of Fire	Date of Fire	Total Acres of Fire	Acres of Analysis Area Disturbed by the Fire
7	Proposed – Total Length	118.2	Bowen	8/25/2010	6,662	58
			Cave Canyon	8/5/2012	88,943	198
			Dairy Canyon	9/13/2010	2,508	20
			Downey West	7/29/2012	130	15
			Highway 81-1	7/1/2010	12	<1
			Highway 81-2	7/1/2010	23	t[1/]
			Mile Marker 225	7/19/2010	18	4
			MM 224	8/17/2010	219	18
			Raft River	7/11/2012	198	15
			Yale Road	7/26/2012	622	1
	Proposed – Compare to Alternatives 7A,B	35.1	Bowen	8/25/2010	6,662	58
	Alternative 7A	37.7	Bull Canyon	9/8/2011	1	<1
			Bowen	8/25/2010	6,662	2
			Dairy Canyon	9/13/2010	2,508	20
	Alternative 7B	46.2	Dairy Canyon	9/13/2010	2,508	20
	Proposed – Compare to Alternative 7C	20.1	MM 224	8/17/2010	219	4
			Raft River	7/11/2012	198	15
			Yale Road	7/26/2012	622	1
	Alternative 7C	20.3	MM 224	8/17/2010	219	4
			Rainbow Road	7/18/2010	4,387	173
			Yale Road	7/26/2012	622	29
	Proposed – Compare to Alternative 7D	6.2	Highway 81-1	7/1/2010	12	<1
			Highway 81-2	7/1/2010	23	t[1/]
			Mile Marker 225	7/19/2010	18	4
			MM 224	8/17/2010	219	18
	Alternative 7D	6.8	Highway 81-2	7/1/2010	23	1
			MM 224	8/17/2010	219	20
	Proposed – Compare to Alternative 7E	3.8				
	Alternative 7E	4.5				
	Proposed – Compare to Alternative 7F	10.5				
	Alternative 7F	10.8	Pine Knob	7/7/2011	11	4
	Proposed – Compare to Alternative 7G	3.3	Cave Canyon	8/5/2012	88,943	54
	Alternative 7G	3.4	Cave Canyon	8/5/2012	88,943	61
	Proposed – Comparison portion for Alternative 7K	118.2	Bowen	8/25/2010	6,662	58
			Cave Canyon	8/5/2012	88,943	198
			Dairy Canyon	9/13/2010	2,508	20
			Downey West	7/29/2012	130	15
			Highway 81-1	7/1/2010	12	<1
			Highway 81-2	7/1/2010	23	t[1/]
			Mile Marker 225	7/19/2010	18	4
			MM 224	8/17/2010	219	18
			Raft River	7/11/2012	198	15
			Yale Road	7/26/2012	622	1
	Alternative 7K	148.1	Cave Canyon	8/5/2012	88,943	698
			Downey West	7/29/2012	130	15
			Emery	8/26/2010	3,785	40
			Walker Hollow	8/21/2011	367	37

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
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Table D.6-7. Wildland Fires Within the Analysis Area cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Name of Fire	Date of Fire	Total Acres of Fire	Acres of Analysis Area Disturbed by the Fire
8	Proposed – Total Length	131.5	Eureka	7/11/2009	<1	t[1/]
			Lucky	7/24/2010	70	23
			Nothot	7/2/2011	1	t[1/]
			Power Station	9/27/2009	3,026	<1
			Benwalk	7/9/2012	29,100	378
			Blair	8/17/2011	39,577	317
	Proposed – Compare to Alternative 8A	51.9	Lucky	7/24/2010	70	23
			Blair	8/17/2011	39,577	317
			Power Station	9/27/2009	3,026	<1
			Benwalk	7/9/2012	29,100	378
			Ditto	7/7/2012	6,179	9
			Power	8/16/2011	1,091	17
			Shoestring	8/28/2008	1,433	45
			South Trail	7/24/2010	3,831	74
			Union	8/16/2011	10,527	127
			Walker	10/2/2011	238	17
	Alternative 8A	53.6	Power Station	9/27/2009	3,026	<1
			5700 N	7/5/2012	237	1
			Hwy 45 MM103	9/1/2011	4,982	3
			Long Butte	8/21/2010	306,113	327
			Trails	8/6/2009	82	13
			Walker	10/2/2011	238	1
			Windmill	8/4/2011	17,382	263
			Windmills	6/16/2008	6	<1
	Proposed – Compare to Alternative 8B	45.3	Ditto	7/7/2012	6,179	7
			Power	8/16/2011	1,091	17
			Union	8/16/2011	10,527	127
	Alternative 8B	45.8	Kuna Butte	7/17/2011	5	1
			Ditto	7/7/2012	6,179	7
			South Pen	8/16/2011	1,304	37
			Union	8/16/2011	10,527	<1
	Alternative 8B – Compare to Alternative 8C	6.5	Ditto	7/7/2012	6,179	7
	Alternative 8C	6.4	Ditto	7/7/2012	6,179	75
			Reggie	7/6/2011	118	1
	Proposed – Compare to Alternative 8D	6.9				
	Alternative 8D	8.1				
	Proposed – Compare to Alternative 8E	7.0				
	Alternative 8E	18.3	Con Shea	6/14/2012	8,926	84
			Swan	5/28/2012	121	7

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
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Blank cells indicate zero miles or null value

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Table D.6-7. Wildland Fires Within the Analysis Area cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Name of Fire	Date of Fire	Total Acres of Fire	Acres of Analysis Area Disturbed by the Fire
9	Proposed – Total Length	162.2	MM40 HWY78	9/27/2009	4	<1
			Balanced Road	6/3/2012	6,423	25
			Berger	8/9/2012	78	1
			Cottonwood Creek	6/21/2012	18	<1
			East Hollister	8/5/2012	568	22
			Flint	7/31/2010	730	15
			Hot Spings 2	10/1/2011	10,397	167
			Kinyon Road	7/7/2012	214,991	175
			Long Butte	8/21/2010	306,113	772
			Love	7/30/2011	43	4
			MM43 HWY78	7/9/2012	782	1
			South Indian	7/9/2012	14,095	171
	Proposed – Compare to Alternative 9A	7.8				
	Alternative 9A	7.7				
	Proposed – Compare to Alternative 9B	49.1	Balanced Road	6/3/2012	6,423	25
			Flint	7/31/2010	730	15
			Kinyon Road	7/7/2012	214,991	175
			Long Butte	8/21/2010	306,113	3
	Alternative 9B	52.3	Kinyon Road	7/7/2012	214,991	27
			Long Butte	8/21/2010	306,113	534
			Windmill	8/4/2011	17,382	170
	Proposed – Compare to Alternative 9C	14.4	Balanced Road	6/3/2012	6,423	25
			Kinyon Road	7/7/2012	214,991	175
			Long Butte	8/21/2010	306,113	771
	Alternative 9C	14.4	Balanced Road	6/3/2012	6,423	17
			Kinyon Road	7/7/2012	214,991	27
			Long Butte	8/21/2010	306,113	11
	Proposed – Compare to Alternative 9D,F,G,H	57.2	MM40 HWY78	9/27/2009	4	<1
			Hot Spings 2	10/1/2011	10,397	122
			Love	7/30/2011	43	4
			MM43 HWY78	7/9/2012	782	1
			South Indian	7/9/2012	14,095	2
	Alternative 9D	60.1	Wilkins Gulch	10/4/2011	9	<1
			Chattin Flat	5/14/2012	181	11
			Con Shea	6/14/2012	8,926	84
			Hot Springs 2	10/1/2011	10,397	109
			Jack Creek	8/10/2010	23	1
			South Indian	7/9/2012	14,095	104
			Strike	7/19/2012	222	21
	Alternative 9F	63.3	Chattin Flat	5/14/2012	181	11
			Con Shea	6/14/2012	8,926	84
			Hot Springs 2	10/1/2011	10,397	120
			Jack Creek	8/10/2010	23	1
			Love	7/30/2011	43	4
			South Indian	7/9/2012	14,095	2
			Strike	7/19/2012	222	21

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero miles or null value

Table D.6-7. Wildland Fires Within the Analysis Area cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Name of Fire	Date of Fire	Total Acres of Fire	Acres of Analysis Area Disturbed by the Fire
9 (cont.)	Alternative 9G	57.8	Wilkins Gulch	10/4/2011	9	<1
			Chattin Flat	5/14/2012	181	11
			Con Shea	6/14/2012	8,926	72
			Hot Springs 2	10/1/2011	10,397	109
			Jack Creek	8/10/2010	23	1
			South Indian	7/9/2012	14,095	104
			Strike	7/19/2012	222	21
	Alternative 9H	61.0	Chattin Flat	5/14/2012	181	11
			Con Shea	6/14/2012	8,926	72
			Hot Springs 2	10/1/2011	10,397	120
			Jack Creek	8/10/2010	23	1
			South Indian	7/9/2012	14,095	2
			Strike	7/19/2012	222	21
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	MM40 HWY78	9/27/2009	4	<1
			Hot Spings 2	10/1/2011	10,397	120
			Love	7/30/2011	43	4
			MM43 HWY78	7/9/2012	782	1
			South Indian	7/9/2012	14,095	2
	Alternative 9E (revised)	70.6	Crowbar	8/7/2010	29,508	38
			Hot Springs 2	10/1/2011	10,397	149
			Love	7/30/2011	43	10
			Sailor Creek	6/29/2010	10,062	34
			South Indian	7/9/2012	14,095	1
10	Proposed – Total Length	34.4	Hunt	7/2/2008	104	23

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero miles or null value

Table D.8-1. Invasive and Noxious Plant Species Potentially Present in the Gateway West Project Analysis Area

Common Name	Scientific Name	Invasive Exotic Species[2/]	Listed as Noxious[3/,4/]			Segments in Which Species is Known or Likely to Occur [4/,5/]	
			State of Wyoming (Designated)	Wyoming Counties (Declared)	State of Idaho[6/]	Wyoming	Idaho
Species on State Noxious Weed List							
Black henbane	*Hyoscyamus niger* [1/]	Yes	--	Albany, Converse, Lincoln, Natrona, Sweetwater	Control	All	All
Buffalobur	*Solanum rostratum*	Yes	--	Converse, Natrona	Control	1, 2, 3, 4	8, 9
Canada thistle	*Cirsium arvense* [1/]	Yes	X	--	Containment	All	All
Common burdock	*Arctium minus* [1/]	Yes	X	--	--	1, 2, 4	All
Common crupina	*Crupina vulgaris* [1/]	Yes	--	Converse	Control	--	7
Common St. Johnswort	*Hypericum perforatum* [1/]	Yes	X	--	--	4	8
Common Tansy	*Tanacetum vulgare* [1/]	Yes	X	--	--	All	5, 7, 8
Dalmatian toadflax	*Linaria dalmatica* [1/]	Yes	X	--	Containment	All	All
Diffuse knapweed	*Centaurea diffusa* [1/]	Yes	X	--	Containment	All	All
Dyer's woad	*Isatis tinctoria* [1/]	Yes	X	--	Control	All	All
Eurasian watermilfoil	*Myriophyllum spicatum* [1/]	Yes	--	--	Control	--	8
Field bindweed	*Convolvulus arvensis* [1/]	Yes	X	--	Containment	All	All
Giant Knotweed	*Polygonum sachalinense*		--	--	Control		7, 8
Hairy whitetop, Hoary cress	*Cardaria pubescens* [1/]	Yes	X [7/]	--	--	All	All
Hoary alyssum	*Berteroa incana*	Yes			Containment	2, 3	7, 8
Houndstongue	*Cynoglossum officinale* [1/]	Yes	X	--	Containment	1, 2, 4	4, 5, 7
Iberian starthistle	*Centaurea iberica* [1/]	Yes	--	Converse	--	1	--
Japanese Knotweed	*Polygonum cuspidatum*	Yes	--	--	Control	All	--
Johnsongrass	*Sorghum halepense*	Yes	--	--	Control	--	4, 5, 7, 8
Jointed goatgrass	*Aegilops cylindrica* [1/]	Yes	--	Converse	Containment	1	All
Leafy spurge	*Euphorbia esula* [1/]	Yes	X	--	Containment	All	All
Matgrass	*Nardus stricta* [1/]	Yes	--	--	Control	--	5
Mayweed chamomile	*Anthemis cotula* [1/]	Yes	--	--	--	1	8, 9
Milium	*Milium vernale*	Yes	--	--	Containment	--	10
Musk thistle	*Carduus nutans* [1/]	Yes	X	--	Control	All	All
Orange hawkweed	*Hieracium aurantiacum* [1/]	Yes	--	Converse	Control	--	5, 7, 8
Oxeye daisy	*Leucanthemum vulgare (* formerly *Chrysanthemum leucanthemum)* [1/]	Yes	X	--	Containment	1, 2, 4	4, 7
Parrotfeather Milfoil	*Myriophyllum aquaticum*	Yes	--	--	Control	--	10
Perennial pepperweed, tall whitetop	*Lepidium latifolium* [1/]	Yes	X	--	Containment	All	All
Perennial sowthistle	*Sonchus arvensis* [1/]	Yes	X	--	Control	All	All
Plumeless thistle	*Carduus acanthoides* [1/]	Yes	X	--	Control	1	--
Poison hemlock	*Conium maculatum* [1/]	Yes	--	--	Containment	1, 2, 3	All
Puncture vine	*Tribulus terrestris*	Yes	--	Natrona	Containment	1, 2	All
Purple loosestrife	*Lythrum salicaria* [1/]	Yes	X	--	Containment	--	All
Quackgrass	*Agropyron repens* [1/]	Yes	X	--	--	All	All
Rush skeletonweed	*Chondrilla juncea* [1/]	Yes	--	Converse	Containment	--	5, 7, 8, 9, 10

[1/] Species on the BLM national invasive species list.

[2/] Included in Invaders database (University of Montana-Missoula 2009).

[3/] Designated noxious weeds are plants that are legally designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property; whereas, "declared noxious weeds" are those that have been declared on a county-by-county basis.

[4/] Source for status: ISDA 2008; Wyoming Weed and Pest 2012a and b; NDA 2009. "—" indictates not listed.

[5/] Distribution based on Invaders database (University of Montana-Missoula 2009), Plants database (NRCS 2009), and ISDA (2008). Distribution of native species is only shown for Wyoming counties where listed as noxious. Underlined segments indicate that species is likely to occur where regulated, non-underlined means it is likely to occur in additional areas where it is currently not regulated.

[6/] Idaho listing categories are explained in text.

[7/] Hairy whitetop (*Cardaria pubescens)* and whitetop (*Cardaria draba)* are listed as the same species as designated as one noxious weed by the state of Wyoming.

Table D.8-1. Invasive and Noxious Plant Species Potentially Present in the Gateway West Project Analysis Area cont.

Common Name	Scientific Name	Invasive Exotic Species[2/]	Listed as Noxious[3/,4/]			Segments in Which Species is Known or Likely to Occur [4/,5/]	
			State of Wyoming (Designated)	Wyoming Counties (Declared)	State of Idaho[6/]	Wyoming	Idaho
Species on State Noxious Weed List cont.							
Russian knapweed	*Acroptilon repens* [1/]	Yes	X	--	Control	All	All
Russian olive	*Elaeagnus angustifolia* [1/]	Yes	X	--	--	1	All
Salt cedar, tamarisk	*Tamarix spp.* [1/]	Yes	X	--	Containment	All	All
Scotch broom	*Cytisus scoparius* [1/]	Yes	--	Converse	Control	--	5, 7, 9
Scotch thistle	*Onopordum acanthium* [1/]	Yes	X	--	Containment	1, 4	All
Silverleaf nightshade	*Solanum elaeagnifolium*	Yes	--	--	Control	--	8, 10
Skeletonleaf bursage	*Ambrosia tomentosa*	Yes	X	--	Control	All	5, 7, 8, 10
Spotted knapweed	*Centaurea maculosa* [1/]	Yes	X	--	Containment	All	All
Syrian beancaper	*Zygophyllum fabago* [1/]	Yes	--	Converse	EDRR	--	5, 7
Tansy ragwort	*Senecio jacobaea* [1/]	Yes	--	Converse	Containment	--	5, 7
Vipers blugloss	*Echium vulgare* [1/]	Yes	--	--	Control	--	8
White Bryony	*Bryonia alba*	Yes			Containment		4, 5, 8
Whitetop, hoary cress	*Cardaria draba* [1/]	Yes	X [7/]	--	Containment	1, 2, 4	All
Yellow hawkweed	*Hieracium caespitosum, H. pratense* [1/]	Yes	--	Converse	Control	--	7, 8
Yellow starthistle	*Centaurea solstitialis* [1/]	Yes	--	--	Containment	--	All
Yellow toadflax	*Linaria vulgaris* [1/]	Yes	X	--	Containment	All	All
County Declared or other Species Not on State Weed Lists, or Not Likely to Occur Where Regulated by State							
Absinth wormwood	*Artemisia absinthium*	Yes	--	Converse	--	1	8
Austrian peaweed/ Swainsonpea	*Sphaerophysa salsula* [1/]	Yes	--	--	--	--	5, 7
Baby's breath	*Gypsophila paniculata* [1/]	Yes	--	Converse	--	1	4, 8
Bermuda grass	*Cynodon dactylon* [1/]	Yes	--	--	--	--	8, 9
Black medic	*Medicago lupulina*	Yes	--	Natrona	--	1	--
Bull thistle	*Cirsium vulgare* [1/]	Yes	--	Converse, Lincoln	--	1, 2, 3, 4	All
Bur buttercup	*Ranunculus testiculatus*	Yes	--	Converse	--	1, 2, 3, 4	All
Camelthorn	*Alhagi camelorum* [1/]	Yes	--	--	--	--	8
Carolina horse-nettle	*Solanum carolinense*	Yes	--	--	--	--	8
Cheatgrass/downy brome	*Bromus tectorum* [1/]	Yes	--	Albany, Converse, Natrona	--	1, 2, 3, 4	All
Chicory	*Cichorium intybus* [1/]	Yes	--	Converse	--	1	All
Common cocklebur	*Xanthium strumarium*	Yes	--	Converse	--	1, 2, 3, 4	All
Common mullein	*Verbascum thapsus*	Yes	--	Converse	--	1, 2, 3, 4	All
Common sunflower	*Helianthus annuus*	Native	--	Converse	--	1	--
Curly dock	*Rumex crispus*	Yes	--	Converse, Natrona	--	1, 2, 3, 4	All
Curlycup gumweed	*Grindelia squarrosa*	Native	--	Converse, Natrona	--	1	--
Dames rocket	*Hersperis matronalis* [1/]	Yes		Converse	--	1, 2, 4	4, 5, 7, 9
Foxtail barley	*Hordium jubatum*	Native	--	Sweetwater	--	3, 4	--
Geyer larkspur	*Delphinium geyeri*	Native	--	Albany, Carbon	--	1, 2, 3	--

[1/] Species on the BLM national invasive species list.

[2/] Included in Invaders database (University of Montana-Missoula 2009).

[3/] Designated noxious weeds are plants that are legally designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property; whereas, "declared noxious weeds" are those that have been declared on a county-by-county basis.

[4/] Source for status: ISDA 2008; Wyoming Weed and Pest 2012a and b; NDA 2009. "—" indictates not listed.

[5/] Distribution based on Invaders database (University of Montana-Missoula 2009), Plants database (NRCS 2009), and ISDA (2008). Distribution of native species is only shown for Wyoming counties where listed as noxious. Underlined segments indicate that species is likely to occur where regulated, non-underlined means it is likely to occur in additional areas where it is currently not regulated.

[6/] Idaho listing categories are explained in text.

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Table D.8-1. Invasive and Noxious Plant Species Potentially Present in the Gateway West Project Analysis Area cont.

Common Name	Scientific Name	Invasive Exotic Species[2/]	Listed as Noxious[3/,4/]			Segments in Which Species is Known or Likely to Occur [4/,5/]	
			State of Wyoming (Designated)	Wyoming Counties (Declared)	State of Idaho[6/]	Wyoming	Idaho
County Declared or other Species Not on State Weed Lists, or Not Likely to Occur Where Regulated by State cont.							
Goatsrue	*Galega officinalis*	Yes	--	Converse	--	1	--
Gorse	*Ulex europaeus*	Yes	--	Converse	--	1	--
Halogeton	*Halogeton glomeratus* [1/]	Yes	--	Carbon, Converse, Natrona,	--	1, 2, 3, 4	5, 7, 8, 9
Italian thistle	*Carduus pycnocephalus* [1/]	Yes	--	Converse	--	1	--
Japanese brome	*Bromus japonicus* [1/]	Yes	--	--	--	All	All
Lady's bedstraw	*Galium verum*	Yes	--	Sweetwater	--	2, 3, 4	7
Locoweed	*Oxytropis spp.*	Native	--	Albany	--	1	--
Meadow knapweed	*Centaurea nigrescens* [1/]	Yes	--	Converse	--	1	--
Medusahead	*Taeniatherum caput-medusae*	Yes	--	Converse	--	--	8
Mountain thermopsis	*Thermopsis montana*	Native	--	Sweetwater	--	2, 3, 4	
Musk mustard, blue mustard	*Chorispora tenella*	Yes	--	Converse	--	1, 2, 3, 4	All
Plains pricklypear	*Opuntia polyacantha*	Native	--	Carbon	--	1, 2	--
Purple starthistle	*Centaurea calcitrapa*	Yes	--	Converse	--	1	--
Redstem filaree	*Erodium cicutarium*	Yes	--	Converse	--	1	All
Russian thistle	*Salsola iberica*	Yes	--	--	--	All	All
Sandbur	*Cenchrus incertus*	Yes	--	Converse	--	1	--
Scentless chamomile	*Tripleurospermum inodorum* [1/]	Yes	--	Converse	--	1, 2, 4	8, 9
Showy milkweed	*Asclepias speciosa*	Native	--	Converse, Natrona	--	1	--
Squarrose knapweed	*Centaurea virgata*	Yes	--	Converse	--	1	--
Sulfur cinquefoil	*Potentilla recta* [1/]	Yes	--	Converse	--	--	4, 5, 7
Teasel	*Dipsacus fullonum* [1/]	Yes	--	Converse		--	All
Wavyleaf thistle	*Cirsium undulatum*	Native	--	Converse	--	1	--
Western sticktight	*Lappula occidentalis*	Native	--	Converse	--	1	--
Wild licorice	*Glycyrrhiza lepidota*	Native	--	Converse, Natrona	--	1	--
Wild oats	*Avena fatua*	Yes	--	Lincoln	--	1, 2, 4	All
Wyeth's lupine	*Lupinus wyethii*	Native	--	Carbon, Converse	--	1, 2	--

[1/] Species on the BLM national invasive species list.

[2/] Included in Invaders database (University of Montana-Missoula 2009).

[3/] Designated noxious weeds are plants that are legally designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property; whereas, "declared noxious weeds" are those that have been declared on a county-by-county basis.

[4/] Source for status: ISDA 2008; Wyoming Weed and Pest 2012a and b; NDA 2009. "—" indictates not listed.

[5/] Distribution based on Invaders database (University of Montana-Missoula 2009), Plants database (NRCS 2009), and ISDA (2008). Distribution of native species is only shown for Wyoming counties where listed as noxious. Underlined segments indicate that species is likely to occur where regulated, non-underlined means it is likely to occur in additional areas where it is currently not regulated.

[6/] Idaho listing categories are explained in text.

[7/] Hairy whitetop (*Cardaria pubescens)* and whitetop (*Cardaria draba)* are listed as the same species as designated as one noxious weed by the state of Wyoming.

Table D.9-1. Impacts to Wetlands and Riparian Areas during Construction (acres)

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Herbaceous Wetlands	Shrub Wetlands	Forested Wetlands			Mixed Wetlands	Total Wetlands			Herbaceous Riparian	Shrub Riparian	Forested Riparian			Mixed Riparian	Total Riparian			Total Wetlands and Riparian		
			Construction Facilities	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts
1W	1W(a) Proposed – Total Length	73.8	2.4	1.3	0.3	1.6	**1.9**	t[2/]	4.0	1.6	**5.6**	0.9	1.3	0.5	0.9	**1.4**	1.2	3.9	0.9	**4.9**	7.9	2.6	**10.5**
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5		0.2	0.3	1.6	**1.9**		0.6	1.6	**2.2**	0.1	0.4	0.5	0.8	**1.3**	0.4		0.8	**0.8**	0.6	2.4	**3.0**
	Alternative 1W(a)-B	20.9	0.1						0.1		**0.1**	0.1	t[2/]			**0.0**		0.1		**0.1**	0.2	0.0	**0.2**
	1W(c) Proposed – Total Length	73.6	1.6	0.1	0.7	1.7	**2.4**	1.4	3.9	1.7	**5.6**	1.7	2.1	0.5	1.5	**2.0**	0.1	4.4	1.5	**5.9**	8.3	3.2	**11.5**
2	Proposed – Total Length	91.9	2.9	1.2					4.1		**4.1**	0.2	4.6					4.7		**4.7**	8.8		**8.8**
	Proposed – Comparison portion for Alternative 2A	16.8	2.9	0.7					3.6		**3.6**		0.1					0.1		**0.1**	3.7		**3.7**
	Alternative 2A	16.0		1.8				6.0	7.9		**7.9**	1.5	1.1		3.9	**3.9**	2.8	5.5	3.9	**9.3**	13.3	3.9	**17.2**
	Proposed – Comparison portion for Alternative 2B	12.5	2.9	0.7					3.6		**3.6**		0.1					0.1		**0.1**	3.7		**3.7**
	Alternative 2B	12.2	6.9					6.1	13.0		**13.0**		0.5	0.1	2.8	**2.9**	4.4	5.0	2.8	**7.9**	18.0	2.8	**20.9**
3	Segment 3 Proposed – Total Length	45.9	1.2	0.4				t[2/]	1.6		**1.6**	t[2/]	1.9					2.0		**2.0**	3.5		**3.5**
	Segment 3A Proposed – Total Length	5.1						0.7	0.7		**0.7**		1.2					1.2		**1.2**	0.7	1.2	**1.9**
4[4/]	Proposed – Total Length	197.6	**53.9[3/]**	12.1	0.6	1.7	**2.3**	2.2	**68.8[3/]**	1.7	**70.4[3/]**	20.8	12.6	1.4	2.7	**4.1**	1.3	36.0	2.7	**38.7**	**109.1[3/]**	4.3	**113.4[3/]**
	Proposed – Comparison Portion for Alternatives 4B-4F	85.2	35.3	7.6	0.4	t[2/]	**0.5**	0.9	44.3	t[2/]	**44.3**	18.3	5.4	1.1	1.6	**2.7**	0.9	25.7	1.6	**27.3**	70.0	1.6	**71.6**
	Alternative 4B	100.2	24.2	1.1	0.3		**0.3**	2.1	27.8		**27.8**	16.2	3.5		0.5	**0.5**	1.9	21.6	0.5	**22.1**	49.4	0.5	**49.9**
	Alternative 4C	101.6	23.2	1.8	0.3		**0.3**	0.3	25.6		**25.6**	15.4	3.2		0.5	**0.5**	2.2	20.8	0.5	**21.3**	46.4	0.5	**46.9**
	Alternative 4D	100.8	24.5	1.2	0.3		**0.3**	2.4	28.4		**28.4**	16.1	3.4		0.5	**0.5**	1.6	21.1	0.5	**21.6**	49.5	0.5	**50.0**
	Alternative 4E	102.2	23.4	1.9	0.3		**0.3**	0.6	26.3		**26.3**	15.4	3.1		0.5	**0.5**	1.8	20.4	0.5	**20.9**	46.6	0.5	**47.1**
	Alternative 4F	87.5	29.5	1.4	0.5	0.7	**1.2**	1.1	32.4	0.7	**33.1**	17.6	5.7	0.4	1.9	**2.3**	0.1	23.8	1.9	**25.6**	56.2	2.6	**58.8**
5	Proposed – Total Length	55.7	1.1	0.1					1.1		**1.1**	0.7	4.3				0.2	5.3		**5.3**	6.4		**6.4**
	Proposed – Comparison portion for Alternatives 5A,B	22.3	0.1	0.1					0.2		**0.2**	t[2/]	t[2/]					0.1		**0.1**	0.2		**0.2**
	Alternative 5A	29.7	0.1						0.1		**0.1**	0.1	0.7	0.1	0.4	**0.4**		0.9	0.4	**1.3**	1.0	0.4	**1.4**
	Alternative 5B	40.4	t[2/]	0.1					0.1		**0.1**	0.2	0.7	0.2	1.0	**1.1**		1.2	1.0	**2.1**	1.3	1.0	**2.2**
	Proposed – Comparison portion for Alternative 5C	32.9	0.1	0.1					0.2		**0.2**	0.7	2.2					2.9		**2.9**	3.1		**3.1**
	Alternative 5C	26.0	2.9					0.7	3.6		**3.6**	0.4	0.1	0.3	1.0	**1.3**	1.3	2.1	1.0	**3.1**	5.8	1.0	**6.8**
	Proposed – Comparison portion for Alternative 5D	19.2										0.7	3.4				0.2	4.3		**4.3**	4.3		**4.3**
	Alternative 5D	17.0										0.7	0.9	0.8	1.2	**2.0**		2.4	1.2	**3.6**	2.4	1.2	**3.6**
	Proposed – Comparison portion for Alternative 5E	5.8											1.2				0.2	1.4		**1.4**	1.4		**1.4**
	Alternative 5E	5.3											0.2					0.2		**0.2**			**0.2**
6	Proposed – Total Length	0.5																					

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Due to permit criteria, acreages reported here are rounded to tenths of an acre; therefore, numbers are inexact and columns/rows may not sum exactly

Blank cells indicate zero acres or null value

This table is based on Project-specific vegetation/wetland data, and the values reported herein may differ from the values reported specifically for National Forests within this EIS, since National Forest System data are used when addressing Forest-specific impacts.

[1/] ROW Clearing limited to tall vegetation that may impact transmission line safety

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

[3/] This number was manually changed from the GIS analysis. It was reduced by 17.2 acres based on matting techniques as described in Section 3.9.2.2.

[4/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.9-1. Impacts to Wetlands and Riparian Areas during Construction (acres) cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Herbaceous Wetlands	Shrub Wetlands	Forested Wetlands			Mixed Wetlands	Total Wetlands			Herbaceous Riparian	Shrub Riparian	Forested Riparian			Mixed Riparian	Total Riparian			Total Wetlands and Riparian		
			Construction Facilities	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts	Construction Facilities	ROW Clearing[1/]	Total Construction Impacts
7	Proposed – Total Length	118.2	1.9	0.7				0.1	2.7		**2.7**	2.5	0.7	0.1		**0.1**	t[2/]	3.4		**3.4**	6.1		**6.1**
	Proposed – Comparison portion for Alternatives 7A,B	35.1	0.1	0.1					0.2		**0.2**	0.3	0.4	t[2/]		**t[2/]**		0.7		**0.7**	0.9		**0.9**
	Alternative 7A	37.7	0.2	0.4				5.7	6.3		**6.3**	0.3	1.6	0.1	0.3	**0.4**	0.3	2.3	0.3	**2.6**	8.6	0.3	**8.9**
	Alternative 7B	46.2										0.1	1.3	0.1		**0.1**		1.5		**1.5**	1.5		**1.5**
	Proposed – Comparison portion for Alternative 7C	20.1		0.1				t[2/]	0.1		**0.1**	t[2/]									0.1		**0.1**
	Alternative 7C	20.3																					
	Proposed – Comparison portion for Alternative 7D	6.2	1.4						1.4		**1.4**	2.1	t[2/]	0.1		**0.1**		2.2		**2.2**	3.6		**3.6**
	Alternative 7D	6.8	1.4						1.4		**1.4**	2.2	0.3	0.1		**0.1**		2.6		**2.6**	3.9		**3.9**
	Proposed – Comparison portion for Alternative 7E	3.8																					
	Alternative 7E	4.5																					
	Proposed – Comparison portion for Alternative 7F	10.5	0.4						0.4		**0.4**	0.1						0.1		**0.1**	0.5		**0.5**
	Alternative 7F	10.8										0.1	t[2/]					0.1		**0.1**	0.1		**0.1**
	Proposed – Comparison portion for Alternative 7G	3.3						0.1	0.1		**0.1**												
	Alternative 7G	3.4						0.1	0.1		**0.1**		0.9				0.1	1.0		**1.0**	1.1		**1.1**
	Proposed – Comparison portion for Alternative 7K	118.2	1.9	0.7				0.1	2.7		**2.7**	2.5	0.7	0.1		**0.1**	t[2/]	3.3		**3.3**	6.0		**6.0**
	Alternative 7K	148.1	2.9	1.9	t[2/]		**t[2/]**	1.3	6.1		**6.1**	0.7	4.1	1.3	1.3	**2.6**	2.9	9.0	1.3	**10.3**	15.1	1.3	**16.4**
8	Proposed – Total Length	131.5	7.2	0.1					7.3		**7.3**	0.8	0.5	0.1	0.1	**0.2**	0.2	1.7	0.1	**1.7**	9.0	0.1	**9.1**
	Proposed – Comparison portion for Alternative 8A	51.9	1.6	t[2/]					1.6		**1.6**	0.1	0.1	0.1	0.1	**0.2**	0.1	0.4	0.1	**0.5**	2.1	0.1	**2.2**
	Alternative 8A	53.6	0.2	0.4				0.1	0.7		**0.7**	t[2/]	0.2	1.3	4.8	**6.1**		1.5	4.8	**6.3**	2.2	4.8	**7.0**
	Proposed – Comparison portion for Alternative 8B	45.3										0.6	0.3					1.0		**1.0**	1.0		**1.0**
	Alternative 8B	45.8	4.4	1.9					6.3		**6.3**	1.1	0.4	t[2/]	0.4	**0.4**	0.1	1.6	0.4	**2.0**	7.9	0.4	**8.3**
	Proposed – Comparison portion for Alternative 8C	6.5										0.1	0.1					0.2		**0.2**	0.2		**0.2**
	Alternative 8C	6.4											0.1					0.1		**0.1**	0.1		**0.1**
	Proposed – Comparison portion for Alternative 8D	6.9										t[2/]						t[2/]		**t[2/]**	**t[2/]**		**t[2/]**
	Alternative 8D	8.1										t[2/]						t[2/]		**t[2/]**	**t[2/]**		**t[2/]**
	Proposed – Comparison portion for Alternative 8E	7.0																					
	Alternative 8E	18.3										0.2						0.2		**0.2**			**0.2**
9	Proposed – Total Length	162.2	1.1	0.4				0.2	1.7		**1.7**	0.4	2.9	0.1	t[2/]	**0.1**	0.9	4.3	t[2/]	**4.3**	6.0	t[2/]	**6.0**
	Proposed – Comparison portion for Alternative 9A	7.8	0.3									t[2/]						t[2/]		**t[2/]**	**t[2/]**		**t[2/]**
	Alternative 9A	7.7										0.3						0.3		**0.3**	0.3		**0.3**
	Proposed – Comparison portion for Alternative 9B	49.1										0.3	0.1					0.4		**0.4**	0.4		**0.4**
	Alternative 9B	52.3	t[2/]						t[2/]		t[2/]		0.3		0.3	**0.3**		0.3	0.3	**0.6**	0.3	0.3	**0.6**
	Proposed – Comparison portion for Alternative 9C	14.4										0.3	t[2/]					0.3		**0.3**	0.3		**0.3**
	Alternative 9C	14.4																					
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	0.8	0.4				0.2	1.4		**1.4**	t[2/]	2.8				0.9	3.7		**3.7**	5.1		**5.1**
	Alternative 9D	60.1	0.3	0.4					0.7		0.7	0.3	0.4	t[2/]		t[2/]	1.2	1.9		**1.9**	2.6		**2.6**
	Alternative 9F	63.3	0.6	0.9				0.2	1.6		1.6	0.3	2.7	t[2/]		t[2/]	2.1	5.1		**5.1**	6.7		**6.7**
	Alternative 9G	57.8	1.0	0.4					1.4		1.4	0.1	1.2	t[2/]		t[2/]	1.2	2.5		**2.5**	4.0		**4.0**
	Alternative 9H	61.0	1.3	0.9				0.2	2.3		2.3	0.2	2.7	t[2/]		t[2/]	2.1	5.0		**5.0**	7.3		**7.3**
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	0.8	0.4				0.2	1.4		1.4	t[2/]	2.8				0.9	3.7		**3.7**	5.1		**5.1**
	Alternative 9E (revised)	70.6	0.2	0.8					1.0		1.0	t[2/]	1.1				0.4	1.5		**1.5**	2.5		**2.5**
10	Proposed – Total Length	34.4											0.8					0.8		**0.8**	0.8		**0.8**
	Total of Proposed Segments (grey shading)		**71.6**	**16.2**	**0.9**	**3.3**	**4.2**	**3.1**	**92.0**	**3.3**	**95.2**	**26.2**	**30.9**	**2.2**	**3.7**	**5.9**	**3.9**	**63.3**	**3.7**	**67.0**	**158.3**	**8.2**	**166.5**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Due to permit criteria, acreages reported here are rounded to tenths of an acre; therefore, numbers are inexact and columns/rows may not sum exactly

Blank cells indicate zero acres or null value

This table is based on Project-specific vegetation/wetland data, and the values reported herein may differ from the values reported specifically for National Forests within this EIS, since National Forest System data are used when addressing Forest-specific impacts.

[1/] ROW Clearing limited to tall vegetation that may impact transmission line safety

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

[3/] This number was manually changed from the GIS analysis. It was reduced by 17.2 acres based on matting techniques as described in Section 3.9.2.2.

Table D.9-2. Impacts to Wetlands and Riparian Areas during Operations (acres)

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Herbaceous Wetlands	Shrub Wetlands	Forested Wetlands			Mixed Wetlands	Total Wetlands			Herbaceous Riparian	Shrub Riparian	Forested Riparian			Mixed Riparian	Total Riparian			Total Wetlands and Riparian		
			Operations Facilities	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts	Operations Facilities	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts (acres)	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts
1W	1W(a) Proposed – Total Length	73.8	0.3	0.2	0.1	1.8	**1.9**	t[2/]	0.6	1.8	**2.4**	0.4	0.3	t[2/]	1.3	**1.4**	0.2	0.9	1.3	**2.3**	1.5	3.2	**4.7**
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5		0.1	0.1	1.8	**1.9**		0.1	1.8	**2.0**	t[2/]	t[2/]	t[2/]	1.2	**1.3**	t[2/]	0.1	1.2	**1.3**	0.3	3.1	**3.3**
	Alternative 1W(a)-B	20.9	t[2/]						t[2/]		**t[2/]**	t[2/]	t[2/]					t[2/]		**t[2/]**	0.1		**0.1**
	1W(c) Proposed – Total Length	73.6	0.2		0.1	2.2	**2.3**	0.2	0.5	2.2	**2.7**	0.3	0.1		1.7	**1.7**	t[2/]	0.4	1.7	**2.2**	0.9	4.0	**4.9**
2	Proposed – Total Length	91.9	0.2	0.1					0.2		**0.2**	t[2/]	1.4					1.4		**1.4**	1.6		**1.6**
	Proposed – Comparison portion for Alternative 2A	16.8	0.1	t[2/]					0.2		**0.2**		t[2/]					t[2/]		**t[2/]**	0.2		**0.2**
	Alternative 2A	16.0		0.2				t[2/]	0.2		**0.2**	0.1	0.2		3.9	**3.9**		0.3	3.9	**4.1**	0.5	3.9	**4.4**
	Proposed – Comparison portion for Alternative 2B	12.5	0.1	t[2/]					0.2		**0.2**		t[2/]					t[2/]		**t[2/]**	0.2		**0.2**
	Alternative 2B	12.2						0.1	0.1		**0.1**		t[2/]		2.9	**2.9**	0.1	0.1	2.9	**3.0**	0.2	2.9	**3.1**
3	Segment 3 Proposed – Total Length	45.9	0.2	t[2/]				t[2/]	0.2		**0.2**	t[2/]	0.1					0.2		**0.2**	0.4		**0.4**
	Segment 3A Proposed – Total Length	5.1											0.2					0.2		**0.2**	0.2		**0.2**
4[4/]	Proposed – Total Length	197.6	0.0[3/]	0.6	t[2/]	1.7	**1.8**	0.2	0.8[3/]	1.7	**2.5[3/]**	1.1	1.5	0.3	3.4	**3.6**	0.4	3.2	3.4	**6.6**	4.0[3/]	5.1	**9.1[3/]**
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	2.3	0.4	t[2/]	0.1	**0.1**	0.1	2.7	0.1	**2.8**	0.5	0.6	0.2	2.3	**2.5**	0.3	1.6	2.3	**3.9**	4.4	2.3	**6.7**
	Alternative 4B	100.2	1.1	0.1	t[2/]		**t[2/]**	0.3	1.5		**1.5**	0.3	0.5		0.5	**0.5**	0.2	1.0	0.5	**1.5**	2.5	0.5	**3.0**
	Alternative 4C	101.6	0.8	0.2	t[2/]		**t[2/]**	0.1	1.2		**1.2**	0.3	0.5		0.5	**0.5**	0.2	0.9	0.5	**1.4**	2.1	0.5	**2.6**
	Alternative 4D	100.8	1.2	0.1	t[2/]		**t[2/]**	0.4	1.7		**1.7**	0.3	0.6		0.5	**0.5**	0.2	1.0	0.5	**1.5**	2.7	0.5	**3.3**
	Alternative 4E	102.2	0.9	0.3	t[2/]		**t[2/]**	0.2	1.4		**1.4**	0.3	0.5		0.5	**0.5**	0.2	0.9	0.5	**1.4**	2.3	0.5	**2.8**
	Alternative 4F	87.5	1.4	0.2	0.1	0.7	**0.8**	0.1	1.6	0.7	**2.4**	0.3	0.6		2.2	**2.2**	t[2/]	1.0	2.2	**3.2**	2.6	3.0	**5.6**
5	Proposed – Total Length	55.7	0.1	t[2/]					0.1		**0.1**	0.2	0.3					0.5		**0.5**	0.6		**0.6**
	Proposed – Comparison portion for Alternatives 5A,B	22.3	t[2/]	t[2/]					t[2/]		**t[2/]**	t[2/]	t[2/]					t[2/]		**t[2/]**	0.1		**0.1**
	Alternative 5A	29.7	t[2/]						t[2/]		**t[2/]**	t[2/]	0.2	t[2/]	0.4	**0.4**		0.2	0.4	**0.6**	0.3	0.4	**0.7**
	Alternative 5B	40.4		t[2/]					t[2/]		**t[2/]**	t[2/]	0.2	0.1	1.0	**1.1**		0.2	1.0	**1.2**	0.3	1.0	**1.3**
	Proposed – Comparison portion for Alternative 5C	32.9	t[2/]	t[2/]					t[2/]		**t[2/]**	0.2	0.3					0.5		**0.5**	0.6		**0.6**
	Alternative 5C	26.0	t[2/]						t[2/]		**t[2/]**	t[2/]	t[2/]	t[2/]	1.3	**1.3**	0.1	0.1	1.3	**1.4**	0.1	1.3	**1.4**
	Proposed – Comparison portion for Alternative 5D	19.2										0.2	0.3					0.5		**0.5**	0.5		**0.5**
	Alternative 5D	17.0										t[2/]	0.1	0.1	1.4	**1.5**		0.2	1.4	**1.6**	0.2	1.4	**1.6**
	Proposed – Comparison portion for Alternative 5E	5.8											t[2/]					t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Alternative 5E	5.3											t[2/]					t[2/]		**t[2/]**	t[2/]		**t[2/]**
6	Proposed – Total Length	0.5																					

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Due to permit criteria, acreages reported here are rounded to tenths of an acre; therefore, numbers are inexact and columns/rows may not sum exactly

Blank cells indicate zero acres or null value

This table is based on Project-specific vegetation/wetland data, and the values reported herein may differ from the values reported specifically for National Forests within this EIS, since National Forest System data are used when addressing Forest-specific impacts.

[1/] ROW maintenance limited to tall vegetation that may impact transmission line safety

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

[3/] This number was manually changed from the GIS analysis. It was reduced by 5.3 acres based on matting techniques as described in Section 3.9.2.2.

[4/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.9-2. Impacts to Wetlands and Riparian Areas during Operations (acres) cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Herbaceous Wetlands	Shrub Wetlands	Forested Wetlands			Mixed Wetlands	Total Wetlands			Herbaceous Riparian	Shrub Riparian	Forested Riparian			Mixed Riparian	Total Riparian			Total Wetlands and Riparian		
			Operations Facilities	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts	Operations Facilities	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts (acres)	Operations Facilities	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts	Operations Facilities	ROW Maintenance[1/]	Total Operation Impacts
7	Proposed – Total Length	118.2	0.1	0.1				t[2/]	0.2		**0.2**	0.1	0.1	t[2/]		**t[2/]**	t[2/]	0.3		**0.3**	0.5		**0.5**
	Proposed – Comparison portion for Alternatives 7A,B	35.1	t[2/]	t[2/]					0.1		**0.1**	t[2/]	t[2/]	t[2/]		**t[2/]**		0.1		**0.1**	0.1		**0.1**
	Alternative 7A	37.7	t[2/]	t[2/]				0.3	0.3		**0.3**	t[2/]	0.2	t[2/]	0.4	**0.4**	t[2/]	0.3	0.4	**0.6**	0.6		**0.6**
	Alternative 7B	46.2										t[2/]	0.1	t[2/]		**t[2/]**		0.2		**0.2**	0.2		**0.2**
	Proposed – Comparison portion for Alternative 7C	20.1		t[2/]					t[2/]		**t[2/]**	t[2/]						t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Alternative 7C	20.3																					
	Proposed – Comparison portion for Alternative 7D	6.2	t[2/]						t[2/]		**t[2/]**	t[2/]	t[2/]	t[2/]		**t[2/]**		0.1		**0.1**	0.1		**0.1**
	Alternative 7D	6.8	t[2/]						t[2/]		**t[2/]**	t[2/]	t[2/]	t[2/]		**t[2/]**		0.1		**0.1**	0.1		**0.1**
	Proposed – Comparison portion for Alternative 7E	3.8																					
	Alternative 7E	4.5																					
	Proposed – Comparison portion for Alternative 7F	10.5	t[2/]						t[2/]		**t[2/]**	t[2/]						t[2/]		**t[2/]**	0.1		**0.1**
	Alternative 7F	10.8										t[2/]	t[2/]					t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Proposed – Comparison portion for Alternative 7G	3.3						t[2/]	t[2/]		**t[2/]**										t[2/]		**t[2/]**
	Alternative 7G	3.4						t[2/]	t[2/]		**t[2/]**										t[2/]		**t[2/]**
	Proposed – Comparison portion for Alternative 7K	118.2	0.1	0.1				t[2/]	0.2		**0.2**	0.1	0.1	t[2/]		**t[2/]**	t[2/]	0.3		**0.3**	0.5		**0.5**
	Alternative 7K	148.1	0.1	0.1				0.3	0.5		**0.5**	0.1	0.7	0.3	1.4	**1.7**	0.5	1.6	1.4	**3.0**	2.1	1.4	**3.5**
8	Proposed – Total Length	131.5	0.3	t[2/]					0.3		**0.3**	0.2	0.1	t[2/]	0.1	**0.1**	t[2/]	0.4	0.1	**0.4**	0.7	0.1	**0.8**
	Proposed – Comparison portion for Alternative 8A	51.9	0.1						0.1		**0.1**	t[2/]	t[2/]	t[2/]	0.1	**0.1**		0.1	0.1	**0.2**	0.2	0.1	**0.3**
	Alternative 8A	53.6	0.1	0.1				t[2/]	0.2		**0.2**	t[2/]	t[2/]	0.2	5.5	**5.7**		0.2	5.5	**5.8**	0.4	5.5	**5.9**
	Proposed – Comparison portion for Alternative 8B	45.3									**0.0**	0.2	t[2/]					0.2		**0.2**	0.2		**0.2**
	Alternative 8B	45.8	0.1						0.1		**0.1**	0.1	0.1		0.4	**0.4**	t[2/]	0.2	0.4	**0.6**	0.2	0.4	**0.6**
	Proposed – Comparison portion for Alternative 8C	6.5											t[2/]					t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Alternative 8C	6.4											t[2/]					t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Proposed – Comparison portion for Alternative 8D	6.9																					
	Alternative 8D	8.1																					
	Proposed – Comparison portion for Alternative 8E	7.0																					
	Alternative 8E	18.3																					
9	Proposed – Total Length	162.2	0.1	0.1				t[2/]	0.3		**0.3**	t[2/]	0.5		t[2/]	**t[2/]**	0.1	0.7	t[2/]	**0.7**	0.9	t[2/]	**0.9**
	Proposed – Comparison portion for Alternative 9A	7.8										t[2/]						t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Alternative 9A	7.7										t[2/]						t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Proposed – Comparison portion for Alternative 9B	49.1										t[2/]	t[2/]					t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Alternative 9B	52.3											0.1		0.3	**0.3**		0.1	0.3	**0.4**	0.1	0.3	**0.4**
	Proposed – Comparison portion for Alternative 9C	14.4										t[2/]	t[2/]					t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Alternative 9C	14.4																					
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	0.1	0.1				t[2/]	0.3		**0.3**	t[2/]	0.5				0.1	0.6		**0.6**	0.9		**0.9**
	Alternative 9D	60.1	t[2/]						t[2/]		**t[2/]**		t[2/]	t[2/]		**t[2/]**		t[2/]		**t[2/]**	t[2/]		**t[2/]**
	Alternative 9F	63.3	0.1	0.1				t[2/]	0.3		**0.3**		0.2	t[2/]		**t[2/]**	0.1	0.3		**0.3**	0.6		**0.6**
	Alternative 9G	57.8	0.2						0.2		**0.2**		t[2/]	t[2/]		**t[2/]**		t[2/]		**t[2/]**	0.2		**0.2**
	Alternative 9H	61.0	0.3	0.1				t[2/]	0.5		**0.5**		0.2	t[2/]		**t[2/]**	0.1	0.3		**0.3**	0.8		**0.8**
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	0.1	0.1				t[2/]	0.2		**0.2**	t[2/]	0.5				0.1	0.6		**0.6**	0.8		**0.8**
	Alternative 9E (revised)	70.6	0.1	t[2/]					0.1		**0.1**	t[2/]	0.1				0.1	0.1		**0.1**	0.2		**0.2**
10	Proposed – Total Length	34.4											0.1					0.1		**0.1**	0.1		**0.1**
	Total of Proposed Segments (grey shading)		**1.2**	**1.0**	**0.1**	**3.6**	**3.7**	**0.2**	**3.2**	**5.7**	**8.9**	**2.0**	**4.7**	**0.3**	**4.8**	**5.2**	**0.7**	**8.3**	**6.5**	**14.9**	**11.4**	**12.4**	**23.8**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Due to permit criteria, acreages reported here are rounded to tenths of an acre; therefore, numbers are inexact and columns/rows may not sum exactly

Blank cells indicate zero acres or null value

This table is based on Project-specific vegetation/wetland data, and the values reported herein may differ from the values reported specifically for National Forests within this EIS, since National Forest System data are used when addressing Forest-specific impacts.

[1/] ROW maintenance limited to tall vegetation that may impact transmission line safety

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

Table D.10-1. Miles of Big Game Crossed by the Proposed and Alternative Routes

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Bighorn Sheep Winter Range	Elk Calving Areas[1/]	Elk Winter Range	Moose Winter Range	Mule Deer Winter Range	Pronghorn Winter Range
1W	1W(a) Proposed – Total Length	73.8			5.4		40.3	27.9
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5					16.5	14.9
	Alternative 1W(a)-B	20.9					18.0	18.3
	1W(c) Proposed – Total Length	73.6			5.4		39.6	28.8
2	Proposed – Total Length	91.9				2.4	75.5	86.2
	Proposed – Compare to Alternative 2A	16.8				2.4	12.7	16.8
	Alternative 2A	16.0					8.7	16.0
	Proposed – Compare to Alternative 2B	12.5				2.4	10.5	12.5
	Alternative 2B	12.2					8.1	12.2
3	Segment 3 Proposed – Total Length	45.9					28.3	45.9
	Segment 3A Proposed – Total Length	5.1					5.1	5.1
4[3/]	Proposed – Total Length	197.6		8.2[2/]	33.8	22.1	75.4	84.7
	Proposed – Compare to Alternatives 4B-4F	85.2		8.2	17.6	22.1	17.3	33.1
	Alternative 4B	100.2			34.2	4.1	41.6	23.0
	Alternative 4C	101.6			35.7	16.4	43.7	22.3
	Alternative 4D	100.8			33.7	4.1	41.7	23.0
	Alternative 4E	102.2			35.2	16.4	43.8	22.3
	Alternative 4F	87.5		8.2	12.6	21.5	17.9	28.0
5	Proposed – Total Length	55.7					33.7	
	Proposed – Compare to Alternatives 5A,B	22.3					8.3	
	Alternative 5A	29.7					12.3	
	Alternative 5B	40.4					20.3	
	Proposed – Compare to Alternative 5C	32.9					21.5	
	Alternative 5C	26.0			8.6		7.8	
	Proposed – Compare to Alternative 5D	19.2					16.7	
	Alternative 5D	17.0					14.0	
	Proposed – Compare to Alternative 5E	5.8					3.5	
	Alternative 5E	5.3					3.6	
6	Proposed – Total Length	0.5					0.3	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Data have been received only for Wyoming portions of the route. Blank cells do not indicate that no parturition range will be crossed

[2/] These numbers only represent the Wyoming portion of Segment 4

[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-1. Miles of Big Game Crossed by the Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Bighorn Sheep Winter Range	Elk Calving Areas[1/]	Elk Winter Range	Moose Winter Range	Mule Deer Winter Range	Pronghorn Winter Range
7	Proposed – Total Length	118.2					49.2	
	Proposed – Compare to Alternatives 7A,B	35.1					15.7	
	Alternative 7A	37.7					6.9	
	Alternative 7B	46.2					10.3	
	Proposed – Compare to Alternative 7C	20.1					4.8	
	Alternative 7C	20.3					7.3	
	Proposed – Compare to Alternative 7D	6.2					2.0	
	Alternative 7D	6.8					2.0	
	Proposed – Compare to Alternative 7E	3.8					3.0	
	Alternative 7E	4.5					4.5	
	Proposed – Compare to Alternative 7F	10.5					9.6	
	Alternative 7F	10.8					10.8	
	Proposed – Compare to Alternative 7G	3.3					3.3	
	Alternative 7G	3.4					3.3	
	Proposed – Comparison portion for Alternative 7K	118.2					49.2	
	Alternative 7K	148.1					49.5	
8	Proposed – Total Length	131.5			17.5		45.1	7.4
	Proposed – Compare to Alternative 8A	51.9			1.9		40.0	
	Alternative 8A	53.6					20.4	
	Proposed – Compare to Alternative 8B	45.3			4.1			
	Alternative 8B	45.8			4.1			
	Alternative 8B – Compare to Alternative 8C	6.5			4.1			
	Alternative 8C	6.4			5.6			
	Proposed – Compare to Alternative 8D	6.9						
	Alternative 8D	8.1						
	Proposed – Comparison portion for Alternative 8E	7.0						
	Alternative 8E	18.3	1.4					
9	Proposed – Total Length	162.2					10.0	20.0
	Proposed – Compare to Alternative 9A	7.8					1.9	
	Alternative 9A	7.7					2.1	
	Proposed – Compare to Alternative 9B	49.1						
	Alternative 9B	52.3						
	Proposed – Compare to Alternative 9C	14.4						
	Alternative 9C	14.4						
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2						13.4
	Alternative 9D	60.1	1.4					0.4
	Alternative 9F	63.3	1.4					0.4
	Alternative 9G	57.8	1.7					0.4
	Alternative 9H	61.0	1.7					0.4
	Proposed – Comparison portion for Alternative 9E (revised)	61.4		17.6				17.6
	Alternative 9E (revised)	70.6	4.3	25.3				25.3
10	Proposed – Total Length	34.4					10.8	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Data have been received only for Wyoming portions of the route. Blank cells do not indicate that no parturition range will be crossed

Table D.10-2. Known Raptor and Bird of Prey Nest Locations within 1 mile of Project Centerline

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Raptor and Birds of Prey Nests															
			American Kestrel	Bald Eagle	Burrowing Owl	Common Raven	Ferruginous Hawk	Golden Eagle	Great Horned Owl	Long-eared Owl	Northern Goshawk	Northern Harrier	Osprey	Prairie Falcon	Red-tailed Hawk	Short-eared Owl	Swainsons Hawk	Total
1W	1W(a) Proposed – Total Length	73.8	1	1		3	14	8			1			2	4			**34**
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5		1				3							4			**8**
	Alternative 1W(a)-B	20.9						2										**2**
	1W(c) Proposed – Total Length	73.6	1	1		4	14	2	1		1			2	3			**29**
2	Proposed – Total Length	91.9	5		5	5	105	37	2			4		7	17	1	2	**190**
	Proposed – Comparison portion for Alternative 2A	16.8	1				19	10	1						3			**34**
	Alternative 2A	16.0	1	2			2	3							2			**10**
	Proposed – Comparison portion for Alternative 2B	12.5					19	8	1						3			**31**
	Alternative 2B	12.2		2			10	7							3			**22**
3	Segment 3 Proposed – Total Length	45.9	2		2	5	17	12	1			1		12	7			**59**
	Segment 3A Proposed – Total Length	5.1				1	1	2	1					5				**10**
4[1/]	Proposed – Total Length	197.6	6	3		18	16	14	7	1	4	2	1	15	33		2	**122**
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	1			6	3	8	1	1			1	1	17		2	**41**
	Alternative 4B	100.2	1		1	2		6	1					2	8		1	**22**
	Alternative 4C	101.6	1		1	2		6	1					2	8		1	**22**
	Alternative 4D	100.8	1		1	2		6	1					2	8		1	**22**
	Alternative 4E	102.2	1		1	2		6	1					2	8		1	**22**
	Alternative 4F	87.5	1			5	3	7	1	1				1	12		1	**32**
5	Proposed – Total Length	55.7		2	1			1										**4**
	Proposed – Comparison portion for Alternatives 5A,B	22.3						1										**1**
	Alternative 5A	29.7						3										**3**
	Alternative 5B	40.4						2										**2**
	Proposed – Comparison portion for Alternative 5C	32.9						1										**1**
	Alternative 5C	26.0																
	Proposed – Comparison portion for Alternative 5D	19.2		2				1										**3**
	Alternative 5D	17.0		2				1										**3**
	Proposed – Comparison portion for Alternative 5E	5.8		2														**2**
	Alternative 5E	5.3																
6	Proposed – Total Length	0.5																

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-2. Known Raptor and Bird of Prey Nest Locations within 1 mile of Project Centerline cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Raptor and Birds of Prey Nests															
			American Kestrel	Bald Eagle	Burrowing Owl	Common Raven	Ferruginous Hawk	Golden Eagle	Great Horned Owl	Long-eared Owl	Northern Goshawk	Northern Harrier	Osprey	Prairie Falcon	Red-tailed Hawk	Short-eared Owl	Swainsons Hawk	Total
7	Proposed – Total Length	118.2			3		9	2										**14**
	Proposed – Comparison portion for Alternatives 7A,B	35.1																
	Alternative 7A	37.7																
	Alternative 7B	46.2																
	Proposed – Comparison portion for Alternative 7C	20.1			2		2											**4**
	Alternative 7C	20.3																
	Proposed – Comparison portion for Alternative 7D	6.2			1			1										**2**
	Alternative 7D	6.8			1													**1**
	Proposed – Comparison portion for Alternative 7E	3.8					7	1										**8**
	Alternative 7E	4.5					7	1										**8**
	Proposed – Comparison portion for Alternative 7F	10.5					7	1										**8**
	Alternative 7F	10.8					7	1										**8**
	Proposed – Comparison portion for Alternative 7G	3.3																
	Alternative 7G	3.4																
	Proposed – Comparison portion for Alternative 7K	118.2			3		9	2										**14**
	Alternative 7K	148.1			1		61	11			3				2		2	**80**
8	Proposed – Total Length	131.5			43		74	20						170				**307**
	Proposed – Comparison portion for Alternative 8A	51.9			1			8										**9**
	Alternative 8A	53.6						20							3			**23**
	Proposed – Comparison portion for Alternative 8B	45.3			42		56	6						170				**274**
	Alternative 8B	45.8			34		20											**54**
	Proposed – Comparison portion for Alternative 8C	6.5					13											**13**
	Alternative 8C	6.4					18											**18**
	Proposed – Comparison portion for Alternative 8D	6.9			14		25											**39**
	Alternative 8D	8.1			17		27											**44**
	Proposed – Comparison portion for Alternative 8E	7.0			19		2	3						160				**184**
	Alternative 8E	18.3			16		23	7						446				**492**
9	Proposed – Total Length	162.2			9	3	42	57						18			6	**135**
	Proposed – Comparison portion for Alternative 9A	7.8					2											**2**
	Alternative 9A	7.7						2										**2**
	Proposed – Comparison portion for Alternative 9B	49.1			3		9	24						14			6	**56**
	Alternative 9B	52.3	1		1		4	50						9	4			**69**
	Proposed – Comparison portion for Alternative 9C	14.4			1		9	11						1			6	**28**
	Alternative 9C	14.4	1		1		4	32						1	1			**40**
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			4	1	7	3										**15**
	Alternative 9D	60.1			101		39	21						446				**607**
	Alternative 9F	63.3			96		44	15						415				**570**
	Alternative 9G	57.8			95		34	26						460				**615**
	Alternative 9H	61.0			90		39	20						429				**578**
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			4	1	7	8						1				**21**
	Alternative 9E (revised)	70.6			3		10	11										**24**
10	Proposed – Total Length	34.4			2			3							1			**6**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Table D.10-3a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Pre-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
1W	1W(a) Proposed – Total Length	73.8	856	61	271	379	391	587	131	65	130	55
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	492	11	246	122	244	272	112	57	135	49
	Alternative 1W(a)-B	20.9	891	5	194	176	262	304	88	123	149	37
	1W(c) Proposed – Total Length	73.6	871	61	275	378	399	553	133	71	135	49
2	Proposed – Total Length	91.9			476	940	332	35	106	55	134	32
	Proposed – Comparison portion for Alternative 2A	16.8			442	221	260	3	73	32	164	21
	Alternative 2A	16.0			412	228	260	3	78	38	71	7
	Proposed – Comparison portion for Alternative 2B	12.5			388	196	260	3	73	32	192	17
	Alternative 2B	12.2			376	196	260	3	78	33	156	17
3	Segment 3 Proposed – Total Length	45.9	250	4	804	324						
	Segment 3A Proposed – Total Length	5.1	43	2	1,106	45						
4[1/]	Proposed – Total Length	197.6	78	879	383	2,028	17	831	64	635	232	525
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	293	43	608	658	23	106	199	95	176	157
	Alternative 4B	100.2	7	10	615	765	11	197	196	180	208	124
	Alternative 4C	101.6	7	10	613	766	10	176	201	180	217	142
	Alternative 4D	100.8	7	10	614	768	11	197	196	180	208	124
	Alternative 4E	102.2	7	10	612	769	10	176	201	180	217	142
	Alternative 4F	87.5	426	59	573	697	24	105	192	103	160	161
5	Proposed – Total Length	55.7	46	703	110	1,092	21	1,037	11	187	249	513
	Proposed – Comparison portion for Alternatives 5A,B	22.3	54	480	132	518	20	321	8	100	304	144
	Alternative 5A	29.7	52	626	125	671	23	379	7	112	294	191
	Alternative 5B	40.4	36	776	150	813	21	511	7	144	275	272
	Proposed – Comparison portion for Alternative 5C	32.9	51	594	128	652	19	549	11	115	323	221
	Alternative 5C	26.0	19	582	143	638	25	636	12	144	235	181
	Proposed – Comparison portion for Alternative 5D	19.2	63	259	106	414	17	420	11	94	307	172
	Alternative 5D	17.0	63	227	91	415	17	422	9	90	326	167
	Proposed – Comparison portion for Alternative 5E	5.8	13	73	114	166	16	281	13	56	255	121
	Alternative 5E	5.3	13	73	114	164	16	278	15	57	249	119
6	Proposed – Total Length	0.5			47	240	78	238	10	43	207	166

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-3a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Pre-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
7	Proposed – Total Length	118.2	34	1,173	89	2,273	41	2,275	10	208	217	1,341
	Proposed – Comparison portion for Alternatives 7A,B	35.1	42	685	128	774	22	682	8	116	302	220
	Alternative 7A	37.7	32	915	141	827	23	675	7	99	270	231
	Alternative 7B	46.2	20	1,013	167	899	21	766	7	139	271	293
	Proposed – Comparison portion for Alternative 7C	20.1	14	182	53	735	72	727	9	29	185	211
	Alternative 7C	20.3	14	196	62	570	67	655	3	3	212	252
	Proposed – Comparison portion for Alternative 7D	6.2	25	126	56	412	42	394	5	10	109	188
	Alternative 7D	6.8	25	126	55	420	42	396	5	10	110	198
	Proposed – Comparison portion for Alternative 7E	3.8	21	93	136	125	18	186	5	12	171	165
	Alternative 7E	4.5	22	97	120	149	20	202	5	13	171	171
	Proposed – Comparison portion for Alternative 7F	10.5	28	155	113	228	22	273	19	31	197	242
	Alternative 7F	10.8	30	165	114	246	22	301	19	42	193	236
	Proposed – Comparison portion for Alternative 7G	3.3	20	138	254	77	14	122	7	3	207	120
	Alternative 7G	3.4	20	134	258	75	14	121	7	3	210	120
	Proposed – Comparison portion for Alternative 7K	118.2	34	1,173	89	2,273	41	2,275	10	208	217	1,341
	Alternative 7K	148.1	30	2,434	147	2,896	38	2,346	11	411	189	986
8	Proposed – Total Length	131.5			58	5,290	36	6,749	12	205	153	902
	Proposed – Comparison portion for Alternative 8A	51.9			58	1,818	45	2,143	15	50	171	551
	Alternative 8A	53.6			39	2,069	47	2,167	10	48	150	786
	Proposed – Comparison portion for Alternative 8B	45.3			55	2,315	33	2,914	9	116	139	237
	Alternative 8B	45.8			52	1,719	39	2,166	12	76	159	499
	Proposed – Comparison portion for Alternative 8C	6.5			67	482	39	655	13	15	279	26
	Alternative 8C	6.4			64	498	40	667	12	17	253	23
	Proposed – Comparison portion for Alternative 8D	6.9			39	819	39	823			64	52
	Alternative 8D	8.1			38	843	42	836			60	81
	Proposed – Comparison portion for Alternative 8E	7.0			39	709	36	790	6	40	141	70
	Alternative 8E	18.3			41	1,207	37	1,344	8	65	119	88
9	Proposed – Total Length	162.2	16	96	56	6,126	40	7,009	23	362	117	1,736
	Proposed – Comparison portion for Alternative 9A	7.8	9	13	65	308	40	434	4	3	142	241
	Alternative 9A	7.7	9	13	68	319	41	443	4	3	133	232
	Proposed – Comparison portion for Alternative 9B	49.1			68	1,758	50	2,015	14	44	115	510
	Alternative 9B	52.3			49	2,087	42	2,249	12	105	134	734
	Proposed – Comparison portion for Alternative 9C	14.4			152	396	19	674	8	12	193	159
	Alternative 9C	14.4			150	371	14	651	7	12	219	181
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			44	2,763	41	2,885	29	242	96	656
	Alternative 9D	60.1			36	3,547	33	3,932	24	299	74	686
	Alternative 9F	63.3			36	3,622	35	3,909	24	288	82	714
	Alternative 9G	57.8			36	3,405	34	3,756	26	275	76	667
	Alternative 9H	61.0			36	3,480	36	3,733	26	264	84	695
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			46	2,926	39	3,192	28	260	95	680
	Alternative 9E (revised)	70.6			78	2,772	40	3,578	32	120	85	263
10	Proposed – Total Length	34.4	16	65	34	844	76	783	7	35	204	551

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero acres or null value

Table D.10-3a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads cont.

Segment Number	Segment/Alternative Name	Segment Length (Miles)	Post-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
1W	1W(a) Proposed – Total Length	73.8	842	62	260	394	372	617	127	67	125	57
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	492	11	237	127	228	290	110	58	129	51
	Alternative 1W(a)-B	20.9	891	5	188	181	248	321	88	124	142	39
	1W(c) Proposed – Total Length	73.6	857	62	264	393	380	582	129	73	130	51
2	Proposed – Total Length	91.9			464	963	323	36	104	56	134	32
	Proposed – Comparison portion for Alternative 2A	16.8			417	234	260	3	73	32	164	21
	Alternative 2A	16.0			390	241	260	3	78	38	71	7
	Proposed – Comparison portion for Alternative 2B	12.5			364	209	260	3	73	32	192	17
	Alternative 2B	12.2			352	209	260	3	78	33	156	17
3	Segment 3 Proposed – Total Length	45.9	250	4	782	333						
	Segment 3A Proposed – Total Length	5.1	43	2	1,082	46						
4[1/]	Proposed – Total Length	197.6	75	915	370	2,098	17	841	63	645	226	539
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	273	46	583	686	23	107	199	95	165	167
	Alternative 4B	100.2	7	10	580	812	11	198	192	183	197	131
	Alternative 4C	101.6	7	10	574	818	10	177	198	183	196	157
	Alternative 4D	100.8	7	10	579	815	11	198	192	183	197	131
	Alternative 4E	102.2	7	10	573	821	10	177	198	183	196	157
	Alternative 4F	87.5	412	61	552	723	24	106	192	103	152	169
5	Proposed – Total Length	55.7	43	752	100	1,205	20	1,086	10	191	232	551
	Proposed – Comparison portion for Alternatives 5A,B	22.3	49	523	115	596	18	347	8	103	259	169
	Alternative 5A	29.7	46	705	108	778	21	415	6	118	257	218
	Alternative 5B	40.4	32	860	130	936	20	556	7	150	238	315
	Proposed – Comparison portion for Alternative 5C	32.9	48	636	114	734	18	581	10	117	286	250
	Alternative 5C	26.0	19	595	130	699	23	671	12	145	212	201
	Proposed – Comparison portion for Alternative 5D	19.2	59	279	96	458	16	441	10	96	288	183
	Alternative 5D	17.0	58	247	83	457	16	444	9	92	306	178
	Proposed – Comparison portion for Alternative 5E	5.8	13	74	103	183	15	297	13	57	247	125
	Alternative 5E	5.3	13	74	104	180	15	294	15	58	241	123
6	Proposed – Total Length	0.5			45	249	74	251	10	44	196	175

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-3a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads cont.

Segment Number	Segment/Alternative Name	Segment Length (Miles)	Post-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
7	Proposed – Total Length	118.2	32	1,249	83	2,454	39	2,381	10	213	205	1,418
	Proposed – Comparison portion for Alternatives 7A,B	35.1	39	738	113	873	21	717	8	121	263	252
	Alternative 7A	37.7	30	991	123	944	22	725	6	104	234	267
	Alternative 7B	46.2	19	1,076	148	1,012	20	815	7	144	236	337
	Proposed – Comparison portion for Alternative 7C	20.1	14	187	51	767	70	749	9	29	178	219
	Alternative 7C	20.3	14	201	59	602	65	677	3	3	205	260
	Proposed – Comparison portion for Alternative 7D	6.2	24	129	51	449	39	426	5	10	107	192
	Alternative 7D	6.8	24	129	50	457	39	428	5	10	108	202
	Proposed – Comparison portion for Alternative 7E	3.8	19	103	107	159	16	214	5	12	158	179
	Alternative 7E	4.5	20	107	98	183	17	230	5	13	158	185
	Proposed – Comparison portion for Alternative 7F	10.5	27	165	97	264	19	306	19	31	181	263
	Alternative 7F	10.8	28	175	100	282	20	334	19	42	177	257
	Proposed – Comparison portion for Alternative 7G	3.3	19	143	239	82	13	131	7	3	194	128
	Alternative 7G	3.4	20	139	242	80	13	130	7	3	197	128
	Proposed – Comparison portion for Alternative 7K	118.2	32	1,249	83	2,454	39	2,381	10	213	205	1,418
	Alternative 7K	148.1	29	2,562	135	3,144	36	2,503	11	418	181	1,031
8	Proposed – Total Length	131.5			56	5,530	35	7,061	11	208	146	945
	Proposed – Comparison portion for Alternative 8A	51.9			55	1,892	43	2,241	15	50	161	585
	Alternative 8A	53.6			37	2,176	45	2,294	10	48	142	832
	Proposed – Comparison portion for Alternative 8B	45.3			52	2,443	31	3,079	9	118	136	243
	Alternative 8B	45.8			50	1,787	38	2,253	12	76	157	506
	Proposed – Comparison portion for Alternative 8C	6.5			62	518	37	691	13	15	279	26
	Alternative 8C	6.4			60	534	38	703	12	17	253	23
	Proposed – Comparison portion for Alternative 8D	6.9			38	849	37	866			61	54
	Alternative 8D	8.1			37	875	40	883			58	83
	Proposed – Comparison portion for Alternative 8E	7.0			37	763	33	858	6	41	135	73
	Alternative 8E	18.3			38	1,284	34	1,446	8	66	115	91
9	Proposed – Total Length	162.2	16	96	53	6,461	39	7,342	23	366	114	1,785
	Proposed – Comparison portion for Alternative 9A	7.8	9	13	62	323	39	451	4	3	140	244
	Alternative 9A	7.7	9	13	65	334	40	462	4	3	132	235
	Proposed – Comparison portion for Alternative 9B	49.1			64	1,858	48	2,091	14	44	110	531
	Alternative 9B	52.3			46	2,222	39	2,366	12	105	127	775
	Proposed – Comparison portion for Alternative 9C	14.4			142	424	18	688	8	12	185	166
	Alternative 9C	14.4			139	401	14	665	7	12	206	192
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			41	2,935	39	3,067	29	246	94	670
	Alternative 9D	60.1			34	3,705	32	4,115	24	303	72	701
	Alternative 9F	63.3			34	3,781	34	4,093	24	292	80	731
	Alternative 9G	57.8			34	3,559	32	3,930	26	279	74	679
	Alternative 9H	61.0			34	3,635	34	3,908	25	268	82	709
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			44	3,040	37	3,321	28	262	94	693
	Alternative 9E (revised)	70.6			74	2,908	39	3,724	32	122	85	265
10	Proposed – Total Length	34.4	16	65	33	861	73	812	7	35	196	575

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

Table D.10-3b. Change in Fragmentation Levels as a Result of Roads Between Pre- and Post-Construction

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count
1W	1W(a) Proposed – Total Length	73.8	14	1	10	15	19	30	3.9	2	5	2
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	0	0	10	5	15	18	1.9	1	5	2
	Alternative 1W(a)-B	20.9	0	0	5	5	14	17	0.7	1	8	2
	1W(c) Proposed – Total Length	73.6	14	1	10	15	20	29	3.6	2	5	2
2	Proposed – Total Length	91.9	0	0	11	23	9	1	1.9	1	0	0
	Proposed – Comparison portion for Alternative 2A	16.8	0	0	25	13	0	0	0	0	0	0
	Alternative 2A	16.0	0	0	22	13	0	0	0	0	0	0
	Proposed – Comparison portion for Alternative 2B	12.5	0	0	24	13	0	0	0	0	0	0
	Alternative 2B	12.2	0	0	23	13	0	0	0	0	0	0
3	Segment 3 Proposed – Total Length	45.9	0	0	22	9	0	0	0	0	0	0
	Segment 3A Proposed – Total Length	5.1	0	0	24	1	0	0	0	0	0	0
4[1/]	Proposed – Total Length	197.6	3	36	13	70	0	10	1.0	10	6	14
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	19	3	25	28	0	1	0	0	11	10
	Alternative 4B	100.2	0	0	36	47	0	1	3.2	3	11	7
	Alternative 4C	101.6	0	0	39	52	0	1	3.3	3	21	15
	Alternative 4D	100.8	0	0	35	47	0	1	3.2	3	11	7
	Alternative 4E	102.2	0	0	39	52	0	1	3.3	3	21	15
	Alternative 4F	87.5	14	2	21	26	0	1	0	0	8	8
5	Proposed –Total Length	55.7	3	49	10	113	1	49	0.2	4	17	38
	Proposed – Comparison portion for Alternatives 5A,B	22.3	4	43	17	78	1	26	0.2	3	45	25
	Alternative 5A	29.7	6	79	17	107	2	36	0.4	6	36	27
	Alternative 5B	40.4	3	84	20	123	2	45	0.3	6	38	43
	Proposed – Comparison portion for Alternative 5C	32.9	3	42	14	82	1	32	0.2	2	38	29
	Alternative 5C	26.0	0	13	12	61	1	35	0.1	1	23	20
	Proposed – Comparison portion for Alternative 5D	19.2	5	20	10	44	1	21	0.2	2	18	11
	Alternative 5D	17.0	5	20	8	42	1	22	0.2	2	20	11
	Proposed – Comparison portion for Alternative 5E	5.8	0	1	11	17	1	16	0.2	1	8	4
	Alternative 5E	5.3	0	1	10	16	1	16	0.3	1	8	4
6	Proposed –Total Length	0.5	0	0	2	9	4	13	0.2	1	11	9

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-3b. Change in Fragmentation Levels as a Result of Roads Between Pre- and Post-Construction cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count
7	Proposed –Total Length	118.2	2	76	7	181	2	106	0.2	5	12	77
	Proposed – Comparison portion for Alternatives 7A,B	35.1	3	53	14	99	1	35	0.3	5	38	32
	Alternative 7A	37.7	2	76	17	117	2	50	0.3	5	36	36
	Alternative 7B	46.2	1	63	19	113	1	49	0.3	5	35	44
	Proposed – Comparison portion for Alternative 7C	20.1	0	5	2	32	2	22	0	0	7	8
	Alternative 7C	20.3	0	5	3	32	2	22	0	0	7	8
	Proposed – Comparison portion for Alternative 7D	6.2	1	3	5	37	3	32	0	0	2	4
	Alternative 7D	6.8	1	3	4	37	3	32	0	0	2	4
	Proposed – Comparison portion for Alternative 7E	3.8	2	10	29	34	2	28	0	0	13	14
	Alternative 7E	4.5	2	10	22	34	2	28	0	0	13	14
	Proposed – Comparison portion for Alternative 7F	10.5	2	10	15	36	2	33	0	0	16	21
	Alternative 7F	10.8	2	10	15	36	2	33	0	0	16	21
	Proposed – Comparison portion for Alternative 7G	3.3	1	5	16	5	1	9	0	0	13	8
	Alternative 7G	3.4	1	5	16	5	1	9	0	0	13	8
	Proposed – Comparison portion for Alternative 7K	118.2	2	76	7	181	2	106	0.2	5	12	77
	Alternative 7K	148.1	2	128	12	248	2	157	0.2	7	8	45
8	Proposed –Total Length	131.5	0	0	3	240	2	312	0.2	3	7	43
	Proposed – Comparison portion for Alternative 8A	51.9	0	0	2	74	2	98	0	0	10	34
	Alternative 8A	53.6	0	0	2	107	3	127	0	0	8	46
	Proposed – Comparison portion for Alternative 8B	45.3	0	0	3	128	2	165	0.2	2	3	6
	Alternative 8B	45.8	0	0	2	68	2	87	0	0	2	7
	Proposed – Comparison portion for Alternative 8C	6.5	0	0	5	36	2	36	0	0	0	0
	Alternative 8C	6.4	0	0	4	36	2	36	0	0	0	0
	Proposed – Comparison portion for Alternative 8D	6.9	0	0	1	30	2	43	0	0	2	2
	Alternative 8D	8.1	0	0	1	32	2	47	0	0	1	2
	Proposed – Comparison portion for Alternative 8E	7.0	0	0	3	54	3	68	0.2	1	6	3
	Alternative 8E	18.3	0	0	2	77	3	102	0.1	1	4	3
9	Proposed –Total Length	162.2	0	0	3	335	2	333	0.3	4	3	49
	Proposed – Comparison portion for Alternative 9A	7.8	0	0	3	15	2	17	0	0	2	3
	Alternative 9A	7.7	0	0	3	15	2	19	0	0	2	3
	Proposed – Comparison portion for Alternative 9B	49.1	0	0	4	100	2	76	0	0	5	21
	Alternative 9B	52.3	0	0	3	135	2	117	0	0	7	41
	Proposed – Comparison portion for Alternative 9C	14.4	0	0	10	28	0	14	0	0	8	7
	Alternative 9C	14.4	0	0	11	30	0	14	0	0	13	11
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	0	0	3	172	2	182	0.5	4	2	14
	Alternative 9D	60.1	0	0	2	158	1	183	0.3	4	2	15
	Alternative 9F	63.3	0	0	2	159	2	184	0.3	4	2	17
	Alternative 9G	57.8	0	0	2	154	2	174	0.4	4	1	12
	Alternative 9H	61.0	0	0	2	155	2	175	0.4	4	2	14
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	0	0	2	114	2	129	0.2	2	2	13
	Alternative 9E (revised)	70.6	0	0	4	136	2	146	0.5	2	1	2
10	Proposed –Total Length	34.4	0	0	1	17	3	29	0	0	9	24

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

Table D.10-4a. Pre- and Post-Construction Levels of Fragmentation Resulting from Transmission Lines

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Pre-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
1W	1W(a) Proposed – Total Length	73.8	4,015	13	1,387	74	3,191	72	566	15	476	15
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	773	7	812	37	1,299	51	639	10	471	14
	Alternative 1W(a)-B	20.9	1,114	4	921	37	1,504	53	1,087	10	346	16
	1W(c) Proposed – Total Length	73.6	4,088	13	1,422	73	3,026	73	525	18	474	14
2	Proposed – Total Length	91.9			10,647	42	775	15	390	15	536	8
	Proposed – Comparison portion for Alternative 2A	16.8			3,617	27	781	1	260	9	859	4
	Alternative 2A	16.0			3,483	27	781	1	327	9	495	1
	Proposed – Comparison portion for Alternative 2B	12.5			2,815	27	781	1	260	9	817	4
	Alternative 2B	12.2			2,727	27	781	1	285	9	2,654	1
3	Segment 3 Proposed – Total Length	45.9	200	5	37,206	7						
	Segment 3A Proposed – Total Length	5.1	43	2	5,529	9						
4[1/]	Proposed – Total Length	197.6	92	749	816	952	21	682	98	417	865	141
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	466	27	4,042	99	29	84	512	37	811	34
	Alternative 4B	100.2	9	8	4,525	104	13	165	734	48	661	39
	Alternative 4C	101.6	9	8	4,514	104	12	148	754	48	732	42
	Alternative 4D	100.8	9	8	4,536	104	13	165	734	48	661	39
	Alternative 4E	102.2	9	8	4,526	104	12	148	754	48	732	42
	Alternative 4F	87.5	1,092	23	4,386	91	30	83	522	38	886	29
5	Proposed – Total Length	55.7	56	580	156	774	26	853	13	152	617	207
	Proposed – Comparison portion for Alternatives 5A,B	22.3	66	389	188	365	25	253	11	71	675	65
	Alternative 5A	29.7	69	473	200	421	33	268	10	80	1,146	49
	Alternative 5B	40.4	44	629	258	473	30	362	10	108	1,314	57
	Proposed – Comparison portion for Alternative 5C	32.9	65	468	181	461	23	449	14	90	616	116
	Alternative 5C	26.0	22	513	182	501	27	584	16	106	349	122
	Proposed – Comparison portion for Alternative 5D	19.2	83	198	145	303	19	379	12	81	593	89
	Alternative 5D	17.0	85	170	130	290	20	350	11	77	779	70
	Proposed – Comparison portion for Alternative 5E	5.8	15	66	115	165	15	295	14	54	368	84
	Alternative 5E	5.3	15	66	112	167	15	295	16	54	366	81
6	Proposed – Total Length	0.5			49	228	79	237	10	43	505	68

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-4a. Pre- and Post-Construction Levels of Fragmentation Resulting from Transmission Lines cont.

			Pre-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
7	Proposed – Total Length	118.2	40	985	148	1376	60	1540	14	156	1499	194
	Proposed – Comparison portion for Alternatives 7A,B	35.1	51	559	192	514	30	512	12	80	790	84
	Alternative 7A	37.7	41	719	239	488	30	515	9	74	945	66
	Alternative 7B	46.2	24	846	298	504	27	592	9	109	1,150	69
	Proposed – Comparison portion for Alternative 7C	20.1	17	151	92	427	113	464	10	27	1,028	38
	Alternative 7C	20.3	17	164	101	351	98	444	5	2	1,525	35
	Proposed – Comparison portion for Alternative 7D	6.2	31	101	109	211	62	264	6	8	735	28
	Alternative 7D	6.8	31	101	106	217	62	267	6	8	780	28
	Proposed – Comparison portion for Alternative 7E	3.8	24	84	246	69	23	148	6	10	1,487	19
	Alternative 7E	4.5	24	88	223	80	25	158	6	11	1,717	17
	Proposed – Comparison portion for Alternative 7F	10.5	34	131	203	127	28	212	24	24	2,165	22
	Alternative 7F	10.8	35	140	213	132	29	231	25	31	1,979	23
	Proposed – Comparison portion for Alternative 7G	3.3	22	127	676	29	19	87	10	2	3,541	7
	Alternative 7G	3.4	22	123	668	29	20	86	10	2	3,597	7
	Proposed – Comparison portion for Alternative 7K	118.2	40	985	148	1,376	60	1,540	14	156	1,499	194
	Alternative 7K	148.1	36	2,060	272	1,563	59	1,522	15	304	899	207
8	Proposed – Total Length	131.5			97	3186	55	4475	13	180	599	230
	Proposed – Comparison portion for Alternative 8A	51.9			82	1,283	62	1,555	15	48	749	126
	Alternative 8A	53.6			55	1,460	68	1,515	11	44	778	152
	Proposed – Comparison portion for Alternative 8B	45.3			110	1,162	60	1,612	13	87	686	48
	Alternative 8B	45.8			91	989	68	1,251	17	55	1,584	50
	Proposed – Comparison portion for Alternative 8C	6.5			73	438	41	621	20	10	604	12
	Alternative 8C	6.4			71	451	43	621	18	11	485	12
	Proposed – Comparison portion for Alternative 8D	6.9			105	305	138	233			475	7
	Alternative 8D	8.1			99	325	153	230			540	9
	Proposed – Comparison portion for Alternative 8E	7.0			87	321	83	344	8	32	495	20
	Alternative 8E	18.3			96	517	80	619	10	52	437	24
9	Proposed – Total Length	162.2	17	89	112	3040	80	3562	38	223	1474	138
	Proposed – Comparison portion for Alternative 9A	7.8	9	13	142	141	80	218	3	4	1,630	21
	Alternative 9A	7.7	9	13	146	149	82	223	3	4	1,475	21
	Proposed – Comparison portion for Alternative 9B	49.1			139	861	91	1,098	18	35	1,630	36
	Alternative 9B	52.3			87	1,171	75	1,242	19	64	1,450	68
	Proposed – Comparison portion for Alternative 9C	14.4			572	105	30	418	13	8	1,708	18
	Alternative 9C	14.4			579	96	22	414	8	10	2,203	18
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			80	1,519	88	1,366	56	126	1,105	57
	Alternative 9D	60.1			75	1,679	74	1,777	40	181	571	89
	Alternative 9F	63.3			73	1,773	78	1,769	41	172	705	83
	Alternative 9G	57.8			75	1,637	75	1,690	43	165	648	78
	Alternative 9H	61.0			72	1,731	80	1,682	44	156	808	72
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			87	1,557	80	1,554	52	141	1,031	63
	Alternative 9E (revised)	70.6			140	1,547	65	2,197	48	82	680	33
10	Proposed – Total Length	34.4	18	60	48	606	130	456	9	29	2299	49

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Table D.10-4a. Pre- and Post-Construction Levels of Fragmentation Resulting from Transmission Lines cont.

			Post-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
1W	1W(a) Proposed – Total Length	73.8	2,270	23	942	109	1,754	131	404	21	357	20
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	416	13	556	54	861	77	426	15	347	19
	Alternative 1W(a)-B	20.9	446	10	631	54	1,035	77	679	16	263	21
	1W(c) Proposed – Total Length	73.6	2,311	23	979	106	1,699	130	394	24	349	19
2	Proposed – Total Length	91.9			5,808	77	484	24	308	19	536	8
	Proposed – Comparison portion for Alternative 2A	16.8			1,843	53	781	1	195	12	859	4
	Alternative 2A	16.0			1,774	53	781	1	246	12	495	1
	Proposed – Comparison portion for Alternative 2B	12.5			1,490	51	781	1	195	12	817	4
	Alternative 2B	12.2			1,443	51	781	1	214	12	2,654	1
3	Segment 3 Proposed – Total Length	45.9	200	5	15,320	17						
	Segment 3A Proposed – Total Length	5.1	43	2	3,110	16						
4[1/]	Proposed – Total Length	197.6	88	782	740	1,051	20	702	93	440	714	171
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	381	33	2,899	138	29	85	412	46	627	44
	Alternative 4B	100.2	9	8	3,386	139	13	166	608	58	560	46
	Alternative 4C	101.6	9	8	3,283	143	12	149	614	59	603	51
	Alternative 4D	100.8	9	8	3,394	139	13	166	608	58	560	46
	Alternative 4E	102.2	9	8	3,291	143	12	149	614	59	603	51
	Alternative 4F	87.5	838	30	3,070	130	30	84	441	45	676	38
5	Proposed – Total Length	55.7	50	643	128	940	24	924	13	157	465	275
	Proposed – Comparison portion for Alternatives 5A,B	22.3	59	437	149	459	22	286	11	74	457	96
	Alternative 5A	29.7	61	540	157	537	28	321	9	87	638	88
	Alternative 5B	40.4	39	705	201	606	26	419	9	115	713	105
	Proposed – Comparison portion for Alternative 5C	32.9	58	523	147	567	21	490	13	92	447	160
	Alternative 5C	26.0	21	539	158	576	25	624	16	107	275	155
	Proposed – Comparison portion for Alternative 5D	19.2	72	227	117	376	18	406	12	83	444	119
	Alternative 5D	17.0	73	198	105	360	19	378	10	79	574	95
	Proposed – Comparison portion for Alternative 5E	5.8	13	73	95	199	14	314	13	55	306	101
	Alternative 5E	5.3	13	73	94	200	14	314	15	55	306	97
6	Proposed – Total Length	0.5			46	246	72	261	10	44	424	81

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-4a. Pre- and Post-Construction Levels of Fragmentation Resulting from Transmission Lines cont.

			Post-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
7	Proposed – Total Length	118.2	37	1,072	126	1,617	55	1,692	13	162	1,006	289
	Proposed – Comparison portion for Alternatives 7A,B	35.1	46	617	156	633	27	553	11	85	523	127
	Alternative 7A	37.7	38	778	191	610	27	580	8	80	562	111
	Alternative 7B	46.2	22	901	239	628	25	647	9	115	690	115
	Proposed – Comparison portion for Alternative 7C	20.1	17	156	85	460	106	492	10	27	723	54
	Alternative 7C	20.3	17	169	93	384	93	471	5	2	1068	50
	Proposed – Comparison portion for Alternative 7D	6.2	29	109	90	255	54	304	6	8	556	37
	Alternative 7D	6.8	29	109	88	261	54	307	6	8	590	37
	Proposed – Comparison portion for Alternative 7E	3.8	19	103	151	112	19	183	6	10	911	31
	Alternative 7E	4.5	20	107	146	122	21	193	6	11	1006	29
	Proposed – Comparison portion for Alternative 7F	10.5	29	150	150	172	23	255	24	24	1191	40
	Alternative 7F	10.8	31	159	159	177	24	274	25	31	1110	41
	Proposed – Comparison portion for Alternative 7G	3.3	20	135	350	56	15	112	10	2	1458	17
	Alternative 7G	3.4	25	2014	326	2007	53	2381	14	387	624	335
	Proposed – Comparison portion for Alternative 7K	118.2	37	1072	126	1617	55	1692	13	162	1006	289
	Alternative 7K	148.1	34	2198	234	1817	54	1668	15	317	702	265
8	Proposed – Total Length	131.5			88	3,499	51	4,860	13	188	526	262
	Proposed – Comparison portion for Alternative 8A	51.9			76	1385	57	1685	15	48	633	149
	Alternative 8A	53.6			51	1584	61	1668	11	44	675	175
	Proposed – Comparison portion for Alternative 8B	45.3			96	1328	53	1818	12	94	599	55
	Alternative 8B	45.8			83	1077	62	1371	16	57	1238	64
	Proposed – Comparison portion for Alternative 8C	6.5			68	476	38	665	20	10	558	13
	Alternative 8C	6.4			66	489	40	665	18	11	448	13
	Proposed – Comparison portion for Alternative 8D	6.9			94	341	118	272			415	8
	Alternative 8D	8.1			89	363	129	273			486	10
	Proposed – Comparison portion for Alternative 8E	7.0			71	391	68	422	8	34	450	22
	Alternative 8E	18.3			78	633	67	739	10	54	389	27
9	Proposed – Total Length	162.2	17	93	99	3,459	71	3,980	35	239	1,043	195
	Proposed – Comparison portion for Alternative 9A	7.8	9	13	115	174	70	250	3	4	1141	30
	Alternative 9A	7.7	9	13	119	184	71	257	3	4	1032	30
	Proposed – Comparison portion for Alternative 9B	49.1			123	975	85	1179	18	36	1107	53
	Alternative 9B	52.3			77	1325	68	1371	19	65	1017	97
	Proposed – Comparison portion for Alternative 9C	14.4			429	140	29	439	11	9	1025	30
	Alternative 9C	14.4			421	132	21	434	7	11	1279	31
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			70	1718	75	1585	51	139	828	76
	Alternative 9D	60.1			66	1930	65	2035	38	193	479	106
	Alternative 9F	63.3			64	2021	68	2027	38	184	568	103
	Alternative 9G	57.8			65	1874	66	1932	40	177	543	93
	Alternative 9H	61.0			63	1965	70	1924	41	168	647	90
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			81	1675	73	1699	49	149	866	75
	Alternative 9E (revised)	70.6			128	1687	61	2358	44	88	575	39
10	Proposed – Total Length	34.4	17	64	45	647	115	516	9	29	1,609	70

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

Table D.10-4b. Change in Fragmentation Levels as a Result of Transmission Lines Between Pre- and Post-Construction

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count
1W	1W(a) Proposed – Total Length	73.8	1,746	10	445	35	1,437	59	161.7	6	119	5
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	357	6	256	17	439	26	212.9	5	124	5
	Alternative 1W(a)-B	20.9	669	6	290	17	469	24	407.6	6	82	5
	1W(c) Proposed – Total Length	73.6	1,777	10	443	33	1,327	57	131.2	6	125	5
2	Proposed – Total Length	91.9	0	0	4,840	35	291	9	82.0	4	0	0
	Proposed – Comparison portion for Alternative 2A	16.8	0	0	1,775	26	0	0	65.1	3	0	0
	Alternative 2A	16.0	0	0	1,709	26	0	0	81.9	3	0	0
	Proposed – Comparison portion for Alternative 2B	12.5	0	0	1,325	24	0	0	65.1	3	0	0
	Alternative 2B	12.2	0	0	1,283	24	0	0	71.2	3	0	0
3	Segment 3 Proposed – Total Length	45.9	0	0	21,886	10	0	0	0.0	0	0	0
	Segment 3A Proposed – Total Length	5.1	0	0	2,419	7	0	0	0.0	0	0	0
4[1/]	Proposed – Total Length	197.6	4	33	77	99	1	20	5.1	23	152	30
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	85	6	1,142	39	0	1	100.2	9	184	10
	Alternative 4B	100.2	0	0	1,139	35	0	1	126.6	10	101	7
	Alternative 4C	101.6	0	0	1,231	39	0	1	140.6	11	129	9
	Alternative 4D	100.8	0	0	1,142	35	0	1	126.6	10	101	7
	Alternative 4E	102.2	0	0	1,234	39	0	1	140.6	11	129	9
	Alternative 4F	87.5	255	7	1,316	39	0	1	81.2	7	210	9
5	Proposed – Total Length	55.7	5	63	28	166	2	71	0.4	5	153	68
	Proposed – Comparison portion for Alternatives 5A,B	22.3	7	48	38	94	3	33	0.5	3	218	31
	Alternative 5A	29.7	9	67	43	116	5	53	0.8	7	508	39
	Alternative 5B	40.4	5	76	57	133	4	57	0.6	7	601	48
	Proposed – Comparison portion for Alternative 5C	32.9	7	55	34	106	2	41	0.3	2	169	44
	Alternative 5C	26.0	1	26	24	75	2	40	0.2	1	74	33
	Proposed – Comparison portion for Alternative 5D	19.2	11	29	28	73	1	27	0.3	2	150	30
	Alternative 5D	17.0	12	28	25	70	2	28	0.3	2	205	25
	Proposed – Comparison portion for Alternative 5E	5.8	1	7	20	34	1	19	0.3	1	62	17
	Alternative 5E	5.3	1	7	19	33	1	19	0.3	1	60	16
6	Proposed – Total Length	0.5	0	0	4	18	7	24	0.2	1	81	13

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-4b. Change in Fragmentation Levels as a Result of Transmission Lines Between Pre- and Post-Construction cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count
7	Proposed – Total Length	118.2	3	87	22	241	5	152	0.5	6	493	95
	Proposed – Comparison portion for Alternatives 7A,B	35.1	5	58	36	119	2	41	0.7	5	267	43
	Alternative 7A	37.7	3	59	48	122	3	65	0.7	6	383	45
	Alternative 7B	46.2	1	55	59	124	2	55	0.5	6	460	46
	Proposed – Comparison portion for Alternative 7C	20.1	1	5	7	33	6	28	0	0	305	16
	Alternative 7C	20.3	1	5	9	33	6	27	0	0	458	15
	Proposed – Comparison portion for Alternative 7D	6.2	2	8	19	44	8	40	0	0	179	9
	Alternative 7D	6.8	2	8	18	44	8	40	0	0	190	9
	Proposed – Comparison portion for Alternative 7E	3.8	4	19	94	43	4	35	0	0	575	12
	Alternative 7E	4.5	4	19	77	42	5	35	0	0	710	12
	Proposed – Comparison portion for Alternative 7F	10.5	4	19	53	45	5	43	0	0	974	18
	Alternative 7F	10.8	4	19	54	45	5	43	0	0	869	18
	Proposed – Comparison portion for Alternative 7G	3.3	1	8	326	27	4	25	0	0	2,083	10
	Alternative 7G	3.4	1	8	322	27	4	25	0	0	2116	10
	Proposed – Comparison portion for Alternative 7K	118.2	3	87	22	241	5	152	0.5	6	493	95
	Alternative 7K	148.1	2	138	38	254	5	146	0.6	13	197	58
8	Proposed – Total Length	131.5	0	0	9	313	4	385	0.6	8	73	32
	Proposed – Comparison portion for Alternative 8A	51.9	0	0	6	102	5	130	0	0	116	23
	Alternative 8A	53.6	0	0	4	124	6	153	0	0	102	23
	Proposed – Comparison portion for Alternative 8B	45.3	0	0	14	166	7	206	0.9	7	87	7
	Alternative 8B	45.8	0	0	7	88	6	120	0.6	2	347	14
	Proposed – Comparison portion for Alternative 8C	6.5	0	0	6	38	3	44	0	0	46	1
	Alternative 8C	6.4	0	0	6	38	3	44	0	0	37	1
	Proposed – Comparison portion for Alternative 8D	6.9	0	0	11	36	20	39	0	0	59	1
	Alternative 8D	8.1	0	0	10	38	24	43	0	0	54	1
	Proposed – Comparison portion for Alternative 8E	7.0	0	0	16	70	15	78	0.5	2	45	2
	Alternative 8E	18.3	0	0	18	116	13	120	0.4	2	49	3
9	Proposed – Total Length	162.2	1	4	14	419	8	418	2.5	16	431	57
	Proposed – Comparison portion for Alternative 9A	7.8	0	0	27	33	10	32	0	0	489	9
	Alternative 9A	7.7	0	0	28	35	11	34	0	0	442	9
	Proposed – Comparison portion for Alternative 9B	49.1	0	0	16	114	6	81	0.5	1	523	17
	Alternative 9B	52.3	0	0	10	154	7	129	0.3	1	434	29
	Proposed – Comparison portion for Alternative 9C	14.4	0	0	143	35	1	21	1.4	1	683	12
	Alternative 9C	14.4	0	0	158	36	1	20	0.7	1	924	13
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	0	0	9	199	12	219	5.2	13	276	19
	Alternative 9D	60.1	0	0	10	251	9	258	2.5	12	92	17
	Alternative 9F	63.3	0	0	9	248	10	258	2.7	12	137	20
	Alternative 9G	57.8	0	0	9	237	9	242	2.9	12	104	15
	Alternative 9H	61.0	0	0	9	234	10	242	3.1	12	162	18
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	0	0	6	118	7	145	2.8	8	165	12
	Alternative 9E (revised)	70.6	0	0	12	140	4	161	3.2	6	105	6
10	Proposed – Total Length	34.4	1	4	3	41	15	60	0	0	690	21

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Table D.10-5a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads and Transmission Lines

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Pre-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
1W	1W(a) Proposed – Total Length	73.8	746	70	202	509	295	778	105	81	99	72
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	361	15	170	177	162	409	91	70	100	66
	Alternative 1W(a)-B	20.9	495	9	141	241	182	439	78	139	94	59
	1W(c) Proposed – Total Length	73.6	759	70	205	506	299	739	100	94	101	66
2	Proposed – Total Length	91.9			374	1,195	208	56	86	68	116	37
	Proposed – Comparison portion for Alternative 2A	16.8			280	349	260	3	56	42	143	24
	Alternative 2A	16.0			264	356	260	3	61	48	71	7
	Proposed – Comparison portion for Alternative 2B	12.5			241	316	260	3	56	42	163	20
	Alternative 2B	12.2			233	316	260	3	60	43	156	17
3	Segment 3 Proposed – Total Length	45.9	200	5	685	380						
	Segment 3A Proposed – Total Length	5.1	43	2	607	82						
4[1/]	Proposed – Total Length	197.6	69	1,003	279	2,781	16	909	56	725	171	712
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	197	64	401	999	22	110	155	122	144	191
	Alternative 4B	100.2	6	11	443	1,062	11	200	154	228	170	152
	Alternative 4C	101.6	6	11	434	1,081	10	180	159	228	166	185
	Alternative 4D	100.8	6	11	443	1,065	11	200	154	228	170	152
	Alternative 4E	102.2	6	11	434	1,084	10	180	159	228	166	185
	Alternative 4F	87.5	340	74	394	1,014	23	109	152	130	141	182
5	Proposed – Total Length	55.7	45	724	89	1,349	18	1,216	9	213	165	774
	Proposed – Comparison portion for Alternatives 5A,B	22.3	52	496	115	597	18	351	8	104	205	214
	Alternative 5A	29.7	51	642	118	712	22	398	7	112	220	255
	Alternative 5B	40.4	34	806	139	879	21	527	7	145	233	321
	Proposed – Comparison portion for Alternative 5C	32.9	51	601	109	765	17	616	10	127	192	372
	Alternative 5C	26.0	19	610	106	857	20	784	11	159	129	329
	Proposed – Comparison portion for Alternative 5D	19.2	62	264	82	539	14	508	9	116	181	292
	Alternative 5D	17.0	63	228	73	517	14	492	7	112	200	273
	Proposed – Comparison portion for Alternative 5E	5.8	12	78	65	289	12	369	9	78	130	237
	Alternative 5E	5.3	12	78	65	287	12	366	11	79	126	235
6	Proposed – Total Length	0.5			32	354	51	367	6	65	123	280

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-5a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads and Transmission Lines cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Pre-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
7	Proposed – Total Length	118.2	33	1,192	82	2,488	38	2,432	10	212	181	1,609
	Proposed – Comparison portion for Alternatives 7A,B	35.1	41	701	116	854	21	713	8	120	224	296
	Alternative 7A	37.7	31	931	134	870	23	696	7	99	209	299
	Alternative 7B	46.2	19	1,043	155	969	21	783	7	140	231	344
	Proposed – Comparison portion for Alternative 7C	20.1	14	182	51	773	68	766	9	30	168	232
	Alternative 7C	20.3	14	196	58	611	63	697	3	3	193	276
	Proposed – Comparison portion for Alternative 7D	6.2	24	129	48	480	37	445	5	9	88	235
	Alternative 7D	6.8	24	129	47	488	37	447	5	9	88	248
	Proposed – Comparison portion for Alternative 7E	3.8	21	96	104	163	16	208	5	11	134	210
	Alternative 7E	4.5	21	100	96	187	18	224	5	12	135	216
	Proposed – Comparison portion for Alternative 7F	10.5	28	158	93	276	20	302	19	30	161	296
	Alternative 7F	10.8	29	168	95	294	20	330	19	41	159	286
	Proposed – Comparison portion for Alternative 7G	3.3	20	138	231	85	13	126	7	3	191	130
	Alternative 7G	3.4	20	134	233	83	13	125	7	3	194	130
	Proposed – Comparison portion for Alternative 7K	118.2	33	1,192	82	2,488	38	2,432	10	212	181	1,609
	Alternative 7K	148.1	30	2,464	140	3,047	36	2,454	11	412	164	1,132
8	Proposed – Total Length	131.5			48	6,371	31	7,884	11	221	121	1,143
	Proposed – Comparison portion for Alternative 8A	51.9			49	2,152	38	2,508	14	53	130	726
	Alternative 8A	53.6			32	2,493	38	2,668	9	50	109	1,080
	Proposed – Comparison portion for Alternative 8B	45.3			48	2,647	30	3,263	9	119	127	259
	Alternative 8B	45.8			44	2,022	34	2,493	12	77	145	547
	Proposed – Comparison portion for Alternative 8C	6.5			43	740	28	909	13	15	207	35
	Alternative 8C	6.4			42	756	29	921	12	17	182	32
	Proposed – Comparison portion for Alternative 8D	6.9			38	845	37	864			64	52
	Alternative 8D	8.1			37	869	40	877			60	81
	Proposed – Comparison portion for Alternative 8E	7.0			37	748	34	830	6	42	127	78
	Alternative 8E	18.3			39	1,271	35	1,416	8	68	109	96
9	Proposed – Total Length	162.2	16	96	54	6,285	40	7,121	23	367	114	1,787
	Proposed – Comparison portion for Alternative 9A	7.8	9	13	60	331	39	450	3	4	140	245
	Alternative 9A	7.7	9	13	64	342	40	459	3	4	131	236
	Proposed – Comparison portion for Alternative 9B	49.1			66	1,809	49	2,037	14	44	110	535
	Alternative 9B	52.3			44	2,290	38	2,438	11	113	115	855
	Proposed – Comparison portion for Alternative 9C	14.4			136	443	18	693	8	12	172	179
	Alternative 9C	14.4			132	421	14	669	7	12	184	215
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			43	2,777	41	2,895	29	244	96	657
	Alternative 9D	60.1			34	3,693	32	4,104	24	306	69	731
	Alternative 9F	63.3			34	3,757	34	4,071	24	293	79	740
	Alternative 9G	57.8			35	3,530	33	3,905	25	281	72	704
	Alternative 9H	61.0			35	3,594	35	3,872	25	268	82	713
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			46	2,952	39	3,215	28	264	95	681
	Alternative 9E (revised)	70.6			78	2,784	40	3,593	32	122	85	263
10	Proposed – Total Length	34.4	16	65	29	1,005	60	998	7	35	177	638

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
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Blank cells indicate zero acres or null value

Table D.10-5a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads and Transmission Lines cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Post-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
1W	1W(a) Proposed – Total Length	73.8	431	121	164	625	223	1,032	90	94	80	89
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	193	28	137	219	128	518	79	81	79	83
	Alternative 1W(a)-B	20.9	202	22	119	286	147	541	71	153	73	76
	1W(c) Proposed – Total Length	73.6	439	121	167	620	224	986	88	107	80	83
2	Proposed – Total Length	91.9			304	1,471	131	89	77	76	116	37
	Proposed – Comparison portion for Alternative 2A	16.8			204	478	260	3	49	48	143	24
	Alternative 2A	16.0			194	485	260	3	55	54	71	7
	Proposed – Comparison portion for Alternative 2B	12.5			179	424	260	3	49	48	163	20
	Alternative 2B	12.2			174	424	260	3	52	49	156	17
3	Segment 3 Proposed – Total Length	45.9	200	5	558	467						
	Segment 3A Proposed – Total Length	5.1	43	2	488	102						
4[1/]	Proposed – Total Length	197.6	63	1,096	239	3,248	15	942	53	769	154	792
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	161	78	320	1,249	22	112	139	136	124	222
	Alternative 4B	100.2	6	11	341	1,382	10	202	141	249	148	174
	Alternative 4C	101.6	6	11	333	1,409	10	182	144	251	138	223
	Alternative 4D	100.8	6	11	341	1,385	10	202	141	249	148	174
	Alternative 4E	102.2	6	11	333	1,412	10	182	144	251	138	223
	Alternative 4F	87.5	282	89	323	1,237	23	111	141	141	123	208
5	Proposed – Total Length	55.7	38	851	70	1,712	16	1,326	9	218	132	966
	Proposed – Comparison portion for Alternatives 5A,B	22.3	43	598	81	842	16	405	7	107	143	307
	Alternative 5A	29.7	39	831	80	1,051	18	488	6	123	150	373
	Alternative 5B	40.4	28	1,001	90	1,347	17	631	7	156	154	487
	Proposed – Comparison portion for Alternative 5C	32.9	43	713	82	1,020	15	675	9	129	141	506
	Alternative 5C	26.0	17	649	88	1,037	19	846	11	161	100	427
	Proposed – Comparison portion for Alternative 5D	19.2	49	332	65	674	13	545	8	118	140	376
	Alternative 5D	17.0	49	295	58	647	13	530	7	114	155	351
	Proposed – Comparison portion for Alternative 5E	5.8	11	88	55	341	11	395	9	79	108	285
	Alternative 5E	5.3	11	88	56	337	12	392	11	80	105	283
6	Proposed – Total Length	0.5			30	375	47	395	6	66	106	324

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-5a. Pre- and Post-Construction Levels of Fragmentation Resulting from Roads and Transmission Lines cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Post-Construction Conditions									
			Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count	Average Patch Size (Acre)	Patch Count
7	Proposed – Total Length	118.2	29	1,367	66	3,070	34	2,699	10	220	151	1,927
	Proposed – Comparison portion for Alternatives 7A,B	35.1	35	826	84	1,172	19	785	7	127	155	429
	Alternative 7A	37.7	27	1,097	94	1,237	19	815	6	109	140	445
	Alternative 7B	46.2	17	1,177	106	1,411	18	888	7	150	156	508
	Proposed – Comparison portion for Alternative 7C	20.1	14	193	47	841	62	836	9	30	137	285
	Alternative 7C	20.3	14	207	52	679	57	767	3	3	162	329
	Proposed – Comparison portion for Alternative 7D	6.2	23	138	41	564	31	527	5	9	81	254
	Alternative 7D	6.8	23	138	40	572	31	529	5	9	82	267
	Proposed – Comparison portion for Alternative 7E	3.8	16	124	61	276	13	268	5	11	119	238
	Alternative 7E	4.5	16	128	60	299	14	284	5	12	120	244
	Proposed – Comparison portion for Alternative 7F	10.5	24	186	66	392	16	377	19	30	138	344
	Alternative 7F	10.8	25	196	68	410	16	405	19	41	136	334
	Proposed – Comparison portion for Alternative 7G	3.3	18	149	132	148	11	156	7	3	153	162
	Alternative 7G	3.4	19	145	133	146	11	155	7	3	155	162
	Proposed – Comparison portion for Alternative 7K	118.2	29	1,367	66	3,070	34	2,699	10	220	151	1,927
	Alternative 7K	148.1	27	2,757	111	3,822	33	2,706	11	432	143	1,306
8	Proposed – Total Length	131.5			45	6,846	29	8,446	10	232	113	1,223
	Proposed – Comparison portion for Alternative 8A	51.9			46	2,296	36	2,677	14	53	120	785
	Alternative 8A	53.6			30	2,673	35	2,904	9	50	102	1,164
	Proposed – Comparison portion for Alternative 8B	45.3			44	2,907	27	3,585	9	128	119	276
	Alternative 8B	45.8			41	2,165	32	2,676	11	80	137	579
	Proposed – Comparison portion for Alternative 8C	6.5			40	795	26	982	13	15	191	38
	Alternative 8C	6.4			39	811	27	994	12	17	166	35
	Proposed – Comparison portion for Alternative 8D	6.9			36	893	34	942			61	54
	Alternative 8D	8.1			35	919	37	959			58	83
	Proposed – Comparison portion for Alternative 8E	7.0			33	851	30	951	6	45	119	83
	Alternative 8E	18.3			35	1,429	31	1,598	8	71	101	104
9	Proposed – Total Length	162.2	16	100	48	7,049	36	7,843	22	388	104	1,948
	Proposed – Comparison portion for Alternative 9A	7.8	9	13	50	402	36	491	3	4	131	262
	Alternative 9A	7.7	9	13	52	417	36	503	3	4	122	253
	Proposed – Comparison portion for Alternative 9B	49.1			58	2,044	45	2,212	14	45	100	585
	Alternative 9B	52.3			40	2,564	35	2,684	11	114	105	939
	Proposed – Comparison portion for Alternative 9C	14.4			113	529	18	715	8	13	149	206
	Alternative 9C	14.4			109	508	13	690	6	13	160	247
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			39	3,106	36	3,290	27	261	89	709
	Alternative 9D	60.1			31	4,058	29	4,525	23	322	65	784
	Alternative 9F	63.3			31	4,123	31	4,493	23	309	73	797
	Alternative 9G	57.8			31	3,883	29	4,314	24	297	67	752
	Alternative 9H	61.0			32	3,948	31	4,282	24	284	76	765
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			43	3,159	36	3,471	27	275	90	720
	Alternative 9E (revised)	70.6			71	3,034	37	3,848	29	132	82	272
10	Proposed – Total Length	34.4	15	69	27	1,075	55	1,081	7	35	157	715

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value

Table D.10-5b. Change in Fragmentation Levels as a Result of Roads and Transmission Lines Between Pre- and Post-Construction

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count
1W	1W(a) Proposed – Total Length	73.8	314	51	37	116	73	254	14.5	13	19	17
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	168	13	33	42	34	109	12.4	11	20	17
	Alternative 1W(a)-B	20.9	293	13	22	45	34	102	7.2	14	21	17
	1W(c) Proposed – Total Length	73.6	320	51	38	114	75	247	12.2	13	21	17
2	Proposed – Total Length	91.9	0	0	70	276	77	33	9.1	8	0	0
	Proposed – Comparison portion for Alternative 2A	16.8	0	0	76	129	0	0	7.0	6	0	0
	Alternative 2A	16.0	0	0	70	129	0	0	6.8	6	0	0
	Proposed – Comparison portion for Alternative 2B	12.5	0	0	61	108	0	0	7.0	6	0	0
	Alternative 2B	12.2	0	0	59	108	0	0	7.3	6	0	0
3	Segment 3 Proposed – Total Length	45.9	0	0	128	87	0	0	0	0	0	0
	Segment 3A Proposed – Total Length	5.1	0	0	119	20	0	0	0	0	0	0
4[1/]	Proposed – Total Length	197.6	6	93	40	467	1	33	3.2	44	17	80
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	35	14	80	250	0	2	16.0	14	20	31
	Alternative 4B	100.2	0	0	103	320	0	2	13.0	21	21	22
	Alternative 4C	101.6	0	0	101	328	0	2	14.6	23	28	38
	Alternative 4D	100.8	0	0	102	320	0	2	13.0	21	21	22
	Alternative 4E	102.2	0	0	101	328	0	2	14.6	23	28	38
	Alternative 4F	87.5	57	15	71	223	0	2	11.9	11	18	26
5	Proposed – Total Length	55.7	7	127	19	363	1	110	0.2	5	33	192
	Proposed – Comparison portion for Alternatives 5A,B	22.3	9	102	33	245	2	54	0.2	3	62	93
	Alternative 5A	29.7	12	189	38	339	4	90	0.6	11	70	118
	Alternative 5B	40.4	7	195	48	468	3	104	0.5	11	80	166
	Proposed – Comparison portion for Alternative 5C	32.9	8	112	27	255	1	59	0.2	2	51	134
	Alternative 5C	26.0	1	39	18	180	1	62	0.1	2	30	98
	Proposed – Comparison portion for Alternative 5D	19.2	13	68	16	135	1	37	0.2	2	40	84
	Alternative 5D	17.0	14	67	15	130	1	38	0.1	2	44	78
	Proposed – Comparison portion for Alternative 5E	5.8	1	10	10	52	1	26	0.1	1	22	48
	Alternative 5E	5.3	1	10	10	50	1	26	0.1	1	21	48
6	Proposed – Total Length	0.5	0	0	2	21	4	28	0.1	1	17	44

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-5b. Change in Fragmentation Levels as a Result of Roads and Transmission Lines Between Pre- and Post-Construction cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Forest Woodlands		Shrublands		Grasslands		Riparian		Agriculture/Disturbed	
			Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count	Reduction in Average Patch Size (Acre)	Change in Patch Count
7	Proposed – Total Length	118.2	4	175	16	582	4	267	0.4	8	30	318
	Proposed – Comparison portion for Alternatives 7A,B	35.1	6	125	31	318	2	72	0.4	7	70	133
	Alternative 7A	37.7	5	166	40	367	3	119	0.6	10	68	146
	Alternative 7B	46.2	2	134	49	442	2	105	0.5	10	75	164
	Proposed – Comparison portion for Alternative 7C	20.1	1	11	4	68	6	70	0	0	31	53
	Alternative 7C	20.3	1	11	6	68	6	70	0	0	31	53
	Proposed – Comparison portion for Alternative 7D	6.2	2	9	7	84	6	82	0	0	7	19
	Alternative 7D	6.8	2	9	7	84	6	82	0	0	6	19
	Proposed – Comparison portion for Alternative 7E	3.8	5	28	43	113	4	60	0	0	16	28
	Alternative 7E	4.5	5	28	36	112	4	60	0	0	16	28
	Proposed – Comparison portion for Alternative 7F	10.5	4	28	28	116	4	75	0	0	22	48
	Alternative 7F	10.8	4	28	27	116	4	75	0	0	23	48
	Proposed – Comparison portion for Alternative 7G	3.3	1	11	98	63	3	30	0	0	38	32
	Alternative 7G	3.4	2	11	101	63	3	30	0	0	38	32
	Proposed – Comparison portion for Alternative 7K	118.2	4	175	16	582	4	267	0.4	8	30	318
	Alternative 7K	148.1	3	293	28	775	3	252	0.5	20	22	174
8	Proposed – Total Length	131.5	0	0	3	475	2	562	0.5	11	8	80
	Proposed – Comparison portion for Alternative 8A	51.9	0	0	3	144	2	169	0	0	10	59
	Alternative 8A	53.6	0	0	2	180	3	236	0	0	8	84
	Proposed – Comparison portion for Alternative 8B	45.3	0	0	4	260	3	322	0.6	9	8	17
	Alternative 8B	45.8	0	0	3	143	2	183	0.4	3	8	32
	Proposed – Comparison portion for Alternative 8C	6.5	0	0	3	55	2	73	0	0	16	3
	Alternative 8C	6.4	0	0	3	55	2	73	0	0	16	3
	Proposed – Comparison portion for Alternative 8D	6.9	0	0	2	48	3	78	0	0	2	2
	Alternative 8D	8.1	0	0	2	50	3	82	0	0	1	2
	Proposed – Comparison portion for Alternative 8E	7.0	0	0	5	103	4	121	0.4	3	8	5
	Alternative 8E	18.3	0	0	4	158	4	182	0.3	3	8	8
9	Proposed – Total Length	162.2	1	4	6	764	4	722	1.3	21	9	161
	Proposed – Comparison portion for Alternative 9A	7.8	0	0	11	71	3	41	0	0	9	17
	Alternative 9A	7.7	0	0	11	75	3	44	0	0	9	17
	Proposed – Comparison portion for Alternative 9B	49.1	0	0	8	235	4	175	0.3	1	9	50
	Alternative 9B	52.3	0	0	5	274	4	246	0.1	1	10	84
	Proposed – Comparison portion for Alternative 9C	14.4	0	0	22	86	1	22	0.7	1	23	27
	Alternative 9C	14.4	0	0	23	87	0	21	0.5	1	24	32
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	0	0	5	329	5	395	1.9	17	7	52
	Alternative 9D	60.1	0	0	3	365	3	421	1.2	16	5	53
	Alternative 9F	63.3	0	0	3	366	3	422	1.2	16	6	57
	Alternative 9G	57.8	0	0	3	353	3	409	1.4	16	5	48
	Alternative 9H	61.0	0	0	3	354	3	410	1.4	16	6	52
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	0	0	3	207	3	256	1.1	11	5	39
	Alternative 9E (revised)	70.6	0	0	6	250	3	255	2.4	10	3	9
10	Proposed – Total Length	34.4	1	4	2	70	5	83	0	0	19	77

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly

Table D.10-6. Acres of Construction Impacts to Big Game Habitat Impacted by the Gateway West Transmission Line

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Wildlife Habitat Impacted					
			Bighorn Sheep Winter Range	Elk Calving Areas	Elk Winter Range	Moose Winter Range	Mule Deer Winter Range	Pronghorn Winter Range
1W	1W(a) Proposed – Total Length	73.8			63		441	295
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5					148	135
	Alternative 1W(a)-B	20.9					249	234
	1W(c) Proposed – Total Length	73.6			67		530	386
2	Proposed – Total Length	91.9			23	58	1,458	1,646
	Proposed – Comparison portion for Alternative 2A	16.8			20	58	217	309
	Alternative 2A	16.0			20	24	204	355
	Proposed – Comparison portion for Alternative 2B	12.5			20	58	176	238
	Alternative 2B	12.2			20	24	117	209
3	Segment 3 Proposed – Total Length	45.9					543	833
	Segment 3A Proposed – Total Length	5.1					60	60
4[1/]	Proposed – Total Length	197.6		194	756	519	1,546	1,675
	Proposed – Comparison portion for Alternatives 4B-4F	85.2		194	409	518	351	698
	Alternative 4B	100.2			788	91	867	483
	Alternative 4C	101.6			779	245	876	476
	Alternative 4D	100.8			785	91	874	485
	Alternative 4E	102.2			759	245	868	478
	Alternative 4F	87.5		235	255	488	296	567
5	Proposed – Total Length	55.7			1		665	
	Proposed – Comparison portion for Alternatives 5A,B	22.3			1		164	
	Alternative 5A	29.7					240	
	Alternative 5B	40.4					397	
	Proposed – Comparison portion for Alternative 5C	32.9			1		459	
	Alternative 5C	26.0			153		129	
	Proposed – Comparison portion for Alternative 5D	19.2					377	
	Alternative 5D	17.0					324	
	Proposed – Comparison portion for Alternative 5E	5.8					70	
	Alternative 5E	5.3					78	
6	Proposed – Total Length	0.5					30	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-6. Acres of Construction Impacts to Big Game Habitat Impacted by the Gateway West Transmission Line cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Wildlife Habitat Impacted					
			Bighorn Sheep Winter Range	Elk Calving Areas	Elk Winter Range	Moose Winter Range	Mule Deer Winter Range	Pronghorn Winter Range
7	Proposed – Total Length	118.2					835	
	Proposed – Comparison portion for Alternatives 7A,B	35.1					288	
	Alternative 7A	37.7					176	
	Alternative 7B	46.2					226	
	Proposed – Comparison portion for Alternative 7C	20.1					64	
	Alternative 7C	20.3					112	
	Proposed – Comparison portion for Alternative 7D	6.2					40	
	Alternative 7D	6.8					40	
	Proposed – Comparison portion for Alternative 7E	3.8					45	
	Alternative 7E	4.5					83	
	Proposed – Comparison portion for Alternative 7F	10.5					172	
	Alternative 7F	10.8					206	
	Proposed – Comparison portion for Alternative 7G	3.3					60	
	Alternative 7G	3.4					78	
	Proposed – Comparison portion for Alternative 7K	118.2					834	
	Alternative 7K	148.1					963	
8	Proposed – Total Length	131.5			361		890	122
	Proposed – Comparison portion for Alternative 8A	51.9			33		767	
	Alternative 8A	53.6					345	
	Proposed – Comparison portion for Alternative 8B	45.3			112			
	Alternative 8B	45.8			112			
	Proposed – Comparison portion for Alternative 8C	6.5			112			
	Alternative 8C	6.4			115			
	Proposed – Comparison portion for Alternative 8D	6.9						
	Alternative 8D	8.1						
	Proposed – Comparison portion for Alternative 8E	7.0						
	Alternative 8E	18.3	18					
9	Proposed – Total Length	162.2	0				205	398
	Proposed – Comparison portion for Alternative 9A	7.8					50	
	Alternative 9A	7.7					58	
	Proposed – Comparison portion for Alternative 9B	49.1						
	Alternative 9B	52.3						
	Proposed – Comparison portion for Alternative 9C	14.4						
	Alternative 9C	14.4						
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2						279
	Alternative 9D	60.1	18					11
	Alternative 9F	63.3	18					11
	Alternative 9G	57.8	30					17
	Alternative 9H	61.0	30					17
	Proposed – Comparison portion for Alternative 9E (revised)	61.4						360
	Alternative 9E (revised)	70.6	75					520
10	Proposed – Total Length	34.4					203	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

Table D.10-7. Acres of Construction Impacts that Would Occur within a 1-mile Buffer around Raptor and Birds of Prey Nest Locations

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Raptor and Birds of Prey Habitat Impacts (acres)														
			American Kestrel	Bald Eagle	Burrowing Owl	Common Raven	Ferruginous Hawk	Golden Eagle	Great Horned Owl	Long-eared Owl	Northern Goshawk	Northern Harrier	Osprey	Prairie Falcon	Red-tailed Hawk	Short-eared Owl	Swainsons Hawk
1W	1W(a) Proposed – Total Length	73.8	15	12		18	80	76	6		14			35	34		
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5		12				43	6						34		
	Alternative 1W(a)-B	20.9						26	5						12		
	1W(c) Proposed – Total Length	73.6	32	20		32	126	61	24		13			33	40		
2	Proposed – Total Length	91.9	182	1	117	153	847	547	44			111		166	311	39	27
	Proposed – Comparison portion for Alternative 2A	16.8	19	1			179	106	31						105		
	Alternative 2A	16.0	30	43			47	43	5						68		
	Proposed – Comparison portion for Alternative 2B	12.5		1			159	94	30						89		
	Alternative 2B	12.2		42			58	47	2						74		
3	Segment 3 Proposed – Total Length	45.9	42		63	81	223	140	35			54		211	107		
	Segment 3A Proposed – Total Length	5.1				24	18	24	23					28			
4[1/]	Proposed – Total Length	197.6	95	77	20	530	251	222	142	23	39	32	42	196	826		59
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	17	<1	20	183	74	137	13	23			42	36	420		51
	Alternative 4B	100.2	8		41	26	9	109	3					34	160		13
	Alternative 4C	101.6	8		41	26	9	109	3					34	167		13
	Alternative 4D	100.8	9		41	26	9	109	3					34	168		13
	Alternative 4E	102.2	9		41	26	9	108	3					34	166		13
	Alternative 4F	87.5	17	<1	20	154	74	84	13	23			3	36	353		13
5	Proposed – Total Length	55.7		31	36			30									
	Proposed – Comparison portion for Alternatives 5A,B	22.3						7									
	Alternative 5A	29.7						27									
	Alternative 5B	40.4						17									
	Proposed – Comparison portion for Alternative 5C	32.9						30									
	Alternative 5C	26.0															
	Proposed – Comparison portion for Alternative 5D	19.2		31				30									
	Alternative 5D	17.0		25				6									
	Proposed – Comparison portion for Alternative 5E	5.8		31													
	Alternative 5E	5.3		2													
6	Proposed – Total Length	0.5															

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-7. Acres of Construction Impacts that Would Occur within a 1-mile buffer around Raptors and Birds of Prey Nests cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Raptor and Birds of Prey Habitat Impacts (acres)														
			American Kestrel	Bald Eagle	Burrowing Owl	Common Raven	Ferruginous Hawk	Golden Eagle	Great Horned Owl	Long-eared Owl	Northern Goshawk	Northern Harrier	Osprey	Prairie Falcon	Red-tailed Hawk	Short-eared Owl	Swainsons Hawk
7	Proposed – Total Length	118.2			104		78	61									
	Proposed – Comparison portion for Alternatives 7A,B	35.1															
	Alternative 7A	37.7						8									
	Alternative 7B	46.2						3									
	Proposed – Comparison portion for Alternative 7C	20.1			74		19										
	Alternative 7C	20.3			44												
	Proposed – Comparison portion for Alternative 7D	6.2			20			17									
	Alternative 7D	6.8			28												
	Proposed – Comparison portion for Alternative 7E	3.8					49	45									
	Alternative 7E	4.5					47	37									
	Proposed – Comparison portion for Alternative 7F	10.5					59	45									
	Alternative 7F	10.8					46	28									
	Proposed – Comparison portion for Alternative 7G	3.3															
	Alternative 7G	3.4															
	Proposed – Comparison portion for Alternative 7K	118.2			104		78	61									
	Alternative 7K	148.1			25		380	223			24				39		48
8	Proposed – Total Length	131.5			373		841	432						152			
	Proposed – Comparison portion for Alternative 8A	51.9			20			159									
	Alternative 8A	53.6						250							50		
	Proposed – Comparison portion for Alternative 8B	45.3			353		539	131						152			
	Alternative 8B	45.8			191		251										
	Proposed – Comparison portion for Alternative 8C	6.5			1		163										
	Alternative 8C	6.4			1		140										
	Proposed – Comparison portion for Alternative 8D	6.9			134		147										
	Alternative 8D	8.1			171		174										
	Proposed – Comparison portion for Alternative 8E	7.0			107		7	56						101			
	Alternative 8E	18.3			98		243	110						208			
9	Proposed – Total Length	162.2	t[2/]		283	100	585	441						249			90
	Proposed – Comparison portion for Alternative 9A	7.8					17										
	Alternative 9A	7.7						25									
	Proposed – Comparison portion for Alternative 9B	49.1	t[2/]		94		122	179						133			90
	Alternative 9B	52.3	44		39		51	214						64	65		
	Proposed – Comparison portion for Alternative 9C	14.4	t[2/]		25		112	107						65			90
	Alternative 9C	14.4	44		49		51	192						29	25		
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			128	41	204	31									
	Alternative 9D	60.1			341		380	257						410			
	Alternative 9F	63.3			324		493	205						318			
	Alternative 9G	57.8			331		292	287						387			
	Alternative 9H	61.0			313		405	228						288			
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			128		204	142									
	Alternative 9E (revised)	70.6			104		147	83									
10	Proposed – Total Length	34.4			39			38							15		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero acres or null value

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

Table D.10-8. Acres of Operations Impacts to Big Game Habitat Impacted by the Gateway West Transmission Line

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Wildlife Habitat Impacted					
			Bighorn Sheep Winter Range	Elk Calving Areas	Elk Winter Range	Moose Winter Range	Mule Deer Winter Range	Pronghorn Winter Range
1W	1W(a) Proposed – Total Length	73.8			15		107	73
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5					27	26
	Alternative 1W(a)-B	20.9					40	38
	1W(c) Proposed – Total Length	73.6			8		74	58
2	Proposed – Total Length	91.9			1	3	208	228
	Proposed – Compare to Alternative 2A	16.8			t[1/]	3	21	28
	Alternative 2A	16.0			t[1/]	1	25	40
	Proposed – Compare to Alternative 2B	12.5				3	17	21
	Alternative 2B	12.2				1	10	17
3	Segment 3 Proposed – Total Length	45.9					113	140
	Segment 3A Proposed – Total Length	5.1					12	12
4[2/]	Proposed – Total Length	197.6		32	104	72	241	238
	Proposed – Comparison portion for Alternatives 4B-4F	85.2		32	59	72	50	81
	Alternative 4B	100.2			96	9	113	59
	Alternative 4C	101.6			89	28	106	60
	Alternative 4D	100.8			102	9	119	59
	Alternative 4E	102.2			91	28	110	60
	Alternative 4F	87.5		41	34	69	35	64
5	Proposed – Total Length	55.7			<1		77	
	Proposed – Compare to Alternatives 5A,B	22.3			<1		22	
	Alternative 5A	29.7					28	
	Alternative 5B	40.4					38	
	Proposed – Compare to Alternative 5C	32.9			<1		60	
	Alternative 5C	26.0			15		14	
	Proposed – Compare to Alternative 5D	19.2					43	
	Alternative 5D	17.0					30	
	Proposed – Compare to Alternative 5E	5.8					4	
	Alternative 5E	5.3					5	
6	Proposed – Total Length	0.5					28	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of impact

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-8. Acres of Operations Impacts to Big Game Habitat Impacted by the Gateway West Transmission Line cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Wildlife Habitat Impacted					
			Bighorn Sheep Winter Range	Elk Calving Areas	Elk Winter Range	Moose Winter Range	Mule Deer Winter Range	Pronghorn Winter Range
7	Proposed – Total Length	118.2					89	
	Proposed – Comparison portion for Alternatives 7A,B	35.1					32	
	Alternative 7A	37.7					20	
	Alternative 7B	46.2					22	
	Proposed – Compare to Alternative 7C	20.1					6	
	Alternative 7C	20.3					9	
	Proposed – Compare to Alternative 7D	6.2					4	
	Alternative 7D	6.8					4	
	Proposed – Compare to Alternative 7E	3.8					4	
	Alternative 7E	4.5					9	
	Proposed – Compare to Alternative 7F	10.5					18	
	Alternative 7F	10.8					22	
	Proposed – Compare to Alternative 7G	3.3					4	
	Alternative 7G	3.4					4	
	Proposed – Comparison portion for Alternative 7K	118.2					89	
	Alternative 7K	148.1					129	
8	Proposed – Total Length	131.5			37		95	13
	Proposed – Compare to Alternative 8A	51.9			5		86	
	Alternative 8A	53.6					48	
	Proposed – Compare to Alternative 8B	45.3			11			
	Alternative 8B	45.8			11			
	Alternative 8B – Compare to Alternative 8C	6.5			11			
	Alternative 8C	6.4			15			
	Proposed – Compare to Alternative 8D	6.9						
	Alternative 8D	8.1						
	Proposed – Comparison portion for Alternative 8E	7.0						
	Alternative 8E	18.3	1					
9	Proposed – Total Length	162.2					17	43
	Proposed – Compare to Alternative 9A	7.8					5	
	Alternative 9A	7.7					5	
	Proposed – Compare to Alternative 9B	49.1						
	Alternative 9B	52.3						
	Proposed – Compare to Alternative 9C	14.4						
	Alternative 9C	14.4						
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2						28
	Alternative 9D	60.1	1					<1
	Alternative 9F	63.3	1					<1
	Alternative 9G	57.8	2					2
	Alternative 9H	61.0	2					2
	Proposed – Comparison portion for Alternative 9E (revised)	61.4						36
	Alternative 9E (revised)	70.6	10					55
10	Proposed – Total Length	34.4					28	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero acres or null value

Table D.10-9. Acres of Operations Impacts that Would Occur within a 1-mile Buffer around Raptor and Bird of Prey Nest Locations

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Raptor and Birds of Prey Habitat Impacts (acres)														
			American Kestrel	Bald Eagle	Burrowing Owl	Common Raven	Ferruginous Hawk	Golden Eagle	Great Horned Owl	Long-eared Owl	Northern Goshawk	Northern Harrier	Osprey	Prairie Falcon	Red-tailed Hawk	Short-eared Owl	Swainsons Hawk
1W	1W(a) Proposed – Total Length	73.8	4	2		3	15	15	2		3			8	6		
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5		2				9	2						6		
	Alternative 1W(a)-B	20.9						5	2						4		
	1W(c) Proposed – Total Length	73.6	4	2		6	18	7	2		2			5	4		
2	Proposed – Total Length	91.9	23	<1	10	19	95	74	5			16		20	36	3	3
	Proposed – Comparison portion for Alternative 2A	16.8	1	<1			15	13	3						7		
	Alternative 2A	16.0	2	5			3	8	2						6		
	Proposed – Comparison portion for Alternative 2B	12.5		<1			13	10	2						6		
	Alternative 2B	12.2		4			3	4	1						4		
3	Segment 3 Proposed – Total Length	45.9	6		5	8	21	71	2			3		77	28		
	Segment 3A Proposed – Total Length	5.1				2	7	2	2					3			
4[2/]	Proposed – Total Length	197.6	12	8		56	24	45	16	4	5	5	4	75	88		8
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	3	t[1/]		23	6	15	2	4			4	5	49		8
	Alternative 4B	100.2	1		2	4	3	18	<1					6	25		2
	Alternative 4C	101.6	1		2	4	3	18	<1					6	25		2
	Alternative 4D	100.8	1		2	4	3	18	<1					6	26		3
	Alternative 4E	102.2	1		2	4	3	18	<1					6	25		3
	Alternative 4F	87.5	3	t[1/]		19	6	9	2	4			1	5	44		3
5	Proposed – Total Length	55.7		1	4			3									
	Proposed – Comparison portion for Alternatives 5A,B	22.3						<1									
	Alternative 5A	29.7						4									
	Alternative 5B	40.4						2									
	Proposed – Comparison portion for Alternative 5C	32.9						3									
	Alternative 5C	26.0															
	Proposed – Comparison portion for Alternative 5D	19.2		1				3									
	Alternative 5D	17.0		3				<1									
	Proposed – Comparison portion for Alternative 5E	5.8		1													
	Alternative 5E	5.3		<1													
6	Proposed – Total Length	0.5															

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.10-9. Acres of Operations Impacts that Would Occur within a 1-mile Buffer around Raptors and Birds of Prey Nests cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Raptor and Birds of Prey Habitat Impacts (acres)														
			American Kestrel	Bald Eagle	Burrowing Owl	Common Raven	Ferruginous Hawk	Golden Eagle	Great Horned Owl	Long-eared Owl	Northern Goshawk	Northern Harrier	Osprey	Prairie Falcon	Red-tailed Hawk	Short-eared Owl	Swainsons Hawk
7	Proposed – Total Length	118.2			9		7	4									
	Proposed – Comparison portion for Alternatives 7A,B	35.1															
	Alternative 7A	37.7						2									
	Alternative 7B	46.2						1									
	Proposed – Comparison portion for Alternative 7C	20.1			7		2										
	Alternative 7C	20.3			2												
	Proposed – Comparison portion for Alternative 7D	6.2			1			2									
	Alternative 7D	6.8			1												
	Proposed – Comparison portion for Alternative 7E	3.8					3	2									
	Alternative 7E	4.5					4	4									
	Proposed – Comparison portion for Alternative 7F	10.5					5	2									
	Alternative 7F	10.8					4	2									
	Proposed – Comparison portion for Alternative 7G	3.3															
	Alternative 7G	3.4															
	Proposed – Comparison portion for Alternative 7K	118.2			9		7	4									
	Alternative 7K	148.1			2		44	35			3				3		8
8	Proposed – Total Length	131.5			35		86	51						12			
	Proposed – Comparison portion for Alternative 8A	51.9			1			24									
	Alternative 8A	53.6						35							5		
	Proposed – Comparison portion for Alternative 8B	45.3			34		58	14						12			
	Alternative 8B	45.8			13		24										
	Proposed – Comparison portion for Alternative 8C	6.5			<1		15										
	Alternative 8C	6.4			<1		16										
	Proposed – Comparison portion for Alternative 8D	6.9			14		15										
	Alternative 8D	8.1			15		15										
	Proposed – Comparison portion for Alternative 8E	7.0			8		1	3						7			
	Alternative 8E	18.3			10		19	6						17			
9	Proposed – Total Length	162.2			27	13	65	53						28			8
	Proposed – Comparison portion for Alternative 9A	7.8					3										
	Alternative 9A	7.7						2									
	Proposed – Comparison portion for Alternative 9B	49.1			8		13	20						14			8
	Alternative 9B	52.3	3		1		6	18						5	4		
	Proposed – Comparison portion for Alternative 9C	14.4			1		10	9						5			8
	Alternative 9C	14.4	3		4		6	15						1	2		
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			11	6	21	5									
	Alternative 9D	60.1			34		31	20						35			
	Alternative 9F	63.3			31		44	15						28			
	Alternative 9G	57.8			33		27	21						32			
	Alternative 9H	61.0			31		40	17						25			
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			11		21	12									
	Alternative 9E (revised)	70.6			12		12	17									
10	Proposed – Total Length	34.4			2			12							1		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Table D.11-1. ESA Threatened, Endangered, or Candidate Wildlife Species with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	ESA Status	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Mammals								
Black-footed Ferret	*Mustela nigripes*	Endangered	-	SGCN / Wyoming	Ferrets use open habitat used by prairie dogs such as: grasslands, steppe, and shrub steppe. The ferrets do not dig their own burrows and rely on abandoned prairie dog burrows for shelter. Only large complexes (several thousand acres of closely spaced colonies) can support and sustain a breeding population of black-footed ferrets.	Yes – Currently, there is a known black-footed ferret population in the Shirley Basin in the Rawlins FO. Potential black-footed ferret habitat occurs within the Kemmerer FO, Rock Springs FO and Rawlins FO.	Ferret block and non-block cleared areas. In addition, prairie dog towns (>200 acres) were mapped and used to represent BFF habitat.	1, 2, 3, 4
Canada Lynx	*Lynx canadensis*	Threatened	-	SGCN / Wyoming SGCN / Idaho	Douglas-fir and spruce/fir vegetation types. A mosaic of habitat conditions is required with denning habitat existing primarily in mature and old growth conifer stands at high elevations, while foraging habitat is found in early successional coniferous forests (Butts 1992).	Yes – Segment 4 bisects linkage area and Lynx Analysis Unit (LAU). The LAU is described as core habitat and is considered occupied habitat (Forest Service 2005).	Linkage area and Lynx Analysis Units (LAUs) were used to identify habitat.	4
Grizzly Bear	*Ursus arctos horribilis*	Threatened	FS sensitive (R2)	-	Grizzly bears are habitat generalist, but are found most often in open mountainous habitats away from human developments.	Yes- The Project would pass through the southern boundary of the Yellowstone Distinct Population Segment (DPS).	The boundary of the Yellowstone DPS, PCA, and areas mapped as "suitable habitat" by the USFWS.	3, 4
Northern Idaho Ground squirrel	*Spermophilus brunneus brunneus*	Threatened	-	SGCN / Idaho	Idaho Ground Squirrels are only found in west-central Idaho within Adams and Valley counties (USFWS 2003). Habitat for this species occurs in medium high elevations, surrounded by forests. Populations are typically associated with shallow rocky soils in xeric meadows surrounded by ponderosa pine and Douglas-fir forests.	No – The Analysis Area does not intercept the species current distribution. In addition, limited habitat for the species occurs within the Analysis Area.	N/A	N/A
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	Threatened	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	This species lives primarily in heavily vegetated, shrub-dominated riparian (streamside) habitats and immediately adjacent upland habitats along the foothills (up to 100 meters from the 100-year floodplain). The species occurs in southeastern Wyoming south to Colorado Springs along the eastern edge of the Front Range of Colorado. The species occurs in Albany, Laramie, Platte, Goshen, and Converse counties in Wyoming (USFWS 2013).	Yes – Marginal streamside habitat required by the species does occur within the Analysis Area. However, the Project is located outside of this species range.	Riparian and wetland habitats, and 100 meters from the 100-year floodplain in Albany, Laramie, Platte, Goshen, and Converse	1, 2
Southern Idaho Ground Squirrel	*Spermophilus brunneus endemicus*	Candidate	FS sensitive (R4)	SGCN / Idaho	The southern subspecies of the Idaho ground squirrel is found at lower elevations within hilly areas and grasslands. These areas are often dominated by annual grassland withrelict big sagebrush and bunch grasses. Distribution extends from Emmett, Idaho, northwest to Weiser, Idaho and the surrounding area of Squaw Butte, Midvale Hill, and Henley Basin in Gem, Payette, and Washington counties. Its range is bounded on the south by the Payette River, on the west by the Snake River and on the northeast by lava flows.	No – The Analysis Area lies to the south of the current distribution of this species.	N/A	N/A
Wolverine	*Gulo gulo luscus*	Candidate	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Low-density, wide-ranging species that inhabits remote forested areas, ranging over a variety of habitats. Large home ranges ranging from 160 to 1,440 mi^2.	Uncertain – Suitable habitat for this species (i.e., high altitude mature forest habitat) is rare near the project; however, the Project would cross through the Caribou-Targhee NF along Segment 4 (which contains wolverines) and a wolverine was observed 6 miles south of the proposed route in 2008 within the Copenhagen Basin.	high altitude mature forest	4
Birds								
Greater Sage-Grouse	*Centrocercus urophasianus*	Candidate	MIS (Caribou NF) FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Habitat occurs within basin-prairie shrub and mountain-foothill shrub communities. Greater sage grouse are only found in areas where adequate sagebrush is available to meet habitat and biological needs. As a sagebrush obligate species, greater sage grouse rely upon the plant species to meet most of its habitat needs during all aspects of its annual life cycles. Adequate stands of sagebrush are essential as greater sage grouse rely on the leaves for food and plant structure for cover.	Yes – Habitat occurs throughout the Analysis Area. Leks have been documented within the Analysis Area.	Shrubland	All segments could provide habitat for this species.
Interior Least Tern	*Sterna antillarum*	Endangered	-	-	Interior least terns breed in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems. Their winter home is not known, but probably includes coastal areas of Central and South America. In the U.S, terns use barren to sparsely vegetated sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines from late April to August.	Yes – Water withdrawals in the Platte River Watershed, regardless of location, could impact the species.	Areas down stream of the analysis area	N/A
Piping Plover	*Charadrius melodus*	Threatened	-	-	In general, this species inhabits wide, sparsely vegetated sand or gravel beaches adjacent to vast alkali lakes; however, they can be found along the beaches near reservoirs, rivers, freshwater lakes, dry alkali lakes and industrial ponds, as well as sandpits and gravel mines	Yes – only in that water withdrawals in the Platte River Watershed, regardless of location, could impact the species.	Areas down stream of the analysis area	N/A
Whooping Crane	*Grus americana*	Endangered	-	-	This species inhabits shallow-water wetlands which vary in size (1–25 ha), shape, and depth. During migration, they can be found feeding in croplands and roosting in wetlands found along their migration paths.	Yes – only in that water withdrawals in the Platte River Watershed, regardless of location, could impact the species.	Areas down stream of the analysis area	N/A
Yellow-billed Cuckoo	*Coccyzus americanus*	Candidate / west of continental divide	FS sensitive (R2, R4) east of the continental divide BLM sensitive	SGCN / Wyoming SGCN / Idaho	Yellow-billed Cuckoos are riparian obligate species that prefer extensive areas of dense thickets and mature deciduous forests near water, and requires low, dense, shrubby vegetation for nest sites. In Wyoming, the only areas that currently support the large cottonwood-riparian stands that are required by this species occur in isolated stands along the Bighorn, Powder, and North Platte rivers (WGFD N.D.). The Yellow-billed Cuckoo is considered an uncommon summer resident in Wyoming. In southwestern Idaho, the species is typically considered a 'rare summer visitor.' There have been confirmed sightings within Owyhee, Canyon, Elmore, Ada, Blaine, and Twin Falls counties within the last 25 years (Taylor 2000). The most suitable habitat in Idaho for the species occurs along the Snake River corridor (Taylor 2000).	Yes – The Project would cross through riparian habitats that could support this species.	Riparian cottonwood forest of greater than 5 ha (Reynolds and Hinckley 2005) with a percent overstory canopy of greater than 50 percent.	9

Table D.11-1. ESA Threatened, Endangered, or Candidate Wildlife Species with the Potential to Occur within the Analysis Area cont.

Common Name	Scientific Name	ESA Status	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Fish								
Bonytail	*Gila elegans*	Endangered	-	-	Slow moving waterbodies with rocky or muddy bottoms.	Yes – only in that water withdrawals in the Colorado River Watershed, regardless of location could impact the species.	Rivers of the Colorado Basin. Green River intersects segment 4.	N/A
Bull Trout	*Salvelinus confluentus*	Threatened MIS (Sawtooth NF)	-	SGCN / Idaho	In Idaho Bull trout occur in the East Fork, West Fork, and headwater tributaries and primarily in headwaters above 7,200 feet elevation within the Jarbidge Wilderness Area (including Slide, Pine, Sawmill, Fall, and Cougar Creeks), as well as Dave Creek. Bull trout require clean, cold water (below 59 degrees Fahrenheit). Bull trout require diverse, yet well connected habitats with structural components that provide good hiding cover (boulders and large wood). Spawning habitat consists of very cold water and loose clean gravel.	No	N/A	N/A
Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened	-	SGCN / Idaho	In Idaho, spawning habitat in the Snake River Basin consists of streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. Fry habitat is found primarily along the sides of pools and near the cover of over-hanging banks. Adults migrate to sea for three to five years and return to natal streams days or weeks before spawning.	No	N/A	N/A
Colorado Pikeminnow	*Ptychocheilus lucius*	Endangered	-	-	The fish occurs in the warm, swift waters of the big rivers of the Colorado Basin. Adults are migratory and inhabit pools and eddies just outside the main current. Young can be found in backwater areas. Colorado pikeminnow are adapted to rivers with seasonally variable flow, high silt loads, and turbulence. Young-of-the-year and juvenile Colorado pikeminnow live in shallow backwater areas, with little or no current over silt and sand bottoms. When they are about 8 inches in length, habitat preferences change with fish seeking deeper water with some velocity. Colorado pikeminnow can tolerate a broad range of temperatures from 35 degrees C in the summer to lower than 10 degrees C in winter.	Yes – only in that water withdrawals in the Colorado River Watershed, regardless of location could impact the species.	Rivers of the Colorado Basin. Green River intersects segment 4.	N/A
Humpback Chub	*Gila cypha*	Endangered	-	-	The humpback chub lives primarily in canyons with swift currents and white water. Spawning occurs at depths ranging 1.8 to 3.8 meters, and water velocities of 0.15 to 0.3 meters per second, over boulder, sand, and possibly gravel substrates. The humpback chub have been associated with a variety of habitats ranging from pools with turbulent to little or no current; substrates of silt, sand, boulder, or bedrock; and depth ranging from 1 meter to as deep as 15 meters.	Yes – only in that water withdrawals in the Colorado River Watershed, regardless of location could impact the species.	Rivers of the Colorado Basin. Green River intersects segment 4.	N/A
Pallid Sturgeon	*Scaphirhynchus albus*	Endangered	-	-	This species is a bottom-oriented species inhabiting the Missouri and Mississippi Rivers from Montana to Louisiana. Pallid sturgeon live close to the bottom of large, silty rivers with swift currents and sandy bottoms. The preferred habitat is comprised of sand flats and gravel bars where water velocity ranges from 10 to 90 centimeters per second and water temperatures range from 32 to 86.degrees Fahrenheit. (http://www.epa.gov/espp/litstatus/effects/appendix_c_life_history_sturgeon.pdf)	Yes – only in that water withdrawals in the Platte River Watershed, regardless of location could impact the species.	Rivers of the Platte Basin. Green River intersects segment 4.	N/A
Razorback Sucker	*Xyrauchen texanus*	Endangered	-	-	The razorback sucker occurred in medium to large rivers with swift turbulent waters, as well as slow backwater areas where it feeds on benthic fauna and flora, detritus, and plankton. Most wild fish are now found in Lake Mohave, which represents the largest population within the lower Colorado River basin. A few adults have also been found in Lake Mead and Lake Havasu. In the upper basin, they can be found in unimpounded waters of the Green, Yampa, and mainstem of the Colorado.	Yes – only in that water withdrawals in the Colorado River Watershed, regardless of location could impact the species.	Rivers of the Colorado Basin. Green River intersects segment 4.	N/A
Sockeye Salmon	*Oncorhynchus nerka*	Endangered	-	SGCN / Idaho	Sockeye inhabit streams, rivers, lakes, estuaries, and marine environments of the Pacific Coast. Spawning occurs in rivers or streams and upwelling areas along lake beaches. Streams and rivers used for spawning must have a lake in the system. Fry rear in lakes and then migrate to the sea.	No – Occurs in Salmon River north of Analysis Area with the run terminating at Redfish Lake.	N/A	N/A
Steelhead	*Oncorhynchus mykiss*	Threatened	-	SGCN / Idaho	Spawning Steelhead require flat water greater than 9.4 inches deep with gravel small enough to dig in found between areas of steep gradients with large gravel. Optimal water temperatures range from 53.6 to 64.4 degrees Fahrenheit. Fry migrate downstream to estuaries and eventually to the sea. Adults return to natal streams to spawn.	No – Occurs in tributaries to the Salmon River north of the Analysis Area	N/A	N/A
White Sturgeon (Kootenai River)	*Acipenser transmontanus*	Endangered	-	SGCN / Idaho	In North America, white sturgeon is found from Ensenada, Mexico to the Cook Inlet in Alaska. Most are found in estuaries of large rivers along the Pacific Coast. Older juveniles and adults are commonly found in rivers, estuaries, and marine environments. Spawning takes place in swift currents with a rocky bottom near rapids. Adult fish tend to occur in deeper, faster waters of large river mainstems, where they spend most of their time on or near the bottom of the riverbed. Juveniles prefer slow moving sloughs and backwaters. Spawning habitat is usually in turbulent fast water, but locations can range from shallow murky side channels with pebbly and sandy bottoms to deeper, less murky main channels with larger boulders and cobble.	No	Occurs in Snake River upstream to Shoshone Falls	N/A

Table D.11-1. ESA Threatened, Endangered, or Candidate Wildlife Species with the Potential to Occur within the Analysis Area cont.

Common Name	Scientific Name	ESA Status	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Amphibians								
Columbia Spotted Frog – Great Basin Population only	*Rana luteiventris*	Candidate	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN / Idaho	This species is aquatic and lives in or near permanent bodies of water such as: lakes, ponds, slow streams, and marshes. They prefer areas with thick algae and vegetation for cover, but may also hide under decaying vegetation. They most commonly occur in non-woody wetland plant communities.	Yes – Permanent water bodies occur in most segments within the Analysis Area.	Permanent wetland and open water areas below 9720 feet in elevation; delineated from vegetation mapping.	4, 8, 9
Wyoming Toad	*Bufo baxteri*	Endangered	-	SGCN / Wyoming	The toad is historically found only in the Laramie Basin within 30 miles from Laramie, Wyoming. By the early 1990s a captured breeding program was commenced in an attempt to save the endangered toad from extinction, but no known wild reproduction has occurred since 1991. It formerly inhabited flood plains, ponds, and small seepage lakes in the shortgrass communities of the Laramie Basin.	No – The Analysis Area does not intercept historical or current distribution for this species.	N/A	N/A
Invertebrates								
Bliss Rapids Snail	*Taylorconcha serpenticola*	Threatened	-	SGCN / Idaho	The Bliss Rapids snail resides on the sides and undersides of rocks in free-flowing and cold-water springs in the middle Snake River, Idaho. It prefers relatively clean and rocky substrates so that it can graze on algae and diatoms at night.	Yes – Project intersects middle Snake River	Snake River	8
Banbury Springs Limpet	*Lanx sp.*	Endangered	-	SGCN / Idaho	The Banbury limpet requires cold, clear and well-oxygenated water with swift currents. The Banbury limpet are found on smooth basalt, boulders, or cobble-sized grounds ranging from 2 to 20 inches deep, but they avoid areas with green algae. Currently, this species only exists at four cold-spring locations that are isolated from each other: Thousand Springs Box Canyon Springs, Briggs Springs, and Banbury Springs.	Yes – Project intersects Snake River near Thousand Springs. Does not intersect Box Canyon Springs.	Snake River	8
Snake River Physa Snail	*Physa natricina*	Endangered	-	SGCN / Idaho	The Snake River physa snail is found in the middle Snake River of southern Idaho. It is believed to be confined to the Snake River, inhabiting areas of swift current on the undersides of large cobbles and boulder-sized rocks. Individuals have been found in relatively undisturbed areas with gravel, boulder, or cobble substrates and a low percentage of epiphytic algae or macrophytes.	Yes – Project intersects middle Snake River	Snake River	8, 10
Bruneau Hot Springsnail	*Pyrgulopsis bruneauensis*	Endangered	-	SGCN / Idaho	The Bruneau hot springsnail occurs in thermal springs along an approximately 5 mile reach of the Bruneau River and in Hot Creek. The Bruneau hot springsnail inhabits small, geothermal spring runs and seeps, typically on basalt bedrock. Temperatures in these waters range from 15.7 to 36.9 degrees Celsius. Substrates usually comprise gravel and silt but individuals are also found on sand, mud, and algal film. Macrophytes are usually absent from occupied habitat.	Yes – Project intersects Bruneau River north of Hot Creek.	Bruneau River	9

Notes: **BLM** = Bureau of Land Management; **FS** = U.S. Forest Service; **R2** = Forest Service Region 2; **R4** = Forest Service Region 4.

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Mammals							
American Hog-nosed Skunk	*Conepatus leuconotus*	FS sensitive (R2)	-	American hog-nosed skunks occur in riparian areas, canyons, and rocky mountain slopes.	No – Within FS Region 2, this species occurs only in Colorado.	N/A	N/A
American marten	*Martes americana*	MIS (Medicine Bow NF) FS sensitive (R2)	-	This species inhabits mainly mature coniferous forests.	Yes	Coniferous Forest	1, 4, 5, 7
Black-tailed Prairie Dog	*Cynomys ludovicianus*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Basin-prairie shrub, grasslands: Habitat includes arid grassland and shrub/grassland communities, usually with slopes less than 12 to 15 percent; in intermountain valleys, benches, and plateaus with diverse grass for cover.	Yes – Colonies occur within the Analysis Area.	Grasslands and Shrublands	1
California Bighorn Sheep	*Ovis canadensis californiana*	FS sensitive (R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	California bighorn sheep inhabit grassy mountains, alpine meadows and foothill country near rocky cliffs that allow quick escape. Common summer habitat includes grazing lands at 6,000-8,500 feet in elevation and winter habitat occurs at 2,500-5,000 feet where snow is not very deep. California bighorns, a subspecies, are found in desert canyons of southwestern Idaho, while Rocky Mountain bighorns are found in the central Idaho mountains.	Potentially	steep rocky areas	7, 9
Cliff Chipmunk	*Tamias dorsalis*	BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Habitat occurs within rocky, steep hillsides; Cliff chipmunks spend much of their time near cliffs. Dens typically occur in rocky outcroppings. Species generally inhabits elevations of 1500 to 3700 meters with scrub-type habitat. Species typically occurs within juniper communities (*Juniperus* spp.), however, it can also use oaks (*Quercus* spp.), maples (*Acer* spp.), Piñon pine (*Pinus monophylla*), and Ponderosa Pine (*P. ponderosa*) communities.	Yes – Limited habitat within the Analysis Area occurs for this species.	Coniferous Forest	1, 4, 5, 7
Dark Kangaroo Mouse	*Microdipodops megacephalus*	BLM sensitive	SGCN/ Idaho	Habitat is found in loose sands and gravel in shadscale scrub, sagebrush scrub, and alkali sink plant communities. May occur in sand dunes near margins of range. The altitude of the habitat is around 1,190-2,455 m. Burrows are constructed in soft ground with the entrance near a shrub. Average home range for males is 6,613 square meters and 3,932 for females.	Yes – Species known to occur within portions of Owyhee County (ICDC and IDFG 2005).	Shrubland	8, 9
Bighorn Sheep	*Ovis canadensis nelsoni*	FS sensitive (R2, R4)	SGCN / Wyoming SGCN/ Idaho	Bighorn sheep inhabit grassy mountains, alpine meadows and foothill country near rocky cliffs that allow quick escape. Common summer habitat includes grazing lands at 6,000-8,500 feet in elevation and winter habitat occurs at 2,500-5,000 feet where snow is not very deep. California bighorns, a subspecies, are found in desert canyons of southwestern Idaho, while Rocky Mountain bighorns are found in the central Idaho mountains.	Potentially	steep rocky areas	7, 9
Fisher	*Martes pennanti*	FS sensitive (R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Fishers prefer coniferous forests, but they are also found in mixed and deciduous forests. They prefer habitats with high canopy closure. They also prefer habitats with many hollow trees for dens. Trees typically found in fisher habitats include spruce, fir, white cedar and some hardwoods.	No – The vegetation composition and structures required by this species does not occur within the Analysis Area.	N/A	N/A
Fringed Myotis	*Myotis thysanodes*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Conifer forests, woodland-chaparral, caves and mine; Habitat occurs within caves, mines, snags, rock outcrops, and human structures as roost sites, with foraging habitat often occurring within riparian areas. Open water habitats provide foraging habitat and these can include streams, reservoirs, stock tanks, and other water catchments.	Unlikely but possible – Potential habitat for this species occurs within some segments of the Analysis Area. In addition a gross scale general distribution layer for this species overlaps with the Project area; however, suitable habitat and known distributions do not overlap. Therefore it is unlikely that this species occurs wihtin the analysis area.	Coniferous Forest	Forests - 1, 4, 5, 7 Species distribution 3, 8
Gray Wolf	*Canus lupus*	FS sensitive (R4)	SGCN / Idaho	Wolves do not exhibit particular habitat preference except for the presence of native ungulates within its territory on a year round basis. While establishing new packs, wolves have demonstrated greater tolerance of human presence and disturbance than previously thought characteristic of this species.	Yes – The Analysis Area is in the Yellowstone and Central Idaho non-experimental population area. It is probable that transitory wolves may use portions of the Analysis Area while dispersing to new areas.	Known locations of wolf packs mapped by the IDCDC and the WYNDD.	All segments could provide habitat for this species.
Gunnison's prairie dog	*Cynomys gunnisoni*	FS sensitive (R2)	-	Basin-prairie shrub, grasslands: Habitat includes arid grassland and shrub/grassland communities.	No – Species distribution does not overlap with the Analysis Area.	N/A	N/A
Idaho Pocket Gopher	*Thomomy idahoensis*	BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Shallow stony soils in open sagebrush, sagebrush-grassland, and mountain meadow habitats; Idaho Pocket Gophers are active all year long. When they excavate burrows in the winter, they leave the dirt piled in snow tunnels.	Yes – Habitat for this species does occur within the Analysis Area.	Shrubland	All segments could provide habitat for this species.
Kit Fox	*Vulpes macrotis*	FS sensitive (R2) BLM sensitive	SGCN/ Idaho	Habitat occurs within semi-desert shrubland and margins of pinyon-juniper woodland. Habitat typically has a saltbush, shadscale, sagebrush, and greasewood presence.	Yes – Habitat for this species occurs within the Analysis Area.	Shrubland	All segments could provide habitat for this species.
Little Pocket Mouse	*Perognathus longimembris*	BLM sensitive	SGCN/ Idaho	Habitat typically occurs in sagebrush, creosote bush, and cactus communities. On slopes with widely spaced shrubs, found in firm, sandy soil overlain with pebbles. In Idaho, found in shadscale/dwarf sage on lower slopes of alluvial fans in Raft River Valley.	No – Species distribution does not overlap with the Analysis Area.	N/A	N/A

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Mammals cont.							
Long-Eared Myotis	*Myotis evotis*	BLM sensitive	SGCN / Wyoming	Species inhabits coniferous forest and woodland, including juniper, Ponderosa pine, and spruce-fir. It typically forages over rivers, streams, and ponds within the forest-woodland environment. During summer, it roosts in a wide variety of structures, including cavities in snags, under loose bark, stumps, buildings, rock crevices, caves, and abandoned mines. During winter, it probably hibernates primarily in caves and abandoned mines.	Yes – Relatively small portions of some segments contain habitat for this species.	Coniferous Forest	1, 4, 5, 7
Merriam's Ground Squirrel	*Spermophilus canus vigilis*	BLM sensitive	-	Shallow stony soils; Little is known about the subspecies. Their annual cycles and diet probably are similar to southern Idaho ground squirrels. Burrow diameter usually is <2 inches; entrances often under bushes or rocks.	Yes	West side of Snake River in west-central Idaho	8, 9, 10
New Mexico Meadow Jumping Mouse	*Zapus hudsonius luteus*	FS sensitive (R2)	-	The New Mexico meadow jumping mouse is endemic to New Mexico, Arizona, and a small area of southern Colorado. It nests in dry soils, but uses moist, streamside, dense riparian/wetland vegetation up to an elevation of about 8,000 feet	No – Species distribution does not overlap with the Analysis Area.	N/A	N/A
Pygmy Rabbit	*Brachylagus idahoensis*	FS sensitive (R4) BLM sensitive	SGCN / Wyoming SGCN / Idaho	Basin-prairie and riparian shrub: Species inhabits dense, tall stands of big sagebrush, usually along intermittent streams or riparian areas in sagebrush-grasslands. It is dependent on sagebrush, which comprises up to 99% of its winter diet. Also, since it excavates its own burrows, soft, deep soil is a key habitat feature.	Yes	Sagebrush shrubland	Segments 2 through 10
Pygmy Shrew	*Sorex hoyi*	FS sensitive (R2)	SGCN / Wyoming SGCN/ Idaho	This southern version of the shrew inhabits moist environments such as bogs, marshes, wet prairies, and the forested margins of lakes and streams.	No – Species distribution does not overlap with the Analysis Area.	N/A	N/A
Piute Ground Squirrel	*Spermophilus mollis artemisae*	BLM sensitive	-	Species prefers areas with native shrubs, especially winterfat, and sagebrush.	Yes – Habitat for this species does occur within the Analysis Area.	Shrubland	5, 7, 8, 9, 10
River Otter	*Lontra canadensis*	FS sensitive (R2)	-	Inhabits rivers, ponds, and lakes located adjacent to wooded areas.	Yes	Wetlands, waterbodies, and riparian areas	All segments could provide habitat for this species.
Rocky Mountain Bighorn Sheep	*Ovis canadensis canadensis*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Bighorn sheep inhabit grassy mountains, alpine meadows and foothill country near rocky cliffs that allow quick escape. Common summer habitat includes grazing lands at 6,000-8,500 feet in elevation and winter habitat occurs at 2,500-5,000 feet where snow is not very deep. California bighorns, a subspecies, are found in desert canyons of southwestern Idaho, while Rocky Mountain bighorns are found in the central Idaho mountains.	No – The Analysis Area does not overlap with the known distribution for this species.	N/A	N/A
Snowshoe Hare	*Lepus americanus*	MIS (Medicine Bow NF)	-	Snowshoe hares inhabit dense young woodlands in environments with relatively deep winter snow accumulation. Optimum densities of woody shrubs and small trees range from 4,600 to 33,210 stems per ha.	Yes	Woodlands	1, 4, 5, 7
Spotted Bat	*Euderma maculatum*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Species occupies a wide variety of habitats typically adjacent to perennial water, from desert scrub to coniferous forest, although it is most often observed in low deserts and basins and juniper woodlands. It roosts in cracks and crevices in high cliffs and canyons. It also may occasionally roost in buildings, caves, or abandoned mines, although cliffs are the only roosting habitat in which reproductive females have been documented.	Yes – Given the wide range of habitats utilized by this species and the overlap between known distribution in the Analysis Area, it is assumed that all segments may provide habitat. Analysis Area, although IDFG indicates it may not be present in southeastern Idaho (IDFG 2005)[1]	Caves, Coniferous Forest, and Shrublands	All segments could provide habitat for this species.
Swift Fox	*Vulpes velox*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Species prefers grasslands. Swift fox tend to be associated with short and mixed grass prairie. They form their dens in sandy soil on open prairies, in plowed fields, or along fences.	Yes – Habitat for this species does occur within the Analysis Area.	Grasslands	All segments could provide habitat for this species.
Townsend's Big-eared Bat	*Corynorhinus townsendii*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Species inhabits forests and basin-prairie shrub. Roosting habitat includes: caves, mines, snags, rock outcrops, and human structures. Similar habitat as the fringed myotis, but more closely associated with caves and mines for day roosts and hibernation sites. It is common in shrub-steppe, juniper woodlands and dry coniferous forests.	Yes – Potential habitat for species occurs within some segments of the Analysis Area including mines, snags, and caves.	Caves, Coniferous Forest, and Shrublands	1, 4, 5, 7, 8, 9, 10,
Uinta Chipmunk	*Tamias umbrinus*	BLM sensitive	SGCN/ Idaho	Habitat often includes coniferous forests at moderate to high elevations (to upper treeline). In Wyoming, they are reported occupying spruce-fir forest, lodgepole pine-Douglas-fir forest, and ponderosa pine forest. In more southern regions of the global range, they are most often associated with ponderosa pine habitats, but also are found in drier pinyon pine-juniper woodlands.	No – Suitable habitat for this species does not occur within the Analysis Area.	N/A	N/A
Water Vole	*Microtus richardsoni*	FS sensitive (R2)	SGCN / Wyoming	Habitat for the water vole consists of a disjunct pattern of short, fragmented patches along reaches of alpine and subalpine, spring fed or glacial streams; with gravel bottoms and a slope of approximately 5 degrees.	No	N/A	N/A

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Mammals cont.							
White-tailed Prairie Dog	*Cynomys leucurus*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Basin-prairie shrub, grasslands: Habitat includes arid grassland and shrub/grassland communities, usually with slopes less than 12 to 15 percent; typically higher elevations than the black tailed prairie dog, in intermountain valleys, benches, and plateaus with diverse grass and forb cover. Where it occurs east of the Continental Divide in Wyoming, it probably occupies areas that are too dry for the black-tailed prairie dog.	Yes – Colonies do occur within the Analysis Area	Grasslands and Shrublands	1, 2, 3, 4
Wyoming Ground Squirrel	*Spermophilus elegans nevadensis*	BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Primarily valley bottoms, foothills, grasslands and semidesert shrublands. Their geographic centers are in southwestern Montana, central and southwestern Wyoming, and southwestern Idaho, but populations occur in the states bordering these regions.	Yes – Habitat for this species does occur within the Analysis Area.	Grasslands and Shrublands	All segments provide potential habitat for this species.
Wyoming Pocket Gopher	*Thomomys clusius*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Limited information is available regarding the habitat requirements of Wyoming pocket gophers. The species seems to prefer loose, gravelly, upland soils, often where greasewood is growing. This species' range is relatively limited, and populations are small; consequently, few animals have ever been found. The species is the only vertebrate animal that occurs exclusively in Wyoming. The current known distribution is restricted to the south-central portion of the state.	Yes – Given the limited available data regarding the distribution and habitat needs of this species, it is assumed that there is the potential that Wyoming pocket gopher habitat occurs within the Analysis Area.	Shrublands	2, 3, 4
Birds							
American Bittern	*Botaurus lentiginosus*	FS sensitive (R2)	SGCN / Wyoming	This species nests near freshwater wetlands with tall, emergent vegetation or in grassy, upland areas in close proximity to such wetlands. Nesting habitat is typically close in proximity to foraging habitat which consists of emergent wetland vegetation.	Yes – This species distribution overlaps the analysis area	Wetlands	All segments provide potential habitat for this species, although some segments would only be used as transitory habitat.
American White Pelican	*Pelecanus erythrorhynchos*	BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Habitat occurs on a variety of aquatic and wetland habitats, including rivers, lakes, reservoirs (both large and small), estuaries, bays, marshes, and sometimes in inshore marine habitats. These habitats are used variously for nesting, loafing, and feeding. Nesting colonies usually are situated on islands or peninsulas in brackish or freshwater lakes, where they are isolated from mammalian predators.	Yes – Habitat for this species occurs within the Analysis Area.	Aquatic Habitats	All segments provide potential habitat for this species, although some segments would only be used as transitory habitat.
Bald Eagle	*Haliaeetus leucocephalus*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Species typically occurs close to fish bearing open water, including major rivers, lakes, and reservoirs. Generally occupy riparian or lacustrine habitat as breeders but occasionally exploit upland areas for food. On rivers, they concentrate on runs and pools, riffles are important seasonally as prey fishes are spawning; lakes and reservoirs are used in shallow areas with gentle sloped shorelines and wetlands. Winter foraging habitat can include upland areas where they feed on carrion, and small mammals.	Yes – Both winter foraging and nesting habitat occurs within the Analysis Area. Bald eagles were observed within the transmission line corridor during raptor surveys conducted in April 2008. An active bald eagle nest was identified within the Kemmerer FO on April 6 in a heron rookery on the Hams Fork River. An active bald eagle nest was also identified within the Casper FO on the North Platte River on April 14th. A pair of bald eagles were observed incubating or perched nearby. In additon, mutilpe eagle nests are known in the general area from agency surveys as well as existing data.	Aquatic Habitats, with emphasis on fisheries.	All segments could provide potential habitat for this species, although some segments would only be used as transitory habitat.
Baird's Sparrow	*Ammodramus bairdii*	BLM sensitive	-	Species utilizes grasslands and weedy fields. Species does not inhabit prairie lands where fire suppression and changes in natural grazing patterns have allowed woody vegetation to grow excessively. Baird's Sparrows prefer to nest in native prairie, but structure may ultimately be more important than plant species composition.	Yes – Potential habitat for this species occurs intermittently throughout the Analysis Area.	Grasslands	All segments could provide habitat for this species.
Black-backed Woodpecker	*Picoides arcticus*	FS sensitive (R2)	SGCN / Wyoming	This species inhabits forest habitats, especially those that have experienced a recent fire, as these provide a rich food source.	No – This species distribution does not overlap the analysis area	N/A	N/A
Black Tern	*Chlidonias niger*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Preferred summer habitats for this species occurs in inland marshes and sloughs, typically with fairly dense cattail or other marsh vegetation and pockets of open water. These wetlands are often shallow in nature. Winter habitat is on the coasts of South America.	Yes – Habitat for this species occurs intermittently throughout most segments.	Wetlands	1, 2, 4, 5, 7, 8, 9
Black-throated Sparrow	*Amphispiza bilineata*	BLM sensitive	-	Species prefers a sparse, isolated desert environment. Hot, dry weather in the desert uplands, creosote bush and scrub environments are the most frequent habitats. These sparrows prefer terrain that is either steeply sloped or very flat. Besides desert uplands, they also favor alluvial fans and hill slopes, usually with much exposed rock and gravel pavement. Within the Analysis Area, habitat most likely occurs within sagebrush communities.	Yes – This species is not common within the Analysis Area; However, potential habitat does occur within Idaho and southwestern Wyoming.	Shrubland	3, 4, 5, 7, 8, 9, 10
Black Swift	*Cypseloides niger*	FS sensitive (R2)	SGCN/ Idaho	Breading black swifts inhabit sea caves and cliffs along the Pacific Coast, and adjacent to or near wet cliff sites in montane canyons. Most nests within the interior U.S. occur on shaded cliff walls near areas of dripping water. Wintering habitat consists of similar habitats described for breeding habitat.	No	N/A	N/A

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Birds cont.							
Boreal Owl	*Aegolius funereus*	FS sensitive (R2, R4)	SGCN / Wyoming SGCN/ Idaho	Species preferred habitat varies throughout its range but includes mainly old-growth forests with woodpecker cavities for nesting. They inhabit a range of forests from pure coniferous to pure deciduous forests. Idaho they were found to favor spruce-fir or subalpine-fir above 5,000 ft. elevation. Hunting habitat includes forest meadows and open forests.	Yes – Suitable habitat does occur within the portion of the Analysis Area.	Coniferous Forest	1, 4, 5, 7
Brewer's Sparrow	*Spizella breweri*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Species is closely associated with sagebrush, preferring dense stands broken up with grassy areas. In the northern part of their range, they can be found in habitats such as sub-alpine fir or dwarf birch, or montane pinon-juniper woodlands.	Yes – Habitat for the species does occur within the Analysis Area.	Grasslands and Shrublands	All segments could provide habitat for this species.
Burrowing Owl	*Athene cunicularia*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Grasslands, basin-prairie shrub: owls use vacant rodent burrows, mainly associated with prairie dog habitat. In Wyoming, the highest concentrations of burrowing owls are in the south and east, although they occur and breed throughout the state (WGFD. ND).	Yes – Breeding records within the region of Analysis Area are associated with prairie dog colonies (WGFD. ND.).	Grasslands and Shrublands	All segments could provide habitat for this species.
California Spotted Owl	*Strix occidentalis occidentalis*	FS sensitive (R4)	-	The California spotted owl's range overlaps that of the northern spotted owl in the southern Cascade Range, and extends south through the western Sierra Nevada to Tulare County. They also occur in discrete populations in mountainous areas of coastal and southern California from Monterey County to northern Baja California.	No – This species distribution does not overlap the analysis area	N/A	N/A
Cassin's Sparrow	*Aimophila cassinii*	FS sensitive (R2)	-	This species breeds in habitats that are dominated by grasses but have some percentage of shrub cover as well. Nests are located placed on the ground or just off the ground, within a low shrub.	No – This species distribution does not overlap the analysis area	N/A	N/A
Calliope Hummingbird	*Stellula calliope*	BLM sensitive	-	Species is a summer resident within the region. Summer habitat is mostly montane communities, breeding at elevations ranging from 3,900 ft to timberline. Species occupies habitats ranging from riparian forests to shrub-sapling secondary growth to open montane forests.	Yes – Species is known to occur within western Wyoming and southern Idaho and marginal habitat occurs within the Analysis Area.	Deciduous and Coniferous Forests	1, 4, 5, 7
Chestnut-Collared Longspur	*Calcarius ornatus*	FS sensitive (R2)	SGCN / Wyoming	This species is a native prairie obligate, and prefers level to rolling native mixed-grass and shortgrass uplands. In drier areas it can be found in moist lowlands.	Yes	Native prairie	1, 2, 3
Columbian Sharp-Tailed Grouse	*Tympanuchus Phasianellus columbianus*	MIS (Caribou NF) FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Species inhabits mountain-foothills shrub communities of serviceberry, snowberry, chokecherry, and Gambel oak; sagebrush-grassland; and willow riparian habitats. In Wyoming, it prefers mountain-foothills shrub and sagebrush-snowberry habitats in the transitional zone between sagebrush-grass and forested habitats. Forest habitats (riparian draws) may provide winter forage. Leks are the center of breeding activity and are typically located in areas with little slope and low, sparse vegetation, such as knolls, ridgetops, or benches that allow good visibility.	Yes – Columbian sharp-tailed grouse leks and suitable habitat have been documented within the Analysis Area.	Shrubland	4, 5, 6, 7, 9
Common Loon	*Gavia immer*	FS sensitive (R4)	-	This species generally inhabits clear, oligotrophic lakes, surrounded by forest, with rocky shorelines, deeply indented bays, numerous islands, and floating bogs. Forest types are characteristic of boreal and mixed forests. Idaho and Wyoming do not generally provide habitat for the common loon; however, there is a small area of breed habitat located on the border of Idaho, Wyoming, and Montana; north of the Project area.	No	N/A	N/A
Ferruginous Hawk	*Buteo regalis*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Species uses mixed-grass prairie communities and is often associated with little bluestem, prairie June grass, green needle-grass, western wheatgrass, and Kentucky bluegrass. Trees are common nest sites, including eastern cottonwoods, peachleaf willow, juniper, box elder maple, green ash, Chinese elm, and American elm. Species also uses sagebrush and saltbrush, greasewood shrublands.	Yes – Nest sites have been documented within the Analysis Area. The ICDC documented multiple nest sites within segments 7, 8, and 9, and the WNDD documented nest sites within segments 1W, 1E, 2, 3, and 4.	Grasslands	All segments could provide habitat for this species.
Flammulated Owl	*Otus flammeolus*	FS sensitive (R2, R4) BLM sensitive	SGCN/ Idaho	Species is associated with mature and old-growth xeric ponderosa pine/Douglas-fir stands with preference for mature growth with open canopy avoiding dense young stands. Nests in woodpecker holes made in mature aspen or ponderosa pine habitat.	Yes – Suitable habitat occurs within the portion of the Analysis Area.	Coniferous or aspen forest	1, 4, 5, 7
Greater Prairie-Chicken	*Tympanuchus cupido*	FS sensitive (R2)	-	This grassland species inhabits mid-tallgrass and tallgrass of the Great Plains region.	No – This species distribution does not overlap the analysis area	N/A	N/A
Great Gray Owl	*Strix nebulosa*	FS sensitive (R4)	SGCN / Wyoming	Species favors dense, mature coniferous forests with close proximity to meadows or open fields. This combination allows conifer nesting and roosting along with the abundance of small rodents that occur in forest openings.	Yes – Suitable habitat does occur within a portion of the Analysis Area.	Mature Coniferous Forest	1, 4, 5, 7

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Birds cont.							
Grasshopper Sparrow	*Ammodramus savannarum*	FS sensitive (R2)	SGCN / Wyoming SGCN/ Idaho	This species inhabits open grassland habitats. It prefers grassland patches that are at least 8 ha or larger in size.	Yes	Grassland habitats that are at-least 8 ha in size	All segments could provide habitat for this species.
Golden Crowned Kinglet	*Regulus satrapa*	MIS (Medicine Bow NF)	-	This species inhabits dense, coniferous forests, especially where spruce or firs are present.	Yes	Coniferous forests	1, 4, 5, 7
Gunnison Sage-Grouse	*Centrocercus minimus*	FS sensitive (R2)	-	This sage-grouse species inhabits a variety of habitats: such as sagebrush habitats with a diversity of grasses and forbs and healthy, as well as wetland and riparian areas.	No – This species distribution does not overlap the analysis area	N/A	N/A
Hammond's Flycatcher	*Empidonax hammondii*	BLM sensitive	-	Species inhabits cool forests, especially coniferous or mixed forests with fir trees. Hammond's Flycatchers have been found to favor old-growth associates in Douglas-fir/ponderosa pine forests.	Yes – Marginal habitat for this species occurs within the Analysis Area.	Coniferous Forest	1, 4, 5, 7
Harlequin Duck	*Histrionicus histrionicus*	FS sensitive (R2, R4)	SGCN / Wyoming SGCN/ Idaho	Species prefers cold, shallow, rapid mountain streams away from concentrated human activities. It nests on the ground along streams with less than 5% gradient, dense shrubs lining the banks, braided channels, swift currents, abundant aquatic insects, and good water quality.	No	N/A	N/A
Lewis's Woodpecker	*Melanerpes lewis*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Species prefers open ponderosa pine forest, open riparian woodland dominated by cottonwood, and logged or burned pine forest. May prefer ponderosa pine forest at medium to high elevations and open riparian forests at low elevations. Often classified as a specialist in burned pine forest habitat although suitability of burned areas may vary with post-fire age, size, and intensity of burn.	Yes – Habitat for this species occurs within the Analysis Area.	Deciduous and Coniferous Forest	1, 4, 5, 7
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*	FS sensitive (R2)	-	This species inhabits xeric grasslands of the southwestern Great Plains region.	No – This species distribution does not overlap the analysis area	N/A	N/A
Lincoln's Sparrow	*Melospiza lincolnii*	MIS (Medicine Bow NF)	-	Habitat information on this species is limited, but based on what is known, they seem to prefer riparian willow habitats at elevations between 2,050 and 2,260 m.	Yes	Riparian willow areas	All segments could provide habitat for this species.
Loggerhead Shrike	*Lanius ludovicianus*	FS sensitive (R2) BLM sensitive	-	Species habitat occurs in basin-prairie shrub and mountain-foothill shrub. Species prefers open habitat including shrub-steppe, deserts and grasslands with access to elevated perches and impaling stations. Feeds mostly on large insects such as grasshoppers and beetles but some small birds and rodents are also taken.	Yes – Habitat occurs throughout the Analysis Area. Nesting has been documented in the ICDC within the proposed Segment 8.	Shrublands and Grasslands	All segments could provide habitat for this species.
Long-billed Curlew	*Numenius americanus*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Habitat occurs in grasslands, plains, foothills, and wet meadows. Species selects open habitats year-round. During the breeding season, they frequent prairies and grasslands, as well as plowed fields, meadows, and pastures.	Yes – Habitat for this species occurs throughout the Analysis Area. The ICDC records indicate that the species has been documented within the Analysis Area along both proposed and alternative segment 8 routes and nesting has been documented within the Analysis Area along both proposed and alternative Segment 9 routes.	Grasslands	All segments could provide habitat for this species.
McCown's Longspur	*Calcarius mccownii*	FS sensitive (R2)	SGCN / Wyoming	This species inhabits shortgrass prairies which contain sparse vegetation coverage. They can utilize agricultural areas (predominantly within their northern range).	Yes	Grasslands	1, 2, 3
Mountain Plover	*Charadrius montanus*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Species inhabits low, open habitats such as arid shortgrass and mixed grass prairies dominated by blue grama and buffalo grass with scattered clumps of cacti and forbs, and saltbush habitats of the shrub-steppe of central and western Wyoming. It prefers to nest in large, flat grassland expanses with sparse, short vegetation (10 cm or less), and bare ground. It is adapted to areas that have been disturbed by prairie dogs, heavy grazing, or fire.	Yes – Potential habitat for this species occurs throughout the Analysis Area.	Xeric shrublands and grasslands with a slope of less than 9%.	1, 2, 3, and 4
Mountain Quail	*Oreortyx pictus*	FS sensitive (R4) BLM sensitive	SGCN/ Idaho	Habitat includes mixed evergreen forests and woodlands. Species are typically found in dense cover with scattered open areas on slopes in foothills and mountains. They use the dense thickets resulting from fires or clearcuts, and they are seldom found far from this cover. In summer, the quail require a source of water, which may limit their nesting range.	Yes	Coniferous Forest and Shrubland	All segments could provide habitat for this species.
Northern Goshawk	*Accipter gentilis*	MIS (Caribou, Medicine Bow, Sawtooth NF) FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming	Species occurs within mature conifer and deciduous forests. Species is a forest habitat generalist and requires abundant prey base, possibly related to understory shrub development in forested habitat. Generally considered to prefer mature coniferous forests, but will also inhabit deciduous and mixed forests from sea level to subalpine areas.	Yes – Suitable and potential habitat occurs within the Analysis Area.	Mature Coniferous and Deciduous Forests	1, 4, 5, 7, 9

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Birds cont.							
Northern Harrier	*Circus cyaneus*	FS sensitive (R2)	-	This species inhabits a wide range of open wetland and upland habitats during the breeding season, including fresh to alkali wetlands, wet or dry grasslands, lightly grazed agricultural pastures, old fields, brushy areas, and cold desert shrub-steppe. In the nonbreeding season, the northern harrier uses a wide variety of open habitats with herbaceous cover, including freshwater and saltwater wetlands, grasslands, idle fields, agricultural pastureland, desert, and, to a lesser extent, cropland	Yes – Observation and nests have been found within or near the analysis area	Wetland, Shrublands, and Grasslands	All segments could provide habitat for this species.
Olive-sided Flycatcher	*Contopus borealis*	FS sensitive (R2) BLM sensitive	-	Olive-sided flycatchers are generally restricted to coniferous or mixed-coniferous forests. Throughout their breeding range, they primarily occur in montane, subalpine, and boreal forests. In addition, they often occur along wooded shores of lakes, rivers, and bogs where forest edges, variation in tree height, and standing dead trees are found. This species is most often associated with forest edges and openings caused by natural or anthropogenic disturbances, including small forest gaps resulting from tree death in old-growth forests, or along the edges of early successional forests. Olive-sided flycatchers usually do not occur in closed canopy forests and are uncommon in forests in the sapling-pole or mature forest stages that lack gaps or edges.	Yes	Forest	1, 4, 5, 7, 9
Peregrine Falcon	*Falco peregrinus*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Tall cliffs: Nests near rocky cliffs and often hunts near water.	Yes	Rocky habitats near riparian/wetlands areas used for hunting	All segments could contain rock habitats
Pileated Woodpecker	*Dryocopus pileatus*	MIS (Sawtooth NF)	-	This species can be found within late successional stages of coniferous or deciduous forest, as well as younger forests that have scattered, large, or dead trees. This species is not found within Wyoming, but does have year round breeding habitat in the northern half of Idaho (north of the Project area).	No	N/A	N/A
Prairie Falcon	*Falco mexicanus*	BLM sensitive	-	This species tends to occupy open treeless terrain including prairies, deserts, riverine escarpments, canyons, foothills, and mountains.	Yes – Found all year in Idaho and Wyoming	Shrublands and Grasslands	All segments could provide habitat for this species.
Purple Martin	*Progne subis*	FS sensitive (R2)	-	This species nests in forest edges and clearings adjacent to waterbodies.	Likely – This species distribution is adjacent to the analysis area, and some individuals would likely pass infrequently into the analysis area.	Riparian areas	1, 2, 4, 5, 7, 8, 9
Sage Sparrow	*Amphispiza belli*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Basin-prairie shrub, mountain-foothill shrub: Species breeds in open, shrublands, most commonly in sagebrush grassland areas. These sparrows favor dense stands of sagebrush with a modest amount of understory vegetation. Winter habitat for sage sparrows is found in open flats, deserts and dry chaparral of the Southwest	Yes	Sagebrush	All segments could provide habitat for this species.
Sage Thrasher	*Oreoscoptes montanus*	BLM sensitive	SGCN / Wyoming	Basin-prairie shrub, mountain-foothill shrub: The species is a sagebrush obligate as they are common inhabitants of shrub-steppe communities that are dominated by big sagebrush. Nest-site selection is specific as most nests are located within or beneath sagebrush plants with high foliage and branch density. Dense patches of large sagebrush plants and low densities of exotic plants also seem to be ar important habitat characteristic for sage thrashers	Yes	Sagebrush	All segments could provide habitat for this species.
Short Eared Owl	*Asio flammeus*	FS sensitive (R2)	SGCN / Wyoming SGCN/ Idaho	The short eared owl typically inhabits open habitats including grasslands, sagebrush, marshes, and tundra.	Yes	Open grassland and sagebrush habitats	All segments could provide habitat for this species.
Swainson's Hawk	*Buteo swainsoni*	BLM sensitve	-	This species inhabits open pine-oak woodlands with a abundant shrub-grass component, grasslands, and cultivated farmlands. Nests in trees or bushes.	Yes	Shrublands and Grasslands	All segments could provide habitat for this species.
Three-Toed Woodpecker	*Picoides dorsalis*	MIS (Medicine Bow NF) FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	This species inhabits old growth spruce-fir as well as lodgepole pine forests. These birds will also exploit recently burned forests, as these provide a rich food source.	Yes	Mature forests	1, 4, 5, 7
Trumpeter Swan	*Cygnus buccinator*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Lakes, ponds, rivers; Species nest on the margins of interconnected shallow marshes and lakes, lakes within forest or sagebrush habitat, and oxbows of rivers. They prefer stable, quiet, shallow waters where small islands, muskrat houses, or dense emergent vegetation provide nesting and loafing sites. Nutrient-rich waters, with dense aquatic plant and invertebrate growth, provide the best habitat	No	N/A	N/A
Upland Sandpiper	*Bartramia longicauda*	BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Native grassland: Species requires taller grass for nesting. It is almost never found on mudflats or in wetland environments where other shorebirds are found. Nests on pasture, prairie remnants, hayfields, summer fallow (bare soil), mulched grain stubble, standing grain stubble, and growing grain, but was most common in nontilled uplands (road rights-of-way, vegetation around prairie wetlands, heavily grazed wetlands, and small tracts of idled grasslands).	No – Occurs in Kootenai and Valley County which are outside of the Analysis Area.	N/A	N/A

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Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Birds cont.							
Virginia's Warbler	*Vermivora virginiae*	BLM sensitive	SGCN/ Idaho	Typically found in pinyon-juniper and oak woodlands. Nests found in dense thickets of mountain mahogany and some populations breed in high, mixed-conifer forests. Occupies scrubby habitats below the pine belt and surrounding conifers. Never occurs in coniferous forest where there is not a deciduous mix. Strong association for breeding in steep draws, drainages, or slopes with oak or other shrubby vegetation.	Yes	Pinyon-juniper, oak woodlands, mountain mahogany.	1, 4, 5, 7
White-faced Ibis	*Plegadis chihi*	BLM sensitive	SGCN / Wyoming SGCN/ Idaho	Marshes, wet meadows: Frequently feeds in shallowly flooded wetlands of short, emergent plants, such as sedges, spikerushes, glassworts, inland saltgrass, and black greasewood. Nearby irrigated crops, particularly alfalfa, barley, and native hay meadows are important feeding sites. Water appears to be a requirement for a suitable feeding site. Usually nests in emergent vegetation or low trees and shrubs over shallow water, use hardstem bulrush, alkali bulrush, cattails, or build a stick nest in small willows.	Yes – Populations near American Falls and Rupert.	Wetlands - near American Falls and Rupert	5, 7
White-headed Woodpecker	*Picoides albolarvatus*	FS sensitive (R4) BLM sensitive	SGCN/ Idaho	Species prefers semi-open areas with large, mature trees, providing 40-70% canopy. Forages on live, mature conifers with deeply creviced and scaly bark (Raphael and White 1984). Nest and roost cavities and trees provide cover.	No – Populations near McCall and Riggins do not intersection with Analysis Area.	N/A	N/A
White-tailed Ptarmigan	*Lagopus leucura*	FS sensitive (R2)	-	This species inhabits alpine ecosystems at or above treeline as well as stream courses and meadows within the subalpine zone.	No	N/A	N/A
Williamsons Sapsucker	*Sphyrapicus thyroideus*	BLM sensitive	-	Open coniferous forests. Breeds at middle to high elevations, generally from 4,900–10,500 feet. Nests at lower elevations (from 2,800–4,250 feet) at the northern edge of its range.	Yes – Known to occur in Bear Lake County, Blain County.	Open forest habitats	4, 5, 7
Willow Flycatcher	*Empidonax trailii*	BLM sensitive	SGCN / Wyoming	Breeding habitat consists of deciduous thickets, especially willows and often near water. Winters in shrubby clearings and early successional growth.	Yes – Breeding bird survey route in western Sweetwater Co	Riparian areas - breeding bird survey route in western Sweetwater Co	4
Wilson's Warbler	*Wilsonia pusilla*	MIS (Medicine Bow NF)	-	This species of warbler inhabits mesic shrub communities or willow woodlands located near the edges of beaver ponds and lakes, riparian zones, fens, bogs, and overgrown clear-cuts.	Yes	Riparian areas	All segments could provide habitat for this species.
Fish							
Big Lost River Whitefish	*Prosopium williamsoni*	FS sensitive (R4)	SGCN / Wyoming	This species inhabits larger tributaries and the mainstem of the Big Lost River. Two metapopulations currently exist: one above and one below the Mackay Dam.	No – The Project does not cross the Big Lost River area	N/A	N/A
Bluehead Sucker	*Catostomus discobolus*	FS sensitve (R2) BLM sensitive	SGCN / Wyoming SGCN / Idaho	Bear, Snake, and Green drainages, all waters. This species has been reported to typically be found in runs or riffles with rock or gravel substrate. Juveniles have been collected from shallow riffles, backwaters, and eddies with silt or gravel substrate. Although the species generally inhabits streams with cool temperatures, bluehead suckers have been found inhabiting small creeks with water temperatures as high as 82.4°F). This species is found in a large variety of river systems ranging from large rivers with discharges of several hundred cubic meters per sec to small creeks with less than a 0.05 cubic meters per second (1.8 cubic feet per sec).	Yes	Snake and Green River drainages	4, 5, 7, 8, 9, 10
Bonneville Cutthroat Trout	*Oncorhynchus clarki utah*	FS sensitive (R4) BLM sensitive	SGCN / Wyoming SGCN / Idaho	Clear mountain streams within the Bonneville basin, along the Bear River drainage.	Yes – Occurs in Bear River and drainages	Bear River	4
Colorado River Cutthroat Trout	*Oncorhynchus clarki pleuriticus*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming	Clear mountain streams along the Colorado River drainages located above the Grand Canyon; including the Green River.	Yes – Occurs in Green River	Green River	4
Common Trout	brook trout *(Salvelinus fontinalis),* rainbow trout *(Oncorhynchus mykiss)* , and brown trout *(Salmo trutta)*	MIS (Medicine Bow NF)	-	Found in cold waters of the Yampa, North Platte, and Colorado Rivers.	Yes	Rivers	4, 5, 7, 8, 9, 10
Finescale Dace	*Phoxinus neogaeus*	FS sensitive (R2)	SGCN / Wyoming	Finescale dace typically occur in cool, boggy lakes and sluggish, acidic streams. They are commonly found in lakes and ponds and are often associated with beaver ponds.	Yes	Waterbodies	4, 5, 7, 8, 9, 10
Fine-spotted Cutthrout Trout, Snake River Cutthroat	*Oncorhynchus clarki* spp	FS sensitve (R4) BLM sensitive	SGCN / Wyoming SGCN / Idaho	Snake River drainage, clear, fast water	Yes – Occurs in Snake River and drainages	Snake River	4, 5, 7, 8, 9, 10

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Fish cont.							
Flannelmouth Sucker	*Catostomus latipinnis*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Colorado River drainage, large rivers, streams and lakes. Although preferring large rivers with deep riffles and runs, they can also be found in smaller streams and sometimes in lakes. Native to the Colorado River drainage basin, in Wyoming it's found in the Green and Little Snake river drainages. In the spring they leave the large rivers and ascend small tributary streams to spawn;	Yes – Occurs in Green River drainages	Green River	4
Flathead Chub	*Platygobio gracilis*	FS sensitive (R2)	SGCN / Wyoming	Near the Project area, this species is found in the northern portion of Wyoming including the Big Horn, Tougue, Powder, Little Powder, Belle Fourche, and Cheyenne River systems. This species distribution in Wyoming is north of the project area.	No	N/A	N/A
Hornyhead Chub	*Nocomis biguttatus*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Found in small to medium sized streams, with gravel and rock substrates, and warm waters with abundant aquatic vegetation.	No	N/A	N/A
Lake Chub	*Couesius plumbeus*	FS sensitive (R2)	SGCN / Wyoming SGCN / Idaho	Found in glacial scour lakes and rivers with clear water and gravel bottoms.	Yes	Rivers	4
Mountain Sucker	*Catostomus platyrhynchus*	FS sensitive (R2)	SGCN / Wyoming	This species can be found in small headwater streams along the Snake River, and lentic habitats such as the Lower Green River Lake.	Yes	Rivers	4, 5, 7
Northern Leatherside Chub	*Lepidomeda copei* (formally *Gila copei)*	FS sensitive (R4) BLM sensitive	SGCN / Wyoming	The leatherside chub inhabits deep pools in medium sized streams that have cool water temperatures between 60 and 75 degrees farenheit. They are found in streams with dense vegetation or abundant lateral habitat. Along the Project area, they can be found in the northeastern portions of the Bonneville Basin, as well as Snake and Bear River drainages along the Wyoming-Idaho-Utah border. Introduced populations can also be found within the Colorado River system.	Yes – this species is found in the Snake River drainage above Shoshone Falls, as well as the Raft River, Goose Creek, Good Creek, and Bear River. In addition, introduced populations occur in the Colorado and Green River system.	The Snake River above Shoshone Falls, as well as the Raft River, Good Creek, Goose Creek, Bear River, Colorado River, and Green River.	4, 7
Northern Redbelly Dace	*Phoxinus eos*	FS sensitive (R2)	-	Found in slow moving, spring fed streams which contain abundant vegetation and large wood debris.	No – species not native to the Project area.	N/A	N/A
Pearl Dace	*Margariscus margarita*	FS sensitive (R2)	SGCN / Wyoming	Found in slow moving, spring fed streams with well vegetated banks, and a diverse system of pool habitats.	No	N/A	N/A
Plains Minnow	*Hybognathus placitus*	FS sensitive (R2)	SGCN / Wyoming	Found along the channels of shallow, fluctuating streams with shifting sand substrates.	No	N/A	N/A
Redband Trout	*Oncorhynchus mykiss gairdneri*	BLM sensitive	SGCN / Idaho	Redband trout occur in inland drainages of the Pacific Northwest. Great Basin redband trout are found in arid forest and desert environments characterized by extreme fluctuations in stream flow and temperature.	Yes – Occurs in Snake River drainages	Snake River	8, 9, 10
Rio Grande Chub	*Gila pandora*	FS sensitive (R2)	-	Current distribution limited to the tributary systems of the Rio Grande. Can be found in cool, fast flowing reaches with gravel or cobble substrates, and banks with overhanging vegetation.	No	N/A	N/A
Rio Grande Cutthroat Trout	*Oncorhynchus clarkii virginalis*	FS sensitive (R2)	-	Current distribution is limited to tributaries of the Rio Grande in Colorado and New Mexico. Found in small, high elevation streams. This species of trout is more of a generalist than other *Oncorhynchus*.	No	N/A	N/A
Rio Grande Sucker	*Catostomus plebeius*	FS sensitive (R2)	-	Current distribution limited to the tributary systems of the Rio Grande. Found in slow moving waters that contain course substrates.	No	N/A	N/A
Roundtail Chub	*Gila robusta*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming	Colorado River drainage, mostly large rivers, also streams and lakes below 7,546 feet. Streams should have a complexity of pool and riffle habitats. Juveniles and adults are typically found in relatively deep, low-velocity habitats that are often associated with woody debris or other types of cover. Substrate in roundtail chub habitat may range from rock and gravel to silt and sand. Larvae have been reported in low velocity areas associated with backwater habitats. Temperature tolerance of roundtail chub has been reported up to 102.2 °F, but temperature preference ranges between 71.6 ° and 75.2 °F.	Yes – Found in Green and Little Snake River drainages	Green and Little Snake River	4
Shoshone Sculpin	*Cottus greenei*	BLM sensitive	SGCN / Idaho	Shoshone sculpin are found in approximately two dozen springs/streams in the Hagerman Valley. Their habitat is essentially restricted to the clear, cool (60.8 degrees Fahrenheit) well oxygenated water of the Thousand Springs Formation. They select low velocity waters with abundant gravel, rock, and aquatic vegetation.	Yes – Occurs in Hagerman Valley	Waterbodies	8
Southern Leatherside Chub	*Lepidomeda aliciae (formally Gila copei)*	FS sensitive (R4)	-	This species is native to streams and rivers of the southeastern portion of the Bonneville Basin; similar habitats to the northern leatherside chub, but with a most southern distribution. Occurs in Utah Lake and Sevier River drainages	Unlikely – distribution is likely south of the Project Area	N/A	N/A
Southern Redbelly Dace	*Phoxinus erythrogaster*	FS sensitive (R2)	-	Found predominantly within slow moving headwaters and upland creeks with abundant bank vegetation and large woody debris. Prefers clear waters and a gravel substrate.	No	N/A	N/A
Sturgeon Chub	*Macrhybopsis gelida*	FS sensitive (R2)	SGCN / Wyoming	Found in fast moving streams with high turbidity. Often in shallow waters such as rock or gravel riffles.	Yes	Rivers	4, 5, 7, 8, 9, 10

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Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Fish cont.							
Westslope Cutthroat Trout	*Oncorhynchus clarki lewisi*	FS sensitive (R4) BLM sensitive	SGCN / Idaho	Westslope cutthroat are common in both headwaters lake and stream environments. The newborn fry frequently migrate back to lakes to rear after 1 to 2 years in their native stream. Spawning and rearing streams tend to be cold and nutrient poor. Westslope cutthroat trout seek out gravel substrate in riffles and pool crests for spawning habitat. Westslope cutthroat trout also require cold water. Westslope cutthroat trout tend to thrive in streams with more pool habitat and cover than uniform, simple habitat. Juvenile cutthroat trout overwinter in the interstitial spaces of large stream substrate. Adult cutthroat trout need deep, slow moving pools that do not fill with anchor ice in order to survive the winter.	Yes – Occurs in Snake River and drainages	Snake River	5, 7, 8, 9, 10
Wood River Sculpin	*Cottus leiopomus*	FS sensitive (R4) BLM sensitive	SGCN / Idaho	The Wood River sculpin occurs only in the Wood River drainage in south–central Idaho. The Wood River sculpin occurs mainly in small to medium sized streams with cool, clear waters and a swift current. Individuals are most commonly found in riffles and runs with a gravel or cobble substrate.	Yes	Waterbodies	8
Yellowstone Cutthroat Trout	*Oncorhynchus clarki bouvieri*	FS sensitive (R2, R4) BLM sensitive MIS (Sawtooth NF)	SGCN / Wyoming SGCN / Idaho	Yellowstone, Bighorn, and Snake River drainage, small mountain streams and large rivers (including Raft River, Goose Creek, Piney Creek, and Trout Creek)	Yes	Snake River	4, 5, 7, 8, 9, 10
Reptiles							
Black Hills Redbelly Snake	*Storeria occipitomaculata pahasapae*	FS sensitive (R2)	SGCN / Wyoming	This species inhabits mountainous or hilly woodlands in the Black Hills. It is commonly found under rocks and logs in moist areas.	No – In Wyoming, this species range is limited to Crook and Weston Counties.	N/A	N/A
Common Garter Snake	*Thamnophis sirtalis*	BLM sensitive	SGCN / Wyoming	Common Garter Snakes are usually found in habitats associated with water, such as streams, rivers, lakes, ponds and marshes. They can also be found in open meadows and coniferous forests	Yes – Found in western Wyoming	Wetlands and open meadows/coniferous forests	2, 3, 4
Longnose Snake	*Rhinocheilus lecontei*	BLM sensitive	SGCN / Idaho	Arid and semi-arid deserts, grasslands, shrublands, and prairies. Sea level to 6,200 ft	Yes – Occurs at Bruneau Sand Dunes	Sand dunes	9
Desert Massasuga Rattlesnake	*Sistrurus catenatus edwardsii*	FS sensitive (R2)	-	This species inhabits shortgrass prairie habitat.	No – This species distribution does not overlap the analysis area	N/A	N/A
Midget Faded Rattlesnake	*Crotalus viridis concolor*	BLM sensitive	SGCN / Wyoming	Mountain foothills shrub, rock outcrop in sagebrush desert.	Yes – Occurs from Green River to Rock Springs	Shrublands	4
Mojave Black-collared Lizard	*Crotaphytus bicinctores*	BLM sensitive	SGCN / Idaho	Isolated populations occur in eastern Idaho and Utah. Prefers arid rocky hilly deserts with sparse vegetation, but sometimes found in areas with few rocks.	Yes – Occurs in Ada, Canyon, and Elmore counties	Shrublands	8, 9
Western Ground Snake	*Sonora semiannulata*	BLM sensitive	SGCN / Idaho	Inhabits areas with surface cover and some moisture: grassland, riverbottoms, desert flats, ranchland, sand hummocks, open rocky hillsides with loose soil, sandy washes, dry streambeds, and riparian thickets.	Yes – Occurs near Hammet	Riparian areas	8, 9
Amphibians							
Boreal Toad (Northern Rocky Mountain population)	*Bufo boreas boreas*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming	Pond margins, wet meadows, riparian areas. Boreal toads live in a wide range of habitats in western North America: wetlands, forests, woodlands, sagebrush, meadows, and floodplains in the mountains and valleys. Boreal toads generally occur between 7,500 and 12,000 feet in Region 2. The wetland habitat classification system of Cowardin et al. (1979) defines the following wetland classes: aquatic bed, streambed, rocky shore, unconsolidated shore, emergent wetland (persistent and non-persistent), scrub-shrub wetland, and forested wetland. Boreal toads are likely to be found within these classes in Riverine, Lacustrine, and Palustrine wetland systems.	Yes	Locations mapped by Idaho CDC and WYNDD.	All segments could provide habitat for this species.
Great Basin Spadefoot	*Spea intermontana*	BLM sensitive	SGCN / Wyoming	Spring seeps, permanent and temporary waters. Mainly sagebrush flats, semi-desert shrublands, pinyon-juniper woodland. Digs its own burrow in loose soil or uses those of small mammals. Breeds in temporary or permanent water, including rain pools, pools in intermittent streams, and flooded areas along streams. Eggs are attached to vegetation in water or placed on bottom of pool.	Yes – Occurs in Natrona County and Green River Valley	Wetlands and waterbodies	1, 4
Idaho Giant Salamander	*Dicamptodon aterrimus*	BLM sensitive	SGCN / Idaho	Known to occur up to 2160 m in elevation. Transformed adults, although seldom seen, inhabit moist coniferous forests where they may be found under logs, bark, or rocks. They are most active on warm, rainy nights. Larvae are usually found in swift, cold mountain streams, but may occasionally be found in lakes or ponds.	No – Occurs in northern Idaho outside of Analysis Area.	N/A	N/A

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Amphibians cont.							
Mountain Yellow-Legged Frog	*Rana muscosa*	FS sensitive (R4)	-	Found in wetland habitats within mountain areas of California and Nevada.	No	N/A	N/A
Northern Leopard Frog	*Rana pipiens*	FS sensitive (R2) BLM sensitive	SGCN / Wyoming SGCN / Idaho	Beaver ponds, permanent water in plains and foothills. Springs, slow streams, marshes, bogs, ponds, canals, flood plains, reservoirs, and lakes; usually permanent water with rooted aquatic vegetation. In summer, commonly inhabits wet meadows and fields. Takes cover underwater, in damp niches, or in caves when inactive. Overwinters usually underwater.	Yes	Wetland habitat mapped for the Northern Leopard Frog	All segments could provide habitat for this species.
Plains Leopard Frog	*Lithobates blairi*	FS sensitive (R2)	-	This species inhabits large waterbodies and streams, but will breed in smaller wetlands.	No – This species distribution does not overlap the analysis area	N/A	N/A
Yosemite Toad	*Bufo canorus*	FS sensitive (R4)	-	Found in wetland habitats within California.	No	N/A	N/A
Spotted Frog	*Ranus pretiosa (lutieventris)*	FS sensitive (R2, R4) BLM sensitive	SGCN / Wyoming SGCN / Idaho	Ponds, sloughs, small streams. Columbia Spotted Frogs are fairly aquatic and are generally found in or near permanent bodies of water such as lakes, ponds, sluggish streams and marshes. The littoral zone is generally comprised of emergent vegetation including grasses and sedges. During the summer these frogs can be found some distance from the breeding sites but still associated with moist vegetation. Found from sea level to about 9,842 feet, usually in hilly areas near cool, permanent, quiet water in streams, rivers, lakes, pools, springs, and marshes. Highly aquatic, but may disperse into forests, grasslands, and brushlands. In the Northwest, prefers areas with thick algae and emergent vegetation, but may use sunken, dead, or decaying vegetation as escape cover.	Yes – Riparian/wetland habitats mapped for this species are present within segment 4	Riparian and wetland habitats	4, 9
Wood Frog	*Lithobates sylvatica*	FS sensitive (R2)	-	This species inhabits wetlands habitats as well as adjoining grassy meadows, willow bogs, coniferous forests, and aspen groves in their western range. In the eastern range they inhabit both closed canopy deciduous and coniferous forests.	No – This species distribution does not overlap the analysis area	N/A	N/A
Woodhouse Toad	*Bufo woodhousii*	BLM sensitive	SGCN / Wyoming SGCN / Idaho	Inhabits a wide variety of habitats - irrigation ditches, temporary pools, backyards, grassland, sagebrush flats, woods, desert streams, farms, river floodplains. Prefers sandy areas. From below sea level to 8,500 ft. (2600 m.)	Yes – Occurs in Ada, Canyon and Elmore County and eastern Wyoming counties.	Wetland and adjacent upland habitats	8, 9, 1E, 1W
Invertebrates							
Bruneau Dunes Tiger Beetle	*Cicindela waynei waynei*	BLM sensitive	SGCN / Idaho	This species primarily occurs in the sparsely vegetated margins of sand dunes. Adults can be found on dunes but spend much of their time on more stabilized substrate in saddles between dunes. Larvae develop in burrows in flat areas in the narrow area between the drifting sand of the dunes and the established desert plant community. Such sites usually having a covering of small gravel or pebbles.	Yes – Occurs in Minidoka, Blain, and Power Counties	Sand dunes in Owyhee County	4, 9
Blind Cave Leiodid Beetle	*Glacicavicola bathyscoides*	BLM sensitive	SGCN / Idaho	This species is known only from southern Idaho and westernmost Wyoming. This species has only been found in lava tube caves in the vicinity of permanent ice	Yes – Occurs in Lincoln and Power County	Lava tube caves in the vicinity of permanent ice in Lincoln and Power County	4, 5, 7, 8
California Floater	*Anodonta californiensis*	BLM sensitive	SGCN / Wyoming SGCN / Idaho	The California floater, a freshwater mussel, is found in the Snake River in scattered locations between Bliss and Alkali Creek. The California floater prefers habitats immediately upstream or downstream of rapids in mud-sand substrates with good water quality.	Yes – Occurs in Elmore, Gooding, Jerome, and Twin Falls County, Idaho	Wetlands	8, 9, 10
Columbia Pebblesnail	*Flumincola fuscus*	BLM sensitive	-	The Columbia pebblesnail is found in the Snake River below Lower Salmon Falls Dam and in the tailwaters of the Bliss Dam. The pebblesnail lives in flowing waters and uses gravel- to boulder-sized substrate at the edges or downstream of rapids and whitewater areas.	Yes – Occurs in Gooding and Twin Falls County, Idaho	Wetlands and waterbodies.	8, 9, 10
Cooper's Rocky Mountain Snail	*Oreohelix strigosa cooperi*	FS sensitive (R2)	SGCN / Wyoming	This species is found in moist forest habitats.	No – Known occurrences are limited to the Black Hills National Forest	N/A	N/A
Dark Blue	*Euphilotes ancilla purpura*	FS sensitive (R4)	-	This butterfly is endemic to the Spring Mountains of Clark County Nevada. It inhabits stream banks, springs and seeps; primarily in mixed conifer and juniper areas.	No – This species distribution does not overlap the analysis area	N/A	N/A
Hudsonian Emerald	*Somatochlora hudsonica*	FS sensitive (R2)	-	This species inhabits wetland habitats which contain shallow, organic soils over dolomitic bedrock; calcareous water from intermittent seeps; or shallow small channels and/or sheet-flow	Unlikely – Near the analysis area, this species is know near Moran in Grand Teton National Park and along the North Fork of the Little Laramie River in the Medicine Bow National Forest (Both outside of the analysis area).	N/A	N/A

Table D.11-2. BLM Sensitive, Forest Service Sensitive, or MIS with the Potential to Occur within the Analysis Area

Common Name	Scientific Name	Federal Agency Status	State Species of Greatest Conservation Need (SGCN) / State Listed in	Habitat Description	Does the Species Have Distribution or Potential Habitat within the Analysis Area?	Habitat Unit used for Analysis	Segments Species may be Present In
Invertebrates cont.							
Morand's Checkerspot	*Euphydryas anicia morandi*	FS sensitive (R4)	-	This butterfly is endemic to the Spring Mountains of Clark County Nevada. There are small populations in the Lee Canyon ski areas. It inhabits meadows and avalanche chutes.	No – This species distribution does not overlap the analysis area	N/A	N/A
Mt. Charleston Blue Butterfly	*Icarcia shasta charlestonesis*	FS sensitive (R4)	-	This butterfly is endemic to the Spring Mountains of Clark County Nevada. It occurs on relatively flat ridglines in the Spring Mountains; typicaly above 8,200 feet.	No – This species distribution does not overlap the analysis area	N/A	N/A
Nokomis Fritillary Butterfly (Silverspot butterfly)	*Speyeria nokomis nokomis*	FS sensitive (R2)	-	This species of butterfly inhabits spring-fed meadows, seeps, marshes, and boggy streamside meadows associated with flowing water.	No – This species distribution does not overlap the analysis area	N/A	N/A
Ottoe skipper	*Hesperia ottoe*	FS sensitive (R2)	-	This butterfly is a prairie obligate species that can be found in dry-mesic to mesic prairies.	No – This species distribution does not overlap the analysis area. The closest occurrence is in Platte County.	N/A	N/A
Pygmy mountain Snail	*Oreohelix pygmaea*	FS sensitive (R2)	SGCN / Wyoming	This species inhabits moist forest habitats.	No – Known occurrences of this species include Tensleep Canyon and Shell Canyon, WY. These canyons are outside of the analysis area	N/A	N/A
Regal Fritillary	*Speyeria idalia*	FS sensitive (R2)	-	This species inhabits tallgrass prairie, wet meadows, and marshy habitats.	No – This species distribution does not overlap the analysis area. The closest occurrence is in Platte County.	N/A	N/A
Rocky Mountain capshell	*Acroloxus coloradensis*	FS sensitive (R2)	-	This species inhabits lakes with high calcium content and low elevations (approximately 2,864 m).	No – This species distribution does not overlap the analysis area.	N/A	N/A
St. Anthony Sand Dunes Tiger Beetle	*Cicindela arenicola*	BLM sensitive	SGCN / Idaho	This species is found on sand dunes. Larvae live in burrows located in flat, grassy areas where the sand is at least a meter thick, often on the windward side of sand dunes.	Yes – Occurs in Bannock, Power, Blaine, Minidoka, Lincoln, and possibly Bingham Counties	Sand dunes	4, 9
Shortface Lanx	*Fisherola nuttalli*	BLM sensitive	SGCN / Idaho	Shortface lanx inhabits cold, unpolluted, medium to large streams with fast-flowing, well-oxygenated water and cobbleboulder substrate, and is generally found at the edges of rapids. Current populations occur in the Snake River.	Yes – Occurs in Snake River	Snake River	8, 9, 10
Spring Mountain Checkerspot	*Chlosyne acastus robusta*	FS sensitive (R4)	-	This butterfly is endemic to the Spring Mountains of Clark County Nevada. It can be found in Kyle Canyon and Deer Creek. It occur primarily in riparian areas.	No – This species distribution does not overlap the analysis area	N/A	N/A
Susan's Purse-making Caddisfly	*Ochrotrichia susanae*	FS sensitive (R2)	-	The larva of this species are aquatic and inhabit small, cold streams that are well-oxygenated, highly buffered, and low in trace metals. Adults are weak flyers and tend to remain close to larva habitat.	No – This species is only know in central Colorado.	N/A	N/A

Notes: **BLM** = Bureau of Land Management; **FS** = U.S. Forest Service; **R2** = Forest Service Region 2; **R4** = Forest Service Region 4.

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	Preble's Meadow Jumping	Yellow-Billed Cuckoo
1W	1W(a) Proposed – Total Length	73.8	1.9			45.7		7.4	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5				7.2		1.1	
	Alternative 1W(a)-B	20.9				9.2		1.3	
	1W(c) Proposed – Total Length	73.6	4.3			44.4		9.2	
2	Proposed – Total Length	91.9	t[1/]			85.2		5.5	
	Proposed – Comparison portion for Alternative 2A	16.8				14.3		1.4	
	Alternative 2A	16.0				12.9		1.4	
	Proposed – Comparison portion for Alternative 2B	12.5				10.3		1.3	
	Alternative 2B	12.2				9.0		1.9	
3	Segment 3 Proposed – Total Length	45.9				36.2	26.4		
	Segment 3A Proposed – Total Length	5.1				4.4	5.1		
4[2/]	Proposed – Total Length	197.6			2.3	144.9	132.0		
	Proposed – Comparison portion for Alternatives 4B-4F	85.2			2.3	69.1	71.3		
	Alternative 4B	100.2			1.3	85.3	18.9		
	Alternative 4C	101.6			0.7	83.2	31.1		
	Alternative 4D	100.8			1.2	84.9	18.9		
	Alternative 4E	102.2			0.6	82.8	31.1		
	Alternative 4F	87.5		4.5	1.8	69.1	76.0		
5	Proposed – Total Length	55.7				27.7			
	Proposed – Comparison portion for Alternatives 5A,B	22.3				9.6			
	Alternative 5A	29.7				14.4			t[1/]
	Alternative 5B	40.4				17.4			t[1/]
	Proposed – Comparison portion for Alternative 5C	32.9				16.0			
	Alternative 5C	26.0				12.7			t[1/]
	Proposed – Comparison portion for Alternative 5D	19.2				10.3			
	Alternative 5D	17.0				5.6			t[1/]
	Proposed – Comparison portion for Alternative 5E	5.8				1.7			
	Alternative 5E	5.3				0.9			
6	Proposed – Total Length	0.5				0.5			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Mileages have been rounded to the nearest tenth of a mile; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero miles or null value

[1/] "t" indicates only a trace amount (<0.1 mile) crossed

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

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	Preble's Meadow Jumping	Yellow-Billed Cuckoo
7	Proposed – Total Length	118.2				44.3			
	Proposed – Comparison portion for Alternatives 7A,B	35.1				11.8			
	Alternative 7A	37.7				17.2			t[1/]
	Alternative 7B	46.2				22.7			
	Proposed – Comparison portion for Alternative 7C	20.1				7.6			
	Alternative 7C	20.3				6.0			
	Proposed – Comparison portion for Alternative 7D	6.2				3.1			
	Alternative 7D	6.8				2.6			
	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				8.4			
	Proposed – Comparison portion for Alternative 7G	3.3				2.5			
	Alternative 7G	3.4				0.4			
	Proposed – Comparison portion for Alternative 7K	118.2				44.3			
	Alternative 7K	148.1				80.4			
8	Proposed – Total Length	131.5			t[1/]	74.8			
	Proposed – Comparison portion for Alternative 8A	51.9				31.4			
	Alternative 8A	53.6				25.6			
	Proposed – Comparison portion for Alternative 8B	45.3			t[1/]	22.2			
	Alternative 8B	45.8			0.2	16.9			t[1/]
	Proposed – Comparison portion for Alternative 8C	6.5				3.6			
	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			
	Alternative 8E	18.3			t[1/]	9.6			
9	Proposed – Total Length	162.2			0.6	103.4			0.4
	Proposed – Comparison portion for Alternative 9A	7.8				3.7			
	Alternative 9A	7.7				5.1			
	Proposed – Comparison portion for Alternative 9B	49.1			t[1/]	39.0			
	Alternative 9B	52.3				22.6			
	Proposed – Comparison portion for Alternative 9C	14.4				13.4			
	Alternative 9C	14.4				8.80			
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			0.6	29.7			
	Alternative 9D	60.1			0.1	29.6			
	Alternative 9F	63.3			0.4	30.1			
	Alternative 9G	57.8			0.2	29.6			
	Alternative 9H	61.0			0.5	30.1			
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			0.6	33.1			
	Alternative 9E (revised)	70.6			0.2	50.4			
10	Proposed – Total Length	34.4				5.9			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] "t" indicates only a trace amount (<0.1 mile) crossed

Table D.11-4. Miles of Habitat Crossed for BLM and Forest Service Sensitive Species with Available Quantitative Data

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Miles of Habitat Crossed											
			Bald Eagle		Black-Tailed Prairie Dog					Northern Goshawk				
			Within a 1-mile Nest Buffer	Within a 1-mile Winter Roost Buffer	Colony	Complex[1/]	Burrowing Owl	Columbian Sharp-Tailed Grouse	Mountain Plover	within a 1-mile Nest Buffer	Northern Leopard Frog	Pygmy Rabbit	White-Tailed Prairie Dog	Wyoming Pocket Gopher
1W	1W(a) Proposed – Total Length	73.8	2.0	6.6	2.6	12.3	50.8		47.0	2.0	1.4		54.6	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	2.0	6.6	1.7	10.7	14.4		11.6		0.4		8.7	
	Alternative 1W(a)-B	20.9		2.0	1.6	20.5	17.6		12.7		0.2		8.7	
	1W(c) Proposed – Total Length	73.6	1.9	6.8	3.0	9.9	51.3		45.5	2.0	1.8		55.3	
2	Proposed – Total Length	91.9					62.4		56.0		1.1	58.5	69.1	29.2
	Proposed – Comparison portion for Alternative 2A	16.8					8.6		8.8		0.6	8.6	9.8	0.5
	Alternative 2A	16.0	1.9				10.1		12.2		0.6	8.2	10.7	1.3
	Proposed – Comparison portion for Alternative 2B	12.5					5.3		6.4		0.5	5.3	6.2	0.5
	Alternative 2B	12.2	2.0				6.2		9.8		0.7	5.6	6.4	1.6
3	Segment 3 Proposed – Total Length	45.9					28.9		38.5		0.3	24.3	29.8	41.8
	Segment 3A Proposed – Total Length	5.1					3.1		4.0		0.3	3.1	3.2	0.6
4[3/]	Proposed – Total Length	197.6	4.2				99.2	57.8	69.6	3.6	7.8	105.2	112.9	8.7
	Proposed – Comparison portion for Alternatives 4B-4F	85.2					48.7	6.5	36.4		3.3	63.4	70.5	
	Alternative 4B	100.2					69.2	8.2	39.4		2.1	70.4	81.9	
	Alternative 4C	101.6					75.0	8.2	39.4		1.5	73.3	87.0	
	Alternative 4D	100.8					66.2	8.2	39.4		2.1	67.2	81.5	
	Alternative 4E	102.2					72.0	8.2	39.4		1.5	70.0	86.6	
	Alternative 4F	87.5					52.3	6.5	36.4		2.8	66.1	69.8	
5	Proposed – Total Length	55.7	1.6	t[2/]			21.7	51.4			0.5	17.7		
	Proposed – Comparison portion for Alternatives 5A,B	22.3					8.4	21.9			t[2/]	6.1		
	Alternative 5A	29.7					14.0	29.7			0.1	7.9		
	Alternative 5B	40.4					22.8	39.5			0.1	11.7		
	Proposed – Comparison portion for Alternative 5C	32.9					10.9	32.4			0.1	8.4		
	Alternative 5C	26.0					14.8	25.8			0.2	10.6		
	Proposed – Comparison portion for Alternative 5D	19.2	1.6	t[2/]			6.0	17.2			0.4	5.7		
	Alternative 5D	17.0	1.7	t[2/]			8.3	15.5			0.4	5.9		
	Proposed – Comparison portion for Alternative 5E	5.8	1.6	t[2/]			2.9	3.9			0.3	1.7		
	Alternative 5E	5.3		t[2/]			0.9	1.7			0.2	0.9		
6	Proposed – Total Length	0.5					0.4	0.2			t[2/]	0.4		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] The number of "colony" miles crossed represents colonies that are not part of complexes; the sum of the two numbers, "colonies" and "complexes," adds up to total miles of prairie dog habitat crossed.

[2/] "t" indicates only a trace amount (<0.1 mile) crossed

[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-4. Miles of Habitat Crossed for BLM and Forest Service Sensitive Species with Available Quantitative Data cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Miles of Habitat Crossed											
			Bald Eagle		Black-Tailed Prairie Dog					Northern Goshawk				
			Within a 1-mile Nest Buffer	Within a 1-mile Winter Roost Buffer	Colony	Complex[1/]	Burrowing Owl	Columbian Sharp-Tailed Grouse	Mountain Plover	within a 1-mile Nest Buffer	Northern Leopard Frog	Pygmy Rabbit	White-Tailed Prairie Dog	Wyoming Pocket Gopher
7	Proposed – Total Length	118.2					66.2	76.8			0.3	41.4		
	Proposed – Comparison portion for Alternatives 7A,B	35.1					15.9	35.0			0.1	9.3		
	Alternative 7A	37.7					18.8	37.0			0.6	12.9		
	Alternative 7B	46.2					26.0	46.0			t[2/]	13.8		
	Proposed – Comparison portion for Alternative 7C	20.1					15.0	15.9			t[2/]	9.8		
	Alternative 7C	20.3					17.5	19.1				14.1		
	Proposed – Comparison portion for Alternative 7D	6.2					4.4	1.1			0.1	3.9		
	Alternative 7D	6.8					4.9	2.1			0.1	4.6		
	Proposed – Comparison portion for Alternative 7E	3.8					1.7					1.7		
	Alternative 7E	4.5					1.0					1.0		
	Proposed – Comparison portion for Alternative 7F	10.5					5.0					3.5		
	Alternative 7F	10.8					3.8					2.5		
	Proposed – Comparison portion for Alternative 7G	3.3					1.8	2.8				1.8		
	Alternative 7G	3.4					2.2	2.6				2.1		
	Proposed – Comparison portion for Alternative 7K	118.2					66.2	76.8			0.3	41.4		
	Alternative 7K	148.1					75.8	95.1		2.3	0.6	67.5		
8	Proposed – Total Length	131.5					111.1				0.8	109.2		
	Proposed – Comparison portion for Alternative 8A	51.9					37.0				0.2	36.3		
	Alternative 8A	53.6		t[2/]			36.2				0.6	32.3		
	Proposed – Comparison portion for Alternative 8B	45.3					41.4				0.2	40.5		
	Alternative 8B	45.8					28.8				0.4	27.6		
	Proposed – Comparison portion for Alternative 8C	6.5					6.4				t[2/]	6.4		
	Alternative 8C	6.4					6.2					6.2		
	Proposed – Comparison portion for Alternative 8D	6.9					6.9					6.9		
	Alternative 8D	8.1					6.6					6.6		
	Proposed – Comparison portion for Alternative 8E	7.0					5.3				0.2	5.3		
	Alternative 8E	18.3		t[2/]			16.6				t[2/]	16.6		
9	Proposed – Total Length	162.2					131.6	1.8			0.7	111.1		
	Proposed – Comparison portion for Alternative 9A	7.8					7.6				0.1	7.6		
	Alternative 9A	7.7					7.0				t[2/]	7.0		
	Proposed – Comparison portion for Alternative 9B	49.1					46.3				0.1	45.8		
	Alternative 9B	52.3					40.6				0.1	39.2		
	Proposed – Comparison portion for Alternative 9C	14.4					13.0				t[2/]	12.5		
	Alternative 9C	14.4					13.4				t[2/]	13.2		
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2					40.3				0.6	23.2		
	Alternative 9D	60.1		t[2/]			52.6				0.3	51.7		
	Alternative 9F	63.3		t[2/]			50.7				0.6	47.1		
	Alternative 9G	57.8		t[2/]			51.6				0.5	50.2		
	Alternative 9H	61.0		t[2/]			49.8				0.7	45.6		
	Proposed – Comparison portion for Alternative 9E (revised)	61.4					43.2				0.6	26.1		
	Alternative 9E (revised)	70.6					58.4				0.2	49.5		
10	Proposed – Total Length	34.4		t[2/]			17.0				0.5	17.0		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] The number of "colony" miles crossed represents colonies that are not part of complexes; the sum of the two numbers, "colonies" and "complexes," adds up to total miles of prairie dog habitat crossed.

[2/] "t" indicates only a trace amount (<0.1 mile) crossed

Table D.11-5. Acres of Construction Impacts to 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	Preble's Meadow Jumping Mouse	Yellow-Billed Cuckoo
1W	1W(a) Proposed – Total Length	73.8	21			515		67	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5				63		10	
	Alternative 1W(a)-B	20.9				129		7	
	1W(c) Proposed – Total Length	73.6	57			575		93	
2	Proposed – Total Length	91.9	22			1,643	6	85	
	Proposed – Comparison portion for Alternative 2A	16.8				261		20	
	Alternative 2A	16.0				289		32	
	Proposed – Comparison portion for Alternative 2B	12.5				191		19	
	Alternative 2B	12.2				164		41	
3	Segment 3 Proposed – Total Length	45.9				669	525		
	Segment 3A Proposed – Total Length	5.1				36	60		
4[2/]	Proposed – Total Length	197.6			54	2,935	2,594		
	Proposed – Comparison portion for Alternatives 4B-4F	85.2			53	1,424	1,443		
	Alternative 4B	100.2			34	1,762	386		
	Alternative 4C	101.6			30	1,687	571		
	Alternative 4D	100.8			34	1,762	388		
	Alternative 4E	102.2			30	1,670	573		
	Alternative 4F	87.5		139	35	1,394	1,494		
5	Proposed – Total Length	55.7				549			
	Proposed – Comparison portion for Alternatives 5A,B	22.3				206			
	Alternative 5A	29.7				318			<1
	Alternative 5B	40.4				346			<1
	Proposed – Comparison portion for Alternative 5C	32.9				335			
	Alternative 5C	26.0				270			1
	Proposed – Comparison portion for Alternative 5D	19.2				217			
	Alternative 5D	17.0				114			2
	Proposed – Comparison portion for Alternative 5E	5.8				58			
	Alternative 5E	5.3				43			
6	Proposed – Total Length	0.5				42			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of impact

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-5. Acres of Construction Impacts to 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	Preble's Meadow Jumping Mouse	Yellow-Billed Cuckoo
7	Proposed – Total Length	118.2				766			<1
	Proposed – Comparison portion for Alternatives 7A,B	35.1				223			t[1/]
	Alternative 7A	37.7				333			<1
	Alternative 7B	46.2				417			
	Proposed – Comparison portion for Alternative 7C	20.1				124			
	Alternative 7C	20.3				93			
	Proposed – Comparison portion for Alternative 7D	6.2				51			<1
	Alternative 7D	6.8				49			<1
	Proposed – Comparison portion for Alternative 7E	3.8				50			
	Alternative 7E	4.5				62			
	Proposed – Comparison portion for Alternative 7F	10.5				123			
	Alternative 7F	10.8				151			
	Proposed – Comparison portion for Alternative 7G	3.3				36			
	Alternative 7G	3.4				18			
	Proposed – Comparison portion for Alternative 7K	118.2				764			
	Alternative 7K	148.1				1,844			<1
8	Proposed – Total Length	131.5			<1	1,397			<1
	Proposed – Comparison portion for Alternative 8A	51.9				562			t[1/]
	Alternative 8A	53.6				475			t[1/]
	Proposed – Comparison portion for Alternative 8B	45.3			<1	443			<1
	Alternative 8B	45.8			7	350			<1
	Proposed – Comparison portion for Alternative 8C	6.5				75			t[1/]
	Alternative 8C	6.4				67			
	Proposed – Comparison portion for Alternative 8D	6.9				55			
	Alternative 8D	8.1				52			
	Proposed – Comparison portion for Alternative 8E	7.0				43			
	Alternative 8E	18.3			<1	201			
9	Proposed – Total Length	162.2			7	1,925			t[1/]
	Proposed – Comparison portion for Alternative 9A	7.8				78			<1
	Alternative 9A	7.7				103			
	Proposed – Comparison portion for Alternative 9B	49.1			t[1/]	727			
	Alternative 9B	52.3				425			
	Proposed – Comparison portion for Alternative 9C	14.4				257			
	Alternative 9C	14.4				165			
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			6	550			
	Alternative 9D	60.1			<1	522			
	Alternative 9F	63.3			5	531			
	Alternative 9G	57.8			1	523			t[1/]
	Alternative 9H	61.0			6	525			t[1/]
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			6	623			
	Alternative 9E (revised)	70.6			3	933			
10	Proposed – Total Length	34.4				128			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of impact

Table D.11-6. Acres of Construction Impacts to BLM and Forest Service Sensitive Species with Available Quantitative Data

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Habitat Impacted by Construction											
			Bald Eagle		Black-Tailed Prairie Dog					Northern Goshawk				
			Within a 1-mile Nest Buffer	Within a 1-mile Winter Roost Buffer	Colony	Complex[1/]	Burrowing Owl	Columbian Sharp-Tailed Grouse	Mountain Plover	Within a 1-mile Nest Buffer	Northern Leopard Frog	Pygmy Rabbit	White-Tailed Prairie Dog	Wyoming Pocket Gopher
1W	1W(a) Proposed – Total Length	73.8	12	59	23	122	514		494	17	8		534	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	12	59	17	99	125		101		2		74	
	Alternative 1W(a)-B	20.9		29	22	269	236		176		<1		132	
	1W(c) Proposed – Total Length	73.6	20	76	34	159	703		700	29	12		724	
2	Proposed – Total Length	91.9	1				1,351		1,254		12	1,219	1,457	521
	Proposed – Comparison portion for Alternative 2A	16.8	1				202		194		6	202	228	9
	Alternative 2A	16.0	43				239		273		14	210	252	23
	Proposed – Comparison portion for Alternative 2B	12.5	1				147		154		6	147	171	9
	Alternative 2B	12.2	42				131		166		20	125	135	26
3	Segment 3 Proposed – Total Length	45.9					525		719		4	468	550	683
	Segment 3A Proposed – Total Length	5.1					34		43		2	34	35	6
4[3/]	Proposed – Total Length	197.6	77				2,079	1,123	1,421	120	131	2,263	2,210	160
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	<1				949	114	701		77	1,312	1,417	
	Alternative 4B	100.2					1,451	176	812		54	1,520	1,683	
	Alternative 4C	101.6					1,525	162	812		50	1,534	1,753	
	Alternative 4D	100.8					1,408	176	814		54	1,477	1,688	
	Alternative 4E	102.2					1,465	158	814		50	1,474	1,743	
	Alternative 4F	87.5	<1				979	123	701		59	1,332	1,379	
5	Proposed –Total Length	55.7	31				521	1,075			8	396		
	Proposed – Comparison portion for Alternatives 5A,B	22.3					194	455			<1	122		
	Alternative 5A	29.7					309	634			1	186		
	Alternative 5B	40.4					486	830			1	254		
	Proposed – Comparison portion for Alternative 5C	32.9					272	719			3	187		
	Alternative 5C	26.0					316	504			6	244		
	Proposed – Comparison portion for Alternative 5D	19.2	31				177	415			6	144		
	Alternative 5D	17.0	25				211	367			4	128		
	Proposed – Comparison portion for Alternative 5E	5.8	31				92	112			3	67		
	Alternative 5E	5.3	2				61	84			2	51		
6	Proposed – Total Length	0.5					43	17			9	43		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] The number of "colony" acres impacted represents colonies that are not part of complexes; the sum of the two numbers, "colonies" and "complexes," adds up to total acres of prairie dog habitat impacted.

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-6. Acres of Construction Impacts to BLM and Forest Service Sensitive Species with Available Quantitative Data cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Habitat Impacted by Construction											
			Bald Eagle		Black-Tailed Prairie Dog		Burrowing Owl	Columbian Sharp-Tailed Grouse	Mountain Plover	Northern Goshawk	Northern Leopard Frog	Pygmy Rabbit	White-Tailed Prairie Dog	Wyoming Pocket Gopher
			Within a 1-mile Nest Buffer	Within a 1-mile Winter Roost Buffer	Colony	Complex[1/]				Within a 1-mile Nest Buffer				
7	Proposed – Total Length	118.2					1,184	1,349			6	781		
	Proposed – Comparison portion for Alternatives 7A,B	35.1					285	639			1	196		
	Alternative 7A	37.7					386	756			9	268		
	Alternative 7B	46.2					537	909			1	296		
	Proposed – Comparison portion for Alternative 7C	20.1					276	285			<1	187		
	Alternative 7C	20.3					313	333				248		
	Proposed – Comparison portion for Alternative 7D	6.2					77	28			4	66		
	Alternative 7D	6.8					96	47			4	86		
	Proposed – Comparison portion for Alternative 7E	3.8					28					28		
	Alternative 7E	4.5					33					32		
	Proposed – Comparison portion for Alternative 7F	10.5					106				<1	81		
	Alternative 7F	10.8					105				<1	76		
	Proposed – Comparison portion for Alternative 7G	3.3					37	51			t[2/]	37		
	Alternative 7G	3.4					54	67			1	51		
	Proposed – Comparison portion for Alternative 7K	118.2					1,183	1,348			6	780		
	Alternative 7K	148.1					1,544	1,878		68	18	1,376		
8	Proposed – Total Length	131.5					2,113				11	2,078		
	Proposed – Comparison portion for Alternative 8A	51.9					684				4	674		
	Alternative 8A	53.6					694				2	595		
	Proposed – Comparison portion for Alternative 8B	45.3					798				1	776		
	Alternative 8B	45.8					593				10	567		
	Proposed – Comparison portion for Alternative 8C	6.5					159				<1	159		
	Alternative 8C	6.4					122				t[2/]	122		
	Proposed – Comparison portion for Alternative 8D	6.9					141				t[2/]	141		
	Alternative 8D	8.1					148				t[2/]	148		
	Proposed – Comparison portion for Alternative 8E	7.0					99					99		
	Alternative 8E	18.3					311				<1	311		
9	Proposed – Total Length	162.2					2,593	34			8	2,225		
	Proposed – Comparison portion for Alternative 9A	7.8					128				1	128		
	Alternative 9A	7.7					137				1	137		
	Proposed – Comparison portion for Alternative 9B	49.1					937				<1	900		
	Alternative 9B	52.3					726				4	689		
	Proposed – Comparison portion for Alternative 9C	14.4					274				<1	236		
	Alternative 9C	14.4					221				t[2/]	202		
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2					783				6	501		
	Alternative 9D	60.1					932				3	917		
	Alternative 9F	63.3					939				11	881		
	Alternative 9G	57.8					939				6	900		
	Alternative 9H	61.0					942				11	860		
	Proposed – Comparison portion for Alternative 9E (revised)	61.4					851				6	568		
	Alternative 9E (revised)	70.6					1,111				3	961		
10	Proposed – Total Length	34.4					319				5	319		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] The number of "colony" acres impacted represents colonies that are not part of complexes; the sum of the two numbers, "colonies" and "complexes," adds up to total acres of prairie dog habitat impacted.

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

Table D.11-7. Acres of Operations Impacts to 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	Preble's Meadow Jumping Mouse	Yellow-Billed Cuckoo
1W	1W(a) Proposed – Total Length	73.8	5			124		23	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5				11		5	
	Alternative 1W(a)-B	20.9				22		1	
	1W(c) Proposed – Total Length	73.6	5			84		15	
2	Proposed –Total Length	91.9	7			228	2	22	
	Proposed – Comparison portion for Alternative 2A	16.8				24		2	
	Alternative 2A	16.0				33		7	
	Proposed – Comparison portion for Alternative 2B	12.5				17		1	
	Alternative 2B	12.2				15		4	
3	Segment 3 Proposed – Total Length	45.9				124	106		
	Segment 3A Proposed – Total Length	5.1				8	12		
4[2/]	Proposed –Total Length	197.6			4	420	356		
	Proposed – Comparison portion for Alternatives 4B-4F	85.2			4	179	181		
	Alternative 4B	100.2			2	232	50		
	Alternative 4C	101.6			2	224	66		
	Alternative 4D	100.8			2	234	51		
	Alternative 4E	102.2			2	222	67		
	Alternative 4F	87.5		77	2	176	190		
5	Proposed – Total Length	55.7				99			
	Proposed – Comparison portion for Alternatives 5A,B	22.3				26			
	Alternative 5A	29.7				38			<1
	Alternative 5B	40.4				44			<1
	Proposed – Comparison portion for Alternative 5C	32.9				41			
	Alternative 5C	26.0				29			1
	Proposed – Comparison portion for Alternative 5D	19.2				35			
	Alternative 5D	17.0				24			1
	Proposed – Comparison portion for Alternative 5E	5.8				17			
	Alternative 5E	5.3				17			
6	Proposed – Total Length	0.5				39			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of occupancy

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-7. Acres of Operations Impacts to 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	Preble's Meadow Jumping Mouse	Yellow-Billed Cuckoo
7	Proposed – Total Length	118.2				112			t[1/]
	Proposed – Comparison portion for Alternatives 7A,B	35.1				29			t[1/]
	Alternative 7A	37.7				43			<1
	Alternative 7B	46.2				50			
	Proposed – Comparison portion for Alternative 7C	20.1				14			
	Alternative 7C	20.3				8			
	Proposed – Comparison portion for Alternative 7D	6.2				5			t[1/]
	Alternative 7D	6.8				5			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			
	Alternative 7F	10.8				15			
	Proposed – Comparison portion for Alternative 7G	3.3				3			
	Alternative 7G	3.4				<1			
	Proposed – Comparison portion for Alternative 7K	118.2				112			t[1/]
	Alternative 7K	148.1				259			t[1/]
8	Proposed – Total Length	131.5			t[1/]	150			t[1/]
	Proposed – Comparison portion for Alternative 8A	51.9				71			t[1/]
	Alternative 8A	53.6				60			t[1/]
	Proposed – Comparison portion for Alternative 8B	45.3			t[1/]	43			
	Alternative 8B	45.8			<1	34			<1
	Proposed – Comparison portion for Alternative 8C	6.5				9			
	Alternative 8C	6.4				8			
	Proposed – Comparison portion for Alternative 8D	6.9				5			
	Alternative 8D	8.1				4			
	Proposed – Comparison portion for Alternative 8E	7.0				4			
	Alternative 8E	18.3				14			
9	Proposed – Total Length	162.2			t[1/]	210			t[1/]
	Proposed – Comparison portion for Alternative 9A	7.8				6			
	Alternative 9A	7.7				9			
	Proposed – Comparison portion for Alternative 9B	49.1				84			
	Alternative 9B	52.3				38			
	Proposed – Comparison portion for Alternative 9C	14.4				24			
	Alternative 9C	14.4				13			
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			1	54			
	Alternative 9D	60.1				39			t[1/]
	Alternative 9F	63.3			1	43			t[1/]
	Alternative 9G	57.8			<1	41			t[1/]
	Alternative 9H	61.0			1	45			t[1/]
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			1	61			
	Alternative 9E (revised)	70.6			<1	90			
10	Proposed – Total Length	34.4				23			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of occupancy

Table D.11-8. Acres of Operations Impacts to BLM and Forest Service Sensitive Species with Available Quantitative Data

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Habitat Impacted by Operation											
			Bald Eagle		Black-Tailed Prairie Dog					Northern Goshawk				
			Within a 1-mile Nest Buffer	Within a 1-mile Winter Roost Buffer	Colony	Complex[1/]	Burrowing Owl	Columbian Sharp-Tailed Grouse	Mountain Plover	Within a 1-mile Nest Buffer	Northern Leopard Frog	Pygmy Rabbit	White-Tailed Prairie Dog	Wyoming Pocket Gopher
1W	1W(a) Proposed – Total Length	73.8	2	11	4	23	107		112	7	2		108	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	2	11	3	18	23		18		<1		13	
	Alternative 1W(a)-B	20.9		7	4	43	37		28		t[2/]		22	
	1W(c) Proposed – Total Length	73.6	2	9	4	15	84		82	23	1		86	
2	Proposed – Total Length	91.9	<1				164		165		2	127	174	57
	Proposed – Comparison portion for Alternative 2A	16.8	<1				16		17		<1	16	18	1
	Alternative 2A	16.0	5				24		29		1	21	25	5
	Proposed – Comparison portion for Alternative 2B	12.5	<1				12		14		<1	12	13	1
	Alternative 2B	12.2	4				11		15		<1	10	11	4
3	Segment 3 Proposed – Total Length	45.9					99		119		<1	87	100	71
	Segment 3A Proposed – Total Length	5.1					6		7		<1	6	6	1
4[3/]	Proposed – Total Length	197.6	8				278	149	208	106	10	317	291	18
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	t[2/]				114	12	82		5	166	178	
	Alternative 4B	100.2					195	20	109		3	211	227	
	Alternative 4C	101.6					197	19	109		2	206	226	
	Alternative 4D	100.8					191	20	110		3	207	231	
	Alternative 4E	102.2					190	18	110		3	199	227	
	Alternative 4F	87.5	t[2/]				118	13	82		3	172	177	
5	Proposed – Total Length	55.7	1				82	156			2	76		
	Proposed – Comparison portion for Alternatives 5A,B	22.3					21	57			t[2/]	15		
	Alternative 5A	29.7					30	77			<1	20		
	Alternative 5B	40.4					44	89			<1	26		
	Proposed – Comparison portion for Alternative 5C	32.9					27	91			1	22		
	Alternative 5C	26.0					32	54			<1	26		
	Proposed – Comparison portion for Alternative 5D	19.2	1				26	56			2	25		
	Alternative 5D	17.0	3				34	46			2	26		
	Proposed – Comparison portion for Alternative 5E	5.8	1				18	18			1	16		
	Alternative 5E	5.3	<1				16	17			1	16		
6	Proposed – Total Length	0.5					41	15			9	41		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] The number of "colony" acres impacted represents colonies that are not part of complexes; the sum of the two numbers, "colonies" and "complexes," adds up to total acres of prairie dog habitat impacted

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-8. Acres of Operations Impacts to BLM and Forest Service Sensitive Species with Available Quantitative Data cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Acres of Habitat Impacted by Operation											
			Bald Eagle		Black-Tailed Prairie Dog					Northern Goshawk				
			Within a 1-mile Nest Buffer	Within a 1-mile Winter Roost Buffer	Colony	Complex[1/]	Burrowing Owl	Columbian Sharp-Tailed Grouse	Mountain Plover	Within a 1-mile Nest Buffer	Northern Leopard Frog	Pygmy Rabbit	White-Tailed Prairie Dog	Wyoming Pocket Gopher
7	Proposed – Total Length	118.2					139	168			<1	100		
	Proposed – Comparison portion for Alternatives 7A,B	35.1					25	68			<1	17		
	Alternative 7A	37.7					37	89			1	26		
	Alternative 7B	46.2					46	94			<1	27		
	Proposed – Comparison portion for Alternative 7C	20.1					29	30			t[2/]	22		
	Alternative 7C	20.3					24	26				19		
	Proposed – Comparison portion for Alternative 7D	6.2					8	1			t[2/]	7		
	Alternative 7D	6.8					10	3			t[2/]	9		
	Proposed – Comparison portion for Alternative 7E	3.8					2					2		
	Alternative 7E	4.5					3					3		
	Proposed – Comparison portion for Alternative 7F	10.5					11				t[2/]	7		
	Alternative 7F	10.8					11				t[2/]	8		
	Proposed – Comparison portion for Alternative 7G	3.3					3	4			t[2/]	3		
	Alternative 7G	3.4					3	3			t[2/]	3		
	Proposed – Comparison portion for Alternative 7K	118.2					139	167			<1	100		
	Alternative 7K	148.1					188	244		61	3	179		
8	Proposed – Total Length	131.5					215				1	212		
	Proposed – Comparison portion for Alternative 8A	51.9					80				<1	79		
	Alternative 8A	53.6					80				<1	71		
	Proposed – Comparison portion for Alternative 8B	45.3					77				<1	75		
	Alternative 8B	45.8					54				<1	53		
	Proposed – Comparison portion for Alternative 8C	6.5					15				t[2/]	15		
	Alternative 8C	6.4					15				t[2/]	15		
	Proposed – Comparison portion for Alternative 8D	6.9					13				t[2/]	13		
	Alternative 8D	8.1					12				t[2/]	12		
	Proposed – Comparison portion for Alternative 8E	7.0					8					8		
	Alternative 8E	18.3					24					24		
9	Proposed – Total Length	162.2					291	3			1	252		
	Proposed – Comparison portion for Alternative 9A	7.8					13				t[2/]	13		
	Alternative 9A	7.7					13				<1	13		
	Proposed – Comparison portion for Alternative 9B	49.1					115				t[2/]	111		
	Alternative 9B	52.3					68				<1	66		
	Proposed – Comparison portion for Alternative 9C	14.4					23				t[2/]	19		
	Alternative 9C	14.4					20				t[2/]	19		
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2					76				1	46		
	Alternative 9D	60.1					73				t[2/]	72		
	Alternative 9F	63.3					75				1	70		
	Alternative 9G	57.8					77				<1	74		
	Alternative 9H	61.0					79				1	71		
	Proposed – Comparison portion for Alternative 9E (revised)	61.4					83				1	53		
	Alternative 9E (revised)	70.6					114				<1	95		
10	Proposed – Total Length	34.4					30				<1	30		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] The number of "colony" acres impacted represents colonies that are not part of complexes; the sum of the two numbers, "colonies" and "complexes," adds up to total acres of prairie dog habitat impacted

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

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
1W	1W(a) Proposed – Total Length	73.8							9(2)		12(2)		16(5)		46(16)	4(2)
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5							3		4		4		15	1
	Alternative 1W(a)-B	20.9					1		2		2		3		16	2
	1W(c) Proposed – Total Length	73.6					1		6(1)		13(3)		17(5)	1	49(18)	6(4)
2	Proposed – Total Length	91.9			2(1)		5(3)	2(2)	15(7)	2(2)	32(16)	2(2)	41(21)	2(2)	130(59)	8(6)
	Proposed – Comparison portion for Alternative 2A	16.8							1(1)	1(1)	7(4)	1(1)	9(4)	1(1)	46(17)	4(3)
	Alternative 2A	16.0							1(1)	1(1)	7(4)	1(1)	10(4)	1(1)	46(17)	4(3)
	Proposed – Comparison portion for Alternative 2B	12.5							1(1)		1(1)		1(1)		38(14)	2(1)
	Alternative 2B	12.2							1(1)		1(1)		2(1)		38(14)	2(1)
3	Segment 3 Proposed – Total Length	45.9							1(1)		3(3)		4(3)		35(17)	1
	Segment 3A Proposed – Total Length	5.1													12(4)	1
4[2/]	Proposed – Total Length	197.6			2(2)	1(1)	6(4)	2(1)	14(8)	8(3)	24(13)	8(3)	29(14)	10(5)	106(62)	23(10)
	Proposed – Comparison portion for Alternatives 4B-4F	85.2			2(2)	1(1)	5(3)	1(1)	12(7)	5(3)	19(11)	5(3)	22(11)	8(5)	75(47)	18(9)
	Alternative 4B	100.2			1		3(2)		13(7)		30(19)	1(1)	40(26)	5(3)	95(58)	17(7)
	Alternative 4C	101.6					3(2)		17(9)		31(20)	2(1)	40(27)	5(3)	95(58)	17(7)
	Alternative 4D	100.8			1		2(1)		15(9)		27(17)	1(1)	35(22)	5(3)	95(58)	17(7)
	Alternative 4E	102.2					2(1)		19(11)		28(18)	2(1)	35(23)	5(3)	95(58)	17(7)
	Alternative 4F	87.5			2(2)	1(1)	7(5)	1(1)	12(8)	4(3)	23(12)	4(3)	25(12)	7(5)	73(46)	18(9)
5	Proposed – Total Length	55.7	1		1		1		1		1		1		2	3
	Proposed – Comparison portion for Alternatives 5A,B	22.3	1		1		1		1		1		1		2	2
	Alternative 5A	29.7									1		1	1	5(1)	5(1)
	Alternative 5B	40.4								1	1	3	2	4	14(8)	10(3)
	Proposed – Comparison portion for Alternative 5C	32.9	1		1		1		1		1		1		2	2
	Alternative 5C	26.0											1		1	1
	Proposed – Comparison portion for Alternative 5D	19.2													1	
	Alternative 5D	17.0													1	
	Proposed – Comparison portion for Alternative 5E	5.8														
	Alternative 5E	5.3														
6	Proposed – Total Length	0.5														6(5)

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

The numbers in parentheses indicate the number of leks located on federally managed lands (e.g., a "4(2)" value indicates there are 4 leks within the buffer distance, 2 of which are located on federally managed lands)

[1/] Refers to leks that have been defined as occupied in Wyoming and Idaho, and all leks in Nevada and Utah

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

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	118.2			1	1	1	3(2)	2(1)	3(2)	3(2)	7(5)	7(6)	10(7)	43(37)	28(22)
	Proposed – Comparison portion for Alternatives 7A,B	35.1			1		1		1		1		1	1(1)	2	4(1)
	Alternative 7A	37.7							1		1		1	2(1)	5(1)	8(2)
	Alternative 7B	46.2							1	2	2	4	2	6(2)	16(10)	12(4)
	Proposed – Comparison portion for Alternative 7C	20.1								1(1)		1(1)	1(1)	2(1)	4(3)	6(4)
	Alternative 7C	20.3								2(1)		2(1)	1(1)	2(1)	4(3)	6(4)
	Proposed – Comparison portion for Alternative 7D	6.2									1(1)	4(3)	3(3)	4(3)	5(3)	5(4)
	Alternative 7D	6.8									1(1)	4(3)	3(3)	4(3)	5(3)	5(4)
	Proposed – Comparison portion for Alternative 7E	3.8						1(1)		1(1)		2(1)		2(1)	7(5)	6(5)
	Alternative 7E	4.5						1(1)		2(1)		2(1)		2(1)	8(6)	6(5)
	Proposed – Comparison portion for Alternative 7F	10.5						1(1)		1(1)		2(1)		2(1)	9(6)	6(5)
	Alternative 7F	10.8		1(1)		1(1)		1(1)		2(1)		2(1)		2(1)	10(7)	6(5)
	Proposed – Comparison portion for Alternative 7G	3.3							1(1)		1(1)	1(1)	3(3)	2(2)	31(30)	16(15)
	Alternative 7G	3.4							1(1)		1(1)	1(1)	2(2)	2(2)	31(30)	16(15)
	Proposed – Comparison portion for Alternative 7K	118.2			1	1	1	3(2)	2(1)	3(2)	3(2)	7(5)	7(6)	10(7)	43(37)	28(22)
	Alternative 7K	148.1			4(4)	1(1)	7(7)	2(1)	17(13)	17(11)	20(15)	27(17)	34(25)	30(19)	100(66)	67(42)
8	Proposed – Total Length	131.5									2(2)	3(1)	2(2)	5(3)	22(18)	31(25)
	Proposed – Comparison portion for Alternative 8A	51.9									1(1)	1(1)	1(1)	4(3)	14(13)	25(22)
	Alternative 8A	53.6											1(1)	2(1)	1(1)	15(12)
	Proposed – Comparison portion for Alternative 8B	45.3													5(5)	3(3)
	Alternative 8B	45.8													4(4)	3(3)
	Proposed – Comparison portion for Alternative 8C	6.5													1(1)	
	Alternative 8C	6.4													1(1)	
	Proposed – Comparison portion for Alternative 8D	6.9														
	Alternative 8D	8.1														
	Proposed – Comparison portion for Alternative 8E	7.0													1(1)	1(1)
	Alternative 8E	18.3													1(1)	2(2)
9	Proposed – Total Length	162.2				1(1)		1(1)	1(1)	2(2)	1(1)	6(5)	9(9)	10(9)	59(55)	58(54)
	Proposed – Comparison portion for Alternative 9A	7.8											1(1)		25(23)	6(5)
	Alternative 9A	7.7											1(1)		25(23)	6(5)
	Proposed – Comparison portion for Alternative 9B	49.1							1(1)		1(1)		3(3)	2(2)	11(11)	16(14)
	Alternative 9B	52.3											1(1)		7(7)	13(12)
	Proposed – Comparison portion for Alternative 9C	14.4							1(1)		1(1)		3(3)	2(2)	10(10)	16(14)
	Alternative 9C	14.4											1(1)		8(8)	16(14)
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2				1(1)		1(1)		1(1)		3(3)	1(1)	5(5)	13(11)	21(20)
	Alternative 9D	60.1											1(1)	1(1)	3(3)	6(6)
	Alternative 9F	63.3											1(1)	1(1)	3(3)	7(7)
	Alternative 9G	57.8											1(1)	1(1)	3(3)	8(8)
	Alternative 9H	61.0											1(1)	1(1)	3(3)	9(9)
	Proposed – Comparison portion for Alternative 9E (revised)	61.4				1(1)		1(1)		1(1)		3(3)	1(1)	5(5)	15(13)	21(20)
	Alternative 9E (revised)	70.6								1(1)	3(1)	8(7)	5(4)	12(11)	16(13)	28(27)
10	Proposed – Total Length	34.4		1(1)		2(1)		3(2)		5(4)		7(6)	1(1)	7(6)	27(26)	22(20)
	Grand Total for the Proposed Routes		**1**	**1(1)**	**4(3)**	**5(3)**	**10(6)**	**11(8)**	**22(13)**	**20(13)**	**43(25)**	**31(20)**	**64(38)**	**42(30)**	**280(171)**	**132(101)**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

The numbers in parentheses indicate the number of leks located on federally managed lands (e.g., a "4(2)" value indicates there are 4 leks within the buffer distance, 2 of which are located on federally managed lands)

[1/] Refers to leks that have been defined as occupied in Wyoming and Idaho, and all leks in Nevada and Utah

Table D.11-10. Number of Columbian Sharp-Tailed 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		2-mile Buffer	
			Occupied[1/]	Undetermined	Occupied[1/]	Undetermined	Occupied[1/]	Undetermined
1W	1W(a) Proposed – Total Length	73.8						
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5						
	Alternative 1W(a)-B	20.9						
	1W(c) Proposed – Total Length	73.6						
2	Proposed – Total Length	91.9						
	Proposed – Comparison portion for Alternative 2A	16.8						
	Alternative 2A	16.0						
	Proposed – Comparison portion for Alternative 2B	12.5						
	Alternative 2B	12.2						
3	Segment 3 Proposed – Total Length	45.9						
	Segment 3A Proposed – Total Length	5.1						
4[2/]	Proposed – Total Length	197.6	2		3		13	1
	Proposed – Comparison portion for Alternatives 4B-4F	85.2						
	Alternative 4B	100.2						
	Alternative 4C	101.6						
	Alternative 4D	100.8						
	Alternative 4E	102.2						
	Alternative 4F	87.5						
5	Proposed – Total Length	55.7	1		4		17	2
	Proposed – Comparison portion for Alternatives 5A,B	22.3	1		3		11	2
	Alternative 5A	29.7	2		5	1	12	2
	Alternative 5B	40.4	1		3	1	16	3
	Proposed – Comparison portion for Alternative 5C	32.9	1		4		16	2
	Alternative 5C	26.0			1		9	1
	Proposed – Comparison portion for Alternative 5D	19.2			1		6	1
	Alternative 5D	17.0	1		1		4	1
	Proposed – Comparison portion for Alternative 5E	5.8					2	
	Alternative 5E	5.3					2	
6	Proposed – Total Length	0.5						

Note: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Refers to leks that have been defined as occupied in Wyoming and Idaho, and all leks in Nevada

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-10. Number of Columbian Sharp-Tailed 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		2-mile Buffer	
			Occupied[1/]	Undetermined	Occupied[1/]	Undetermined	Occupied[1/]	Undetermined
7	Proposed – Total Length	118.2	1		4		25	4
	Proposed – Comparison portion for Alternatives 7A,B	35.1	1		3		22	2
	Alternative 7A	37.7	1		3		20	2
	Alternative 7B	46.2			1		21	5
	Proposed – Comparison portion for Alternative 7C	20.1			1		2	2
	Alternative 7C	20.3	1		1		7	1
	Proposed – Comparison portion for Alternative 7D	6.2						
	Alternative 7D	6.8						
	Proposed – Comparison portion for Alternative 7E	3.8						
	Alternative 7E	4.5						
	Proposed – Comparison portion for Alternative 7F	10.5						
	Alternative 7F	10.8						
	Proposed – Comparison portion for Alternative 7G	3.3						
	Alternative 7G	3.4						
	Proposed – Comparison portion for Alternative 7K	118.2	1		4		25	4
	Alternative 7K	148.1		1	3	2	15(1)	13(3)
8	Proposed – Total Length	131.5						
	Proposed – Comparison portion for Alternative 8A	51.9						
	Alternative 8A	53.6						
	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	18.3						
9	Proposed – Total Length	162.2						
	Proposed – Comparison portion for Alternative 9A	7.8						
	Alternative 9A	7.7						
	Proposed – Comparison portion for Alternative 9B	49.1						
	Alternative 9B	52.3						
	Proposed – Comparison portion for Alternative 9C	14.4						
	Alternative 9C	14.4						
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2						
	Alternative 9D	60.1						
	Alternative 9F	63.3						
	Alternative 9G	57.8						
	Alternative 9H	61.0						
	Proposed – Comparison portion for Alternative 9E (revised)	61.4						
	Alternative 9E (revised)	70.6						
10	Proposed – Total Length	34.4						

Note: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Refers to leks that have been defined as occupied in Wyoming and Idaho, and all leks in Nevada

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	Preliminary Priority Habitats	Preliminary General Habitats
1W	1W(a) Proposed – Total Length	73.8	25.8						
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	0.9						
	Alternative 1W(a)-B	20.9	9.1						
	1W(c) Proposed – Total Length	73.6	24.8						
2	Proposed – Total Length	91.9	40.9						
	Proposed – Comparison portion for Alternative 2A	16.8	4.0						
	Alternative 2A	16.0	4.5						
	Proposed – Comparison portion for Alternative 2B	12.5							
	Alternative 2B	12.2							
3	Segment 3 Proposed – Total Length	45.9							
	Segment 3A Proposed – Total Length	5.1							
4[1/]	Proposed – Total Length	197.6	40.2	14.6				9.2	5.4
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	28.4	2.6				2.6	
	Alternative 4B	100.2	44.0	4.9	0.3			5.2	
	Alternative 4C	101.6	56.4	4.9	0.3			5.2	
	Alternative 4D	100.8	44.6	4.9	0.3			5.2	
	Alternative 4E	102.2	57.0	4.9	0.3			5.2	
	Alternative 4F	87.5	27.0	2.6				2.6	
5	Proposed – Total Length	55.7							
	Proposed – Comparison portion for Alternatives 5A,B	22.3							
	Alternative 5A	29.7		2.9					2.8
	Alternative 5B	40.4		9.1	0.8			1.5	10.9
	Proposed – Comparison portion for Alternative 5C	32.9							
	Alternative 5C	26.0							
	Proposed – Comparison portion for Alternative 5D	19.2							
	Alternative 5D	17.0							
	Proposed – Comparison portion for Alternative 5E	5.8							
	Alternative 5E	5.3							
6	Proposed – Total Length	0.5			0.3				0.3

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

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	Preliminary Priority Habitats Crossed	Preliminary General Habitats Crossed
7	Proposed – Total Length	118.2		11.9	16.5		5.1	8.4	25.1
	Proposed – Comparison portion for Alternatives 7A,B	35.1							
	Alternative 7A	37.7		4.6				1.3	3.4
	Alternative 7B	46.2		7.9	1.1			2.3	9.6
	Proposed – Comparison portion for Alternative 7C	20.1		0.2	11.0				11.2
	Alternative 7C	20.3			11.0				11.0
	Proposed – Comparison portion for Alternative 7D	6.2		1.7	3.2		0.3	3.0	2.2
	Alternative 7D	6.8		2.5	1.7		0.3	1.4	3.1
	Proposed – Comparison portion for Alternative 7E	3.8		3.0			0.6	0.7	2.9
	Alternative 7E	4.5		3.2			1.3	3.5	1.0
	Proposed – Comparison portion for Alternative 7F	10.5		5.1			1.4	2.3	4.2
	Alternative 7F	10.8		3.3			2.0	4.9	0.4
	Proposed – Comparison portion for Alternative 7G	3.3		3.3				0.7	2.6
	Alternative 7G	3.4		3.4					3.4
	Proposed – Comparison portion for Alternative 7K	118.2		11.9	16.5		5.1	8.4	25.1
	Alternative 7K	148.1		49.1	39.4	1.8	18.9	72.6	42.8
8	Proposed – Total Length	131.5		15.1	20.0	11.4		6.6	21.1
	Proposed – Comparison portion for Alternative 8A	51.9		7.8	19.1	8.9		6.6	13.4
	Alternative 8A	53.6			15.6	5.7			15.6
	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	18.3							
9	Proposed – Total Length	162.2		11.2	10.0			16.0	25.8
	Proposed – Comparison portion for Alternative 9A	7.8		0.2				0.2	2.5
	Alternative 9A	7.7		2.2				2.2	1.0
	Proposed – Comparison portion for Alternative 9B	49.1		6.3	8.7			11.7	12.5
	Alternative 9B	52.3							
	Proposed – Comparison portion for Alternative 9C	14.4		5.0	8.6			11.7	1.9
	Alternative 9C	14.4			0.9				0.7
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2							0.5
	Alternative 9D	60.1							0.2
	Alternative 9F	63.3							0.2
	Alternative 9G	57.8							0.3
	Alternative 9H	61.0							0.3
	Proposed – Comparison portion for Alternative 9E (revised)	61.4							4.7
	Alternative 9E (revised)	70.6		18.2	5.4	15.2			12.8
10	Proposed – Total Length	34.4		0.1	6.0	5.7			6.0

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

Table D.11-14. Acres of Construction Impacts to Agency Designated Greater Sage-Grouse Habitat

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Core Areas Crossed	Key Areas Crossed	R1 Habitats Crossed	R2 Habitats Crossed	R3 Habitats Crossed	Preliminary Priority Habitats Crossed	Preliminary General Habitats Crossed
1W	1W(a) Proposed – Total Length	73.8	289						
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	9						
	Alternative 1W(a)-B	20.9	137						
	1W(c) Proposed – Total Length	73.6	298						
2	Proposed – Total Length	91.9	717						
	Proposed – Comparison portion for Alternative 2A	16.8	69						
	Alternative 2A	16.0	91						
	Proposed – Comparison portion for Alternative 2B	12.5							
	Alternative 2B	12.2							
3	Segment 3 Proposed – Total Length	45.9							
	Segment 3A Proposed – Total Length	5.1							
4[1/]	Proposed – Total Length	197.6	792	284				157	127
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	588	48				48	
	Alternative 4B	100.2	855	117	6			124	
	Alternative 4C	101.6	1,024	104	6			110	
	Alternative 4D	100.8	880	118	6			124	
	Alternative 4E	102.2	1,042	100	6			106	
	Alternative 4F	87.5	587	57				57	
5	Proposed – Total Length	55.7							
	Proposed – Comparison portion for Alternatives 5A,B	22.3							
	Alternative 5A	29.7		46	<1			2	42
	Alternative 5B	40.4		166	20			42	200
	Proposed – Comparison portion for Alternative 5C	32.9							
	Alternative 5C	26.0							
	Proposed – Comparison portion for Alternative 5D	19.2							
	Alternative 5D	17.0							
	Proposed – Comparison portion for Alternative 5E	5.8							
	Alternative 5E	5.3							
6	Proposed – Total Length	0.5			15				15

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-14. Acres of Construction Impacts to Agency Designated Greater Sage-Grouse Habitat 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	Preliminary Priority Habitats Crossed	Preliminary General Habitats Crossed
7	Proposed – Total Length	118.2		219	315		75	145	463
	Proposed – Comparison portion for Alternatives 7A,B	35.1							
	Alternative 7A	37.7		70	<1			16	53
	Alternative 7B	46.2		127	25			38	174
	Proposed – Comparison portion for Alternative 7C	20.1		2	220				222
	Alternative 7C	20.3		t[2/]	211				211
	Proposed – Comparison portion for Alternative 7D	6.2		27	71		3	40	61
	Alternative 7D	6.8		34	63		3	19	80
	Proposed – Comparison portion for Alternative 7E	3.8		50			7	11	46
	Alternative 7E	4.5		70			14	68	16
	Proposed – Comparison portion for Alternative 7F	10.5		97			21	53	65
	Alternative 7F	10.8		63			51	105	9
	Proposed – Comparison portion for Alternative 7G	3.3		61				14	47
	Alternative 7G	3.4		82				1	82
	Proposed – Comparison portion for Alternative 7K	118.2		218	315		74	144	462
	Alternative 7K	148.1		946	735	26	370	1386	826
8	Proposed – Total Length	131.5		251	379	200		127	408
	Proposed – Comparison portion for Alternative 8A	51.9		114	350	147		127	246
	Alternative 8A	53.6			242	70			238
	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	18.3							
9	Proposed – Total Length	162.2		226	180	1		292	507
	Proposed – Comparison portion for Alternative 9A	7.8		10				10	48
	Alternative 9A	7.7		40				40	26
	Proposed – Comparison portion for Alternative 9B	49.1		122	170	1		222	246
	Alternative 9B	52.3			20				5
	Proposed – Comparison portion for Alternative 9C	14.4		103	162			222	29
	Alternative 9C	14.4			31				19
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2							16
	Alternative 9D	60.1							9
	Alternative 9F	63.3							9
	Alternative 9G	57.8							10
	Alternative 9H	61.0							10
	Proposed – Comparison portion for Alternative 9E (revised)	61.4							97
	Alternative 9E (revised)	70.6		7	85	227		7	240
10	Proposed – Total Length	34.4		14	93	137			107

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

Table D.11-15. Acres of Operations Impacts to Agency Designated Greater Sage-Grouse Habitat

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Core Areas Crossed	Key Areas Crossed	R1 Habitats Crossed	R2 Habitats Crossed	R3 Habitats Crossed	Preliminary Priority Habitats Crossed	Preliminary General Habitats Crossed
1W	1W(a) Proposed – Total Length	73.8	62						
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	1						
	Alternative 1W(a)-B	20.9	23						
	1W(c) Proposed – Total Length	73.6	34						
2	Proposed – Total Length	91.9	90						
	Proposed – Comparison portion for Alternative 2A	16.8	7						
	Alternative 2A	16.0	12						
	Proposed – Comparison portion for Alternative 2B	12.5							
	Alternative 2B	12.2							
3	Segment 3 Proposed – Total Length	45.9							
	Segment 3A Proposed – Total Length	5.1							
4[2/]	Proposed – Total Length	197.6	101	33				18	15
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	78	5				5	
	Alternative 4B	100.2	111	13	2			14	
	Alternative 4C	101.6	131	12	2			14	
	Alternative 4D	100.8	117	13	2			14	
	Alternative 4E	102.2	137	11	2			13	
	Alternative 4F	87.5	81	6				6	
5	Proposed – Total Length	55.7							
	Proposed – Comparison portion for Alternatives 5A,B	22.3							
	Alternative 5A	29.7		7	t[1/]			1	6
	Alternative 5B	40.4		23	2			4	29
	Proposed – Comparison portion for Alternative 5C	32.9							
	Alternative 5C	26.0							
	Proposed – Comparison portion for Alternative 5D	19.2							
	Alternative 5D	17.0							
	Proposed – Comparison portion for Alternative 5E	5.8							
	Alternative 5E	5.3							
6	Proposed – Total Length	0.5			15				15

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

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[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-15. Acres of Operations Impacts to Agency Designated Greater Sage-Grouse Habitat 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	Preliminary Priority Habitats Crossed	Preliminary General Habitats Crossed
7	Proposed – Total Length	118.2		27	35		8	14	56
	Proposed – Comparison portion for Alternatives 7A,B	35.1							
	Alternative 7A	37.7		10	t[1/]			2	8
	Alternative 7B	46.2		20	4			6	26
	Proposed – Comparison portion for Alternative 7C	20.1		<1	24				25
	Alternative 7C	20.3			16				16
	Proposed – Comparison portion for Alternative 7D	6.2		4	5		<1	5	4
	Alternative 7D	6.8		5	3		<1	3	6
	Proposed – Comparison portion for Alternative 7E	3.8		4			1		4
	Alternative 7E	4.5		7			2	7	1
	Proposed – Comparison portion for Alternative 7F	10.5		9			3	4	8
	Alternative 7F	10.8		7			4	10	1
	Proposed – Comparison portion for Alternative 7G	3.3		5				1	4
	Alternative 7G	3.4		5					5
	Proposed – Comparison portion for Alternative 7K	118.2		27	35		8	14	56
	Alternative 7K	148.1		131	81	4	55	175	112
8	Proposed – Total Length	131.5		29	39	16		12	43
	Proposed – Comparison portion for Alternative 8A	51.9		16	38	13		12	29
	Alternative 8A	53.6			29	8			28
	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	18.3							
9	Proposed – Total Length	162.2		28	17	<1		29	66
	Proposed – Comparison portion for Alternative 9A	7.8		<1					6
	Alternative 9A	7.7		3				3	3
	Proposed – Comparison portion for Alternative 9B	49.1		14	16	<1		22	32
	Alternative 9B	52.3							
	Proposed – Comparison portion for Alternative 9C	14.4		12	13			22	3
	Alternative 9C	14.4			2				1
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2							2
	Alternative 9D	60.1							<1
	Alternative 9F	63.3							<1
	Alternative 9G	57.8							<1
	Alternative 9H	61.0							<1
	Proposed – Comparison portion for Alternative 9E (revised)	61.4							10
	Alternative 9E (revised)	70.6		2	9	22		2	28
10	Proposed – Total Length	34.4		7	8	9			14

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

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[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.11-16. Sightlines from Occupied and Undetermined Sage-Grouse Leks on Federally Managed Lands that are Located within 4 miles of Construction Sites Proposed on Federally Managed Lands

Lek ID	Agency	Management Status	Route Associated with Closest Disturbance or Centerline[1/]	Distance to Closest Disturbance or Project Centerline (miles)	Visible Distance (sightline) from Lek Toward Project (miles)	Distance to Existing Features Crossing Sightline (miles)[2/]	Distance to Closest Existing Features that do Not Cross Sightline (miles)[3/]	Other Routes within 4 miles[1/]
1O062	Bankhead Jones	Occupied	Alternative 7K	1.00	0.09			
1O069	Bankhead Jones	Undetermined	Alternative 7K	1.48	0.03		1.14	7B
22-2281293	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	3.68	0.12	0.74		
22-2282061	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	2.40	0.06			
22-2283321	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.72	0.14			2A
22-2283324	Bureau of Land Management	Undetermined	Segment 2 Proposed - Total Length	0.95	0.75			2A
22-2382221	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	2.50	0.29			
22-2382283	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.68	0.20			
22-2382343	Bureau of Land Management	Undetermined	Segment 2 Proposed - Total Length	0.86	0.12			
22-2481083	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	3.90	0.37	1.44		
22-Hanna Draw East 1	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.84	0.38			
22-Hanna Draw East 2	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	2.34	0.17			
22-Missouri John	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	3.55	0.06			
25-Cherokee Towers	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.23	0.14		0.22	
25-Creston	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	2.84	0.01		0.19	
25-Fox Farm	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.48	0.57			
25-Lake Bed	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	0.55	0.05			
25-Ram Canyon	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.01	0.04			
25-Scottys Peak	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.53	0.21			
25-Separation Hilltop	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	2.33	0.09			
25-Smith Draw	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	1.75	0.20			2A, 2B
25-South Cherokee	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	2.95	0.12	1.42		
25-SW Riner	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	0.86	0.29			
25-West Seaverson	Bureau of Land Management	Occupied	Segment 2 Proposed - Total Length	3.57	0.03			
27-2878143	Bureau of Land Management	Occupied	Segment 1W(c) Proposed - Total Length	3.51	0.30	2.34		1W(a)
27-Bates Creek Reservoir	Bureau of Land Management	Occupied	Segment 1W(a) Proposed - Total Length	0.08	0.08			1W(c)
27-East Fork	Bureau of Land Management	Occupied	Segment 1W(c) Proposed - Total Length	2.73	0.25			1W(a)
27-Upper Lone Tree	Bureau of Land Management	Occupied	Segment 1W(a) Proposed - Total Length	1.27	0.67			1W(c)
2B013	Bureau of Land Management	Occupied	Alternative 4B	1.95	0.06			4C,4D,4E
2B018	Bureau of Land Management	Undetermined	Alternative 4B	3.45	0.98		0.28	4C,4D,4E
2B019	Bureau of Land Management	Undetermined	Alternative 4B	3.64	0.60		0.12	4C,4D,4E
2B021	Bureau of Land Management	Undetermined	Alternative 4B	2.68	0.20		1.39	4,4C,4D,4E,4F
2B035	Bureau of Land Management	Occupied	Segment 4 Proposed - Total Length	0.76	0.03			
2J010	Bureau of Land Management	Undetermined	Segment 10 Proposed - Total Length	2.21	0.33	1.77		
2J012	Bureau of Land Management	Undetermined	Segment 10 Proposed - Total Length	1.22	0.11	0.81		
2J013	Bureau of Land Management	Undetermined	Segment 10 Proposed - Total Length	0.77	0.24	0.34		
2J014	Bureau of Land Management	Undetermined	Segment 10 Proposed - Total Length	0.00	0.00			
2J017	Bureau of Land Management	Undetermined	Segment 10 Proposed - Total Length	1.44	0.24			
2O164	Bureau of Land Management	Undetermined	Segment 9 Proposed - Total Length	2.14	0.96			
2O189	Bureau of Land Management	Occupied	Alternative 9E (revised)	3.66	0.04			
2O192	Bureau of Land Management	Undetermined	Alternative 9E (revised)	1.70	0.61			
2O193	Bureau of Land Management	Undetermined	Alternative 9E (revised)	1.72	0.02			
2O197	Bureau of Land Management	Occupied	Alternative 9E (revised)	2.26	0.15			
2O199	Bureau of Land Management	Undetermined	Alternative 9E (revised)	3.94	0.37			
2O200	Bureau of Land Management	Undetermined	Alternative 9E (revised)	3.80	0.25			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Blank cells indicate zero miles or null value

[1/] Alternative 4G was added in late 2012 and was therefore not included in this table

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Table D.11-16. Sightlines from Occupied and Undetermined Sage-Grouse Leks on Federally Managed Lands that are Located within 4 miles of Construction Sites Proposed on Federally Managed Lands cont.

Lek ID	Agency	Management Status	Route Associated with Closest Disturbance or Centerline[1/]	Distance to Closest Disturbance or Project Centerline (miles)	Visible Distance (sightline) from Lek Toward Project (miles)	Distance to Existing Features Crossing Sightline (miles)[2/]	Distance to Closest Existing Features that do Not Cross Sightline (miles)[3/]	Other Routes within 4 miles[1/]
2O201	Bureau of Land Management	Occupied	Alternative 9E (revised)	2.46	0.02			
2O204	Bureau of Land Management	Undetermined	Alternative 9E (revised)	1.06	0.08			
2O205	Bureau of Land Management	Undetermined	Alternative 9E (revised)	2.41	0.03			
2O278	Bureau of Land Management	Undetermined	Segment 9 Proposed - Total Length	0.32	0.02			
2O441	Bureau of Land Management	Undetermined	Alternative 9E (revised)	2.26	0.02			9
2O442	Bureau of Land Management	Undetermined	Alternative 9E (revised)	2.85	0.07			9
2O442a	Bureau of Land Management	Undetermined	Alternative 9E (revised)	3.11	0.10			
2O618	Bureau of Land Management	Occupied	Alternative 9E (revised)	1.33	0.13			9,9D,9F,9G,9H,9I
2O629	Bureau of Land Management	Undetermined	Segment 9 Proposed - Total Length	2.12	0.08			9E
2O641	Bureau of Land Management	Undetermined	Alternative 9E (revised)	1.31	0.07			9,9D,9F,9G,9H,9I
2T010	Bureau of Land Management	Undetermined	Segment 9 Proposed - Total Length	2.69	0.39			
2T014	Bureau of Land Management	Undetermined	Segment 9 Proposed - Total Length	2.51	1.10			
2T016	Bureau of Land Management	Occupied	Segment 9 Proposed - Total Length	3.20	0.47	3.16		
2T063	Bureau of Land Management	Occupied	Alternative 7K	3.72	0.10		0.04	9
2T064	Bureau of Land Management	Occupied	Segment 9 Proposed - Total Length	3.04	0.06	2.93		9A
2T138	Bureau of Land Management	Undetermined	Segment 9 Proposed - Total Length	1.14	0.36			
2T149	Bureau of Land Management	Occupied	Segment 9 Proposed - Total Length	1.68	0.55			9B,9C
2T151	Bureau of Land Management	Occupied	Segment 9 Proposed - Total Length	1.09	0.17			
2T152	Bureau of Land Management	Occupied	Segment 9 Proposed - Total Length	2.19	0.83			
2T156	Bureau of Land Management	Occupied	Segment 9 Proposed - Total Length	3.28	0.81			
4-Alkali Creek East	Bureau of Land Management	Occupied	Alternative 4F	0.95	0.03			4
4-Alkali Creek West	Bureau of Land Management	Undetermined	Alternative 4F	1.05	0.04			4
4C014	National Forest	Undetermined	Alternative 7K	3.85	0.15		2.83	
4C015	National Forest	Occupied	Alternative 7K	3.18	0.07		2.09	
4C016	National Forest	Occupied	Alternative 7K	3.18	0.19		1.95	
4C017	National Forest	Occupied	Alternative 7K	2.22	0.31			
4C018	Bureau of Land Management	Occupied	Alternative 7K	1.19	0.04			
4C019	National Forest	Undetermined	Alternative 7K	1.33	0.22			
4C020	National Forest	Undetermined	Alternative 7K	1.16	0.42			
4C027	Bureau of Land Management	Undetermined	Alternative 7K	0.46	0.04			
4C028	Bureau of Land Management	Occupied	Alternative 7K	1.71	0.25		0.18	
4C029	Bureau of Land Management	Undetermined	Segment 7 Proposed - Total Length	2.83	0.08			7D
4C030	Bureau of Land Management	Undetermined	Alternative 7K	1.07	0.09			
4C036	Bureau of Land Management	Undetermined	Alternative 7K	2.29	0.05		1.57	
4C037	Bureau of Land Management	Undetermined	Segment 7 Proposed - Total Length	0.68	0.10			7A,7B,7C
4C052	Bureau of Land Management	Occupied	Alternative 7K	0.74	0.02			
4C063	National Forest	Occupied	Alternative 7K	3.37	0.09			
4C068	Bureau of Land Management	Undetermined	Alternative 7K	2.19	0.06		0.66	
4C069	Bureau of Land Management	Undetermined	Alternative 7K	0.90	0.17			
4C070	Bureau of Land Management	Undetermined	Alternative 7K	1.19	0.15			7
4C071	Bureau of Land Management	Undetermined	Alternative 7K	0.34	0.02			7,7G
4C091	Bureau of Land Management	Undetermined	Alternative 7K	3.45	0.29	1.77		
4C096	National Forest	Undetermined	Alternative 7K	2.58	0.15	0.14		
4C097	National Forest	Occupied	Alternative 7K	3.47	0.06	0.01		
4C099	National Forest	Undetermined	Alternative 7K	3.26	0.50		0.65	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Table D.11-16. Sightlines from Occupied and Undetermined Sage-Grouse Leks on Federally Managed Lands that are Located within 4 miles of Construction Sites Proposed on Federally Managed Lands cont.

Lek ID	Agency	Management Status	Route Associated with Closest Disturbance or Centerline[1/]	Distance to Closest Disturbance or Project Centerline (miles)	Visible Distance (sightline) from Lek Toward Project (miles)	Distance to Existing Features Crossing Sightline (miles)[2/]	Distance to Closest Existing Features that do Not Cross Sightline (miles)[3/]	Other Routes within 4 miles[1/]
4C100	National Forest	Undetermined	Alternative 7K	3.71	0.57		1.04	
4C101	Bureau of Land Management	Occupied	Alternative 7K	0.74	0.28			7,7G,9,10
4C102	National Forest	Occupied	Alternative 7K	3.45	0.07	1.66		
4C106	National Forest	Undetermined	Alternative 7K	3.93	0.02		1.57	
4C110	Bureau of Land Management	Occupied	Alternative 7K	3.72	0.01		3.21	
4C111a	Bureau of Land Management	Occupied	Alternative 7K	1.04	0.23			7
4C111b	Bureau of Land Management	Occupied	Alternative 7K	0.70	0.25			7,7G
4C117	Bureau of Land Management	Undetermined	Alternative 7F	0.02	0.01			7,7D,7E
4C119	Bureau of Land Management	Undetermined	Alternative 7K	1.01	0.07			
4C122	Bureau of Land Management	Undetermined	Alternative 7K	0.70	0.06			
4C123	Bureau of Land Management	Undetermined	Alternative 7K	0.70	0.11			
4C127	Bureau of Land Management	Occupied	Alternative 7K	0.17	0.04			
4C128	Bureau of Land Management	Occupied	Alternative 7K	0.71	0.06			
4C129	Bureau of Land Management	Occupied	Alternative 7K	0.72	0.29			
4C133	Bureau of Land Management	Undetermined	Alternative 7K	1.86	0.38		0.89	7,7G,9,10
4C137	Bureau of Land Management	Occupied	Segment 7 Proposed - Total Length	2.82	0.03		0.58	7C,7D
4C138	Bureau of Land Management	Undetermined	Alternative 7K	0.89	0.10	0.89		
4C139	Bureau of Land Management	Occupied	Alternative 7K	0.39	0.10			
4C141	Bureau of Land Management	Occupied	Alternative 7K	0.03	0.03			
4C142	Bureau of Land Management	Undetermined	Alternative 7K	1.74	0.04			
4C143	Bureau of Land Management	Undetermined	Segment 7 Proposed - Total Length	2.51	0.09			7D
4C145a	Bureau of Land Management	Occupied	Segment 7 Proposed - Total Length	3.89	0.11		0.29	7D
4C146	National Forest	Occupied	Alternative 7K	0.23	0.10			
4C163	Bureau of Land Management	Occupied	Alternative 7K	1.98	0.29			
4C165	National Forest	Occupied	Alternative 7K	3.35	0.08	1.04		
4C178	Bureau of Land Management	Occupied	Alternative 7K	2.20	0.02			
4C179	National Forest	Occupied	Alternative 7K	0.33	0.13			
4-Chicken Creek	National Park Service	Occupied	Alternative 4B	2.14	0.41	1.51		4C
4-Chicken Creek 2	National Park Service	Occupied	Alternative 4B	1.96	0.45	1.38		4C
4-County Rd 4	Bureau of Reclamation	Occupied	Alternative 4F	0.93	0.25	0.69		4,4B,4C,4D,4E
4-Craven Reservoir 1	Bureau of Land Management	Occupied	Alternative 4F	0.19	0.16	0.15		4
4-Craven Reservoir 2	Bureau of Land Management	Undetermined	Alternative 4F	0.09	0.09		0.09	4
4-Dempsey Basin	Bureau of Land Management	Occupied	Alternative 4F	0.95	0.31	0.81		
4-East Willow Ck	Bureau of Land Management	Occupied	Alternative 4F	2.27	0.09	2.24		4
4-Horse Creek	Bureau of Land Management	Occupied	Alternative 4C	1.53	0.07		0.64	4E
4-Linden Canyon	Bureau of Land Management	Occupied	Alternative 4B	3.32	0.38	3.30		4C
4-Nancy Hill Grave	Bureau of Land Management	Occupied	Segment 4 Proposed - Total Length	0.28	0.11			4F
4-North Fork Dempsey Creek	Bureau of Land Management	Occupied	Alternative 4F	0.88	0.38	0.53		
4-North Twin Cr	Bureau of Land Management	Occupied	Alternative 4B	2.83	0.64	2.42		4C
4-Opal Bench 1	Bureau of Land Management	Occupied	Alternative 4F	2.73	0.34	2.35		4
4-Opal Bench 2	Bureau of Land Management	Occupied	Alternative 4F	1.25	0.52	0.66		4
4-Oyster Ridge South	Bureau of Land Management	Undetermined	Alternative 4F	2.81	0.14		0.13	4
4-Petersen Ranch Lek	Bureau of Land Management	Occupied	Alternative 4C	2.04	0.29	0.92		4E
4-Quaken Asp	Bureau of Land Management	Undetermined	Segment 4 Proposed - Total Length	0.77	0.11	0.74		4F
4-Round Mtn	Bureau of Land Management	Occupied	Alternative 4F	2.19	0.44	1.65		4

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Table D.11-16. Sightlines from Occupied and Undetermined Sage-Grouse Leks on Federally Managed Lands that are Located within 4 miles of Construction Sites Proposed on Federally Managed Lands cont.

Lek ID	Agency	Management Status	Route Associated with Closest Disturbance or Centerline[1/]	Distance to Closest Disturbance or Project Centerline (miles)	Visible Distance (sightline) from Lek Toward Project (miles)	Distance to Existing Features Crossing Sightline (miles)[2/]	Distance to Closest Existing Features that do Not Cross Sightline (miles)[3/]	Other Routes within 4 miles[1/]
4-Seven Mile Gulch 1	Bureau of Land Management	Occupied	Alternative 4B	1.31	1.16		1.03	4C,4D,4E
4-Small Pox Creek	Bureau of Land Management	Occupied	Alternative 4B	2.14	0.07	1.33		4C
4-Wyman Creek	Bureau of Land Management	Occupied	Segment 4 Proposed - Total Length	1.21	0.34			4C,4E
4-Yellow Point North	Bureau of Land Management	Occupied	Alternative 4F	0.64	0.38	0.30		4
5-Anna Richey	Bureau of Land Management	Occupied	Alternative 4B	1.79	0.15		0.27	4C,4D,4E
5-Bert Brush	Bureau of Land Management	Occupied	Alternative 4B	3.05	0.07			4C,4D,4E
5-Bridger Creek	Bureau of Land Management	Occupied	Alternative 4B	2.16	0.28	0.91		4C,4D,4E
5-Bulldog Hollow	Bureau of Land Management	Occupied	Alternative 4B	2.58	0.02	1.29		4C,4D,4E
5-Bulldog Hollow South	Bureau of Land Management	Occupied	Alternative 4B	3.86	0.03	2.6		4D
5-Bullpen Creek	Bureau of Land Management	Occupied	Alternative 4B	0.53	0.12			4C,4D,4E
5-Clear Creek Ridge	Bureau of Land Management	Occupied	Alternative 4D	0.18	0.10			4B,4C,4E
5-Collett Basin	Bureau of Land Management	Occupied	Alternative 4D	2.84	0.98			4B,4C,4E
5-East Fork Bullpen	Bureau of Land Management	Occupied	Alternative 4D	0.83	0.53		0.57	4B,4C,4E
5-Little Round Mtn North	Bureau of Land Management	Occupied	Alternative 4B	0.16	0.02			4C,4D,4E
5-Little Round Mtn South	Bureau of Land Management	Occupied	Alternative 4B	3.12	0.02			4C,4D,4E
5-Middle Clear Creek Ridge	Bureau of Land Management	Occupied	Alternative 4D	1.70	0.12			4B,4E
5-North Crawford	Bureau of Land Management	Occupied	Alternative 4B	3.96	0.16	2.56		
5-Skull Point West	Bureau of Land Management	Occupied	Alternative 4B	2.20	0.17		0.92	4C,4D,4E
5-South Collett Ck	Bureau of Land Management	Occupied	Alternative 4D	3.43	0.03			
5-South Twin Creek	Bureau of Land Management	Occupied	Alternative 4B	0.83	0.03			4C,4D,4E
5-Zieglers Wonder Wash	Bureau of Land Management	Occupied	Alternative 4B	2.73	0.25		0.12	4C,4D,4E
7-Alkali Creek 4	Bureau of Land Management	Occupied	Segment 4 Proposed - Total Length	2.02	0.02	1.81		
7-Blue Rim	Bureau of Land Management	Occupied	Segment 4 Proposed - Total Length	3.19	0.60			
9-Bitter Divide	Bureau of Land Management	Occupied	Segment 3 Proposed - Total Length	1.12	0.33			
9-Desert Springs North	Bureau of Land Management	Occupied	Segment 3 Proposed - Total Length	1.16	0.31			
9-Tipton North	Bureau of Land Management	Occupied	Segment 3 Proposed - Total Length	2.50	0.31			
E018	Bureau of Land Management	Undetermined	Segment 8 Proposed - Total Length	3.21	0.26	3.19		
E020	Bureau of Land Management	Undetermined	Segment 8 Proposed - Total Length	2.36	0.34		0.56	8A
E022	Bureau of Land Management	Undetermined	Segment 8 Proposed - Total Length	3.78	0.55	1.05		
E050	Bureau of Land Management	Occupied	Segment 8 Proposed - Total Length	2.22	0.28		0.42	8A
E051	Bureau of Land Management	Undetermined	Segment 8 Proposed - Total Length	2.97	0.51		2.01	
E071	Bureau of Land Management	Occupied	Segment 8 Proposed - Total Length	2.91	0.31	1.19		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
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Table D.12-1. Mining Activities Within 1,000 Feet of Transmission Line Routes, Observed From Aerial Photograph Reconnaissance and Topographic Maps

Segment Number	Proposed Alternative or Route Name[1/]	Milepost Location	Land Use/Feature Type	Mineral Product	Location
1W	1W(a) Proposed – Total Length	2.1	Gravel Pit	Gravel	Crossed
		2.7	Forbis Gravel Pit	Gravel	620 feet SE
		21.3-21.9	Active Mining Claim	2 or more minerals	Crossed
		40.6-42.0	Active Mining Claim	2 or more minerals	Crossed
		43.8-46.3	Active Mining Claim	2 or more minerals	Crossed
	Alternative 1W(a)-B	13.1	Glenrock South Oil/Gas Well	Oil/Gas	938 feet NE
		13.5	Glenrock South Oil/Gas Well	Oil/Gas	927 feet NE
		14.6	Glenrock South Oil/Gas Well	Oil/Gas	425 feet NW
		17.1	Drill Hole	Oil/Gas	526 feet E
		17.5	Drill Hole	Oil/Gas	379 feet E
	1W(c) Proposed – Total Length	19.9-20.5	Active Mining Claim	2 or more minerals	Crossed
		39.2-41.4	Active Mining Claim	2 or more minerals	Crossed
		42.0-42.5	Active Mining Claims	Uranium and other	72 feet E
		42.5-45.0	Active Mining Claims	2 or more minerals	Crossed
2	Proposed – Total Length	5.8	WC Oil/Gas Well	Oil/Gas	Crossed
		9.6-9.9	Active Coal Lease	Coal	Crossed
		9.6-13.0	Seminoe II Mine Permit	Coal	Crossed
		10.4-11.4	Mine Surface Reclamation	Coal	Crossed
		11.1-11.5	Active Coal Lease	Coal	Crossed
		12.6-13.0	Active Coal Lease	Coal	Crossed
		15.6-16.0	EDC Mine Permit	Coal	Crossed
		16.9-17.2	Mine Surface Reclamation	Coal	Crossed
		17.1-21.6	EDC Mine Permit	Coal	Crossed
		21.6-23.0	EDC Mine Permit	Coal	550 feet N
		32.0-32.3	Active MMD Claim	Sand and Gravel	Crossed
		37.0-37.7	Active MMD Claim	Sand and Gravel	Crossed
		37.7	Gravel Pit	Gravel	139 feet N
		37.8	Sand Pit	Sand	870 feet S
		62.3-62.8	Active Mining Claim	Uranium	Crossed
		63.8-69.2	Active Mining Claim	Uranium	Crossed
		80.1	Echo Springs Oil/Gas Well	Oil/Gas	940 feet N
		82.2	Echo Springs Oil/Gas Well	Oil/Gas	250 feet N
		83.9	Echo Springs Oil/Gas Well	Oil/Gas	610 feet SE
		84.7	Echo Springs Oil/Gas Well	Oil/Gas	830 feet NW
		85.1	Echo Springs Oil/Gas Well	Oil/Gas	500 feet N
		85.6	Echo Springs Oil/Gas Well	Oil/Gas	660 feet N
		86.1	Echo Springs Oil/Gas Well	Oil/Gas	640 feet N
		86.6	Echo Springs Oil/Gas Well	Oil/Gas	690 feet N
		87.1	Echo Springs Oil/Gas Well	Oil/Gas	960 feet N
		87.1	Echo Springs Oil/Gas Well	Oil/Gas	790 feet N
		87.6	Echo Springs Oil/Gas Well	Oil/Gas	890 feet S
		88.0	Echo Springs Oil/Gas Well	Oil/Gas	670 feet S
		88.1	Echo Springs Oil/Gas Well	Oil/Gas	990 feet N
		89.5	Echo Springs Oil/Gas Well	Oil/Gas	950 feet NW
		90.9	Tierney Oil/Gas Well	Oil/Gas	720 feet S
		91.9	Tierney Oil/Gas Well	Oil/Gas	300 feet S
	Alternative 2A	9.1-9.4	Gravel Pit	Gravel	Crossed
		10.0-10.3	Active MMD Claim	Sand and Gravel	Crossed
		10.5-10.8	Active MMD Claim	Sand and Gravel	Crossed
		10.7	Gravel Pit	Gravel	Crossed
		10.8	Gravel Pit	Gravel	318 feet N
	Alternative 2B	5.4-5.8	Gravel Pit	Gravel	Crossed
		6.2-6.5	Gravel Pits	Gravel	316-910 feet S

Table D.12-1. Mining Activities Within 1,000 Feet of Transmission Line Routes, Observed From Aerial Photograph Reconnaissance and Topographic Maps cont.

Segment Number	Proposed Alternative or Route Name[1/]	Milepost Location	Land Use/Feature Type	Mineral Product	Location
3	Segment 3 Proposed – Total Length	0.2	Tierney Oil/Gas Well	Oil/Gas	920 feet SW
		0.9	Tierney Oil/Gas Well	Oil/Gas	870 feet SW
		1.0	Tierney Oil/Gas Well	Oil/Gas	620 feet NE
		1.3	Tierney Oil/Gas Well	Oil/Gas	780 feet NE
		1.4	Tierney Oil/Gas Well	Oil/Gas	380 feet N
		1.5	Tierney Oil/Gas Well	Oil/Gas	430 feet S
		1.6	Tierney Oil/Gas Well	Oil/Gas	540 feet N
		2.1	Frewen Oil/Gas Well	Oil/Gas	880 feet S
		2.6	Frewen Oil/Gas Well	Oil/Gas	960 feet N
		2.8	Frewen Oil/Gas Well	Oil/Gas	180 feet S
		4.1	Frewen Oil/Gas Well	Oil/Gas	500 feet S
		4.2	Frewen Oil/Gas Well	Oil/Gas	920 feet N
		5.7	Frewen Oil/Gas Well	Oil/Gas	280 feet N
		21.1	Tipton Oil/Gas Well	Oil/Gas	985 feet E
		30.2	Patric Draw North Oil/Gas Well	Oil/Gas	950 feet N
		30.4	Patric Draw North Oil/Gas Well	Oil/Gas	340 feet N
		31.6	Arch Oil/Gas Well	Oil/Gas	920 feet N
		34.4	Desert Springs West Oil/Gas Well	Oil/Gas	990 feet N
		34.9	Desert Springs West Oil/Gas Well	Oil/Gas	960 feet N
		35.1	Desert Springs West Oil/Gas Well	Oil/Gas	240 feet S
		35.4	Desert Springs West Oil/Gas Well	Oil/Gas	980 feet N
		38.4	Red Hill Oil/Gas Well	Oil/Gas	790 feet S
		40.3-40.8	Active Coal Lease	Coal	Crossed
		41.4-42.4	Active Coal Lease	Coal	Crossed
		42.7	WC Oil/Gas Well	Oil/Gas	710 feet NE
	Segment 3A Proposed – Total Length	2.9	Desert Springs West Oil/Gas Well	Oil/Gas	940 feet SW
4[2/]	Proposed – Total Length	3.0-3.9	Mining Surface Reclamation	Coal	Crossed
		3.4-3.9	Active Coal Lease	Coal	Crossed
		4.9	Deadman Wash Oil/Gas Well	Oil/Gas	810 feet N
		8.7	Deadman Wash Oil/Gas Well	Oil/Gas	540 feet S
		9.7	Mariann Oil/Gas Well	Oil/Gas	660 feet S
		11.0	MariannOil/Gas Well	Oil/Gas	130 feet N
		48.7-49.9	Active Solid Mineral Lease	Trona	Crossed
		50.2-51.0	Mining Surface Disturbance	Trona	500 feet S
		50.2-51.4	Active Solid Mineral Lease	Trona	Crossed
		50.8-51.1	Active MMD Claim	Sand and Gravel	Crossed
		52.6-53.6	Active Solid Mineral Lease	Trona	720 feet N
		53.6-53.8	Active Solid Mineral Lease	Trona	Crossed
		70.9	Whiskey Butte Oil/Gas Well	Oil/Gas	720 feet N
		71.4	Whiskey Butte Oil/Gas Well	Oil/Gas	831 feet N
		71.6	Whiskey Butte Oil/Gas Well	Oil/Gas	670 feet N
		71.8	Whiskey Butte Oil/Gas Well	Oil/Gas	720 feet S
		72.1	Whiskey Butte Oil/Gas Well	Oil/Gas	560 feet N
		72.3	Whiskey Butte Oil/Gas Well	Oil/Gas	790 feet S
		72.5	Whiskey Butte Oil/Gas Well	Oil/Gas	860 feet N
		72.7	Whiskey Butte Oil/Gas Well	Oil/Gas	880 feet S
		73.1	Whiskey Butte Oil/Gas Well	Oil/Gas	650 feet S
		73.6	Whiskey Butte Oil/Gas Well	Oil/Gas	360 feet S
		73.8	Whiskey Butte Oil/Gas Well	Oil/Gas	660 feet N
		74.0	Whiskey Butte Oil/Gas Well	Oil/Gas	450 feet N
		74.1	Whiskey Butte Oil/Gas Well	Oil/Gas	600 feet S
		74.3	Whiskey Butte Oil/Gas Well	Oil/Gas	340 feet N
		74.3	Whiskey Butte Oil/Gas Well	Oil/Gas	850 feet S
		74.6	Whiskey Butte Oil/Gas Well	Oil/Gas	400 feet S
		75.0	Whiskey Butte Oil/Gas Well	Oil/Gas	450 feet S
		75.4	Whiskey Butte Oil/Gas Well	Oil/Gas	410 feet N
		75.5	Whiskey Butte Oil/Gas Well	Oil/Gas	400 feet S

Table D.12-1. Mining Activities Within 1,000 Feet of Transmission Line Routes, Observed From Aerial Photograph Reconnaissance and Topographic Maps cont.

Segment Number	Proposed Alternative or Route Name[1/]	Milepost Location	Land Use/Feature Type	Mineral Product	Location
4 (cont.)	Proposed – Total Length (cont.)	75.6	Whiskey Butte Oil/Gas Well	Oil/Gas	770 feet N
		75.7	Whiskey Butte Oil/Gas Well	Oil/Gas	950 feet S
		75.9	Whiskey Butte Oil/Gas Well	Oil/Gas	450 feet N
		76.0	Whiskey Butte Oil/Gas Well	Oil/Gas	900 feet N
		76.2	Whiskey Butte Oil/Gas Well	Oil/Gas	730 feet N
		76.2	Whiskey Butte Oil/Gas Well	Oil/Gas	470 feet S
		76.6	Cow Hollow Oil/Gas Well	Oil/Gas	700 feet N
		76.6	Cow Hollow Oil/Gas Well	Oil/Gas	1,000 feet N
		79.0	Cow Hollow Oil/Gas Well	Oil/Gas	780 feet S
		79.0	Cow Hollow Oil/Gas Well	Oil/Gas	860 feet S
		79.6	Cow Hollow Oil/Gas Well	Oil/Gas	670 feet N
		80.1	Cow Hollow Oil/Gas Well	Oil/Gas	260 feet S
		80.7	Cow Hollow Oil/Gas Well	Oil/Gas	440 feet S
		100.2	Active Coal Lease	Coal	430 feet W
		105.6	Stone Quarry	Stone-Riprap	310 feet S
		147.2-147.7	Gravel Pit	Gravel	500 feet N
		195.3	Borrow Pit	Gravel	100 feet NE
	Alternative 4B	2.2	Gravel Pit	Gravel	880 feet N
		7.4-11.4	Active Solid Mineral Lease	Trona, Oil Shale, Halite	Crossed
		10.2-10.7	Texasgulf Emergency Pond	Soda Ash	540 feet N
		13.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	620 feet S
		15.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	650 feet N
		15.3	Fabian Ditch Oil/Gas Well	Oil/Gas	800 feet S
		15.6	Bruff Oil/Gas Well	Oil/Gas	520 feet N
		16.0	Fabian Ditch Oil/Gas Well	Oil/Gas	Crossed
		16.2	Fabian Ditch Oil/Gas Well	Oil/Gas	950 feet N
		16.4	Fabian Ditch Oil/Gas Well	Oil/Gas	660 feet N
		16.8	Fabian Ditch Oil/Gas Well	Oil/Gas	440 feet N
		17.0	Fabian Ditch Oil/Gas Well	Oil/Gas	390 feet S
		17.4	Fabian Ditch Oil/Gas Well	Oil/Gas	335 feet N
		17.6	Fabian Ditch Oil/Gas Well	Oil/Gas	330 feet S
		18.2	Fabian Ditch Oil/Gas Well	Oil/Gas	520 feet N
		18.5	Fabian Ditch Oil/Gas Well	Oil/Gas	730 feet S
		19.0	Fabian Ditch Oil/Gas Well	Oil/Gas	860 feet S
		19.5	Wilson Ranch Oil/Gas Well	Oil/Gas	970 feet S
		20.5	Wilson Ranch Oil/Gas Well	Oil/Gas	940 feet N
		21.6	Wilson Ranch Oil/Gas Well	Oil/Gas	150 feet S
		22.6	Wilson Ranch Oil/Gas Well	Oil/Gas	370 feet S
		43.5	Glencoe Mine	Unknown	690 feet S
		43.7	Glencoe Waste Rock Dump	Unknown	400 feet S
		45.7-46.2	FMC Granger Reclamation	Coal	Crossed
		47.3-48.6	Elkol Strip Mine	Coal	Crossed
		47.9-48.7	Active Coal Lease	Coal	Crossed
		48.0-48.7	Active Coal Lease	Coal	Crossed
		54.6-54.9	Mine Surface Disturbance	Unknown	110 feet W
		63.0-64.6	Active Mining Claim	2 or more minerals	Crossed
		73.3-73.6	Carlisle Mine Surface Disturbance	Coal	480 feet S
		73.7	Gravel Pit	Gravel	470 feet S
	Alternative 4C	2.2	Gravel Pit	Gravel	880 feet N
		7.4-11.4	FMC Active Solid Mineral Lease	Trona, Oil Shale, Halite	Crossed
		10.2-10.7	Texasgulf Emergency Pond	Soda Ash	540 feet N
		13.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	620 feet S
		15.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	650 feet N
		15.3	Fabian Ditch Oil/Gas Well	Oil/Gas	800 feet S
		15.6	Bruff Oil/Gas Well	Oil/Gas	520 feet N
		16.0	Fabian Ditch Oil/Gas Well	Oil/Gas	Crossed

Table D.12-1. Mining Activities Within 1,000 Feet of Transmission Line Routes, Observed From Aerial Photograph Reconnaissance and Topographic Maps cont.

Segment Number	Proposed Alternative or Route Name[1/]	Milepost Location	Land Use/Feature Type	Mineral Product	Location
4 (cont.)	Alternative 4C (cont.)	16.2	Fabian Ditch Oil/Gas Well	Oil/Gas	950 feet N
		16.4	Fabian Ditch Oil/Gas Well	Oil/Gas	660 feet N
		16.8	Fabian Ditch Oil/Gas Well	Oil/Gas	440 feet N
		17.0	Fabian Ditch Oil/Gas Well	Oil/Gas	390 feet S
		17.4	Fabian Ditch Oil/Gas Well	Oil/Gas	335 feet N
		17.6	Fabian Ditch Oil/Gas Well	Oil/Gas	330 feet S
		18.2	Fabian Ditch Oil/Gas Well	Oil/Gas	520 feet N
		18.5	Fabian Ditch Oil/Gas Well	Oil/Gas	730 feet S
		19.0	Fabian Ditch Oil/Gas Well	Oil/Gas	860 feet S
		19.5	Wilson Ranch Oil/Gas Well	Oil/Gas	970 feet S
		20.5	Wilson Ranch Oil/Gas Well	Oil/Gas	940 feet N
		21.6	Wilson Ranch Oil/Gas Well	Oil/Gas	150 feet S
		22.6	Wilson Ranch Oil/Gas Well	Oil/Gas	370 feet S
		43.5	Glencoe Mine	Unknown	690 feet S
		43.7	Glencoe Mine Waste Rock Dump	Unknown	400 feet S
		45.7-46.2	FMC Mine Reclamation	Coal	Crossed
		47.3-48.6	Elkol Strip Mine	Coal	Crossed
		48.0-48.7	Active Coal Lease	Coal	Crossed
		54.6-54.9	Mine Surface Disturbance	Unknown	110 feet W
		63.0-64.6	Active Mining Claim	2 or More Minerals	Crossed
		78.2-78.4	Gravel Pit	Gravel	Crossed
		78.3	Gravel Pit	Gravel	Crossed
		75.9-76.3	Gravel Pit	Gravel	10 feet W
	Alternative 4D	2.2	Gravel Pit	Gravel	880 feet N
		7.4-11.4	FMC Solid Mineral Lease	Trona, Oil Shale, Halite	Crossed
		10.2-10.7	Texagulf Emergency Pond	Soda Ash	540 feet N
		13.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	620 feet S
		15.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	650 feet N
		15.3	Fabian Ditch Oil/Gas Well	Oil/Gas	800 feet S
		15.6	Bruff Oil/Gas Well	Oil/Gas	520 feet N
		16.0	Fabian Ditch Oil/Gas Well	Oil/Gas	Crossed
		16.2	Fabian Ditch Oil/Gas Well	Oil/Gas	950 feet N
		16.4	Fabian Ditch Oil/Gas Well	Oil/Gas	660 feet N
		16.8	Fabian Ditch Oil/Gas Well	Oil/Gas	440 feet N
		17.0	Fabian Ditch Oil/Gas Well	Oil/Gas	390 feet S
		17.4	Fabian Ditch Oil/Gas Well	Oil/Gas	335 feet N
		17.6	Fabian Ditch Oil/Gas Well	Oil/Gas	330 feet S
		18.2	Bruff Oil/Gas Well	Oil/Gas	470 feet N
		18.5	Fabian Ditch Oil/Gas Well	Oil/Gas	730 feet S
		19.0	Fabian Ditch Oil/Gas Well	Oil/Gas	860 feet S
		19.5	Wilson Ranch Oil/Gas Well	Oil/Gas	970 feet S
		20.5	Wilson Ranch Oil/Gas Well	Oil/Gas	940 feet N
		21.6	Wilson Ranch Oil/Gas Well	Oil/Gas	150 feet S
		22.6	Wilson Ranch Oil/Gas Well	Oil/Gas	370 feet S
		43.5	Glencoe Mine	Unknown	690 feet S
		43.7	Glencoe Mine Waste Rock Dump	Unknown	400 feet S
		45.7-46.2	FMC Mine Reclamation	Coal	Crossed
		47.3-48.6	Elkol Strip Mine	Coal	Crossed
		48.0-48.7	Active Coal Lease	Coal	Crossed
		56.2-56.4	Mine Surface Disturbance	Unknown	Crossed
		63.6-65.3	Active Mining Claim	2 or More Minerals	Crossed
		73.9-74.2	Carlisle Mine Surface Reclamation	Coal	480 feet S
		74.3	Gravel Pit	Gravel	470 feet S

Table D.12-1. Mining Activities Within 1,000 Feet of Transmission Line Routes, Observed From Aerial Photograph Reconnaissance and Topographic Maps cont.

Segment Number	Proposed Alternative or Route Name[1/]	Milepost Location	Land Use/Feature Type	Mineral Product	Location
4 (cont.)	Alternative 4E	2.2	Gravel Pit	Gravel	880 feet N
		7.4-11.4	FMC Solid Mineral Lease	Trona, Oil Shale, Halite	Crossed
		10.2-10.7	Texas Gulf Emergency Pond	Soda Ash	540 feet N
		13.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	620 feet S
		15.1	Wild Hare Gulch Oil/Gas Well	Oil/Gas	650 feet N
		15.3	Fabian Ditch Oil/Gas Well	Oil/Gas	800 feet S
		15.6	Bruff Oil/Gas Well	Oil/Gas	520 feet N
		16.0	Fabian Ditch Oil/Gas Well	Oil/Gas	Crossed
		16.2	Fabian Ditch Oil/Gas Well	Oil/Gas	950 feet N
		16.4	Fabian Ditch Oil/Gas Well	Oil/Gas	660 feet N
		16.8	Fabian Ditch Oil/Gas Well	Oil/Gas	440 feet N
		17.0	Fabian Ditch Oil/Gas Well	Oil/Gas	390 feet S
		17.4	Fabian Ditch Oil/Gas Well	Oil/Gas	335 feet N
		17.6	Fabian Ditch Oil/Gas Well	Oil/Gas	330 feet S
		18.2	Bruff Oil/Gas Well	Oil/Gas	470 feet N
		18.5	Fabian Ditch Oil/Gas Well	Oil/Gas	730 feet S
		19.0	Fabian Ditch Oil/Gas Well	Oil/Gas	860 feet S
		19.5	Wilson Ranch Oil/Gas Well	Oil/Gas	970 feet S
		20.5	Wilson Ranch Oil/Gas Well	Oil/Gas	940 feet N
		21.6	Wilson Ranch Oil/Gas Well	Oil/Gas	150 feet S
		22.6	WC Oil/Gas Well	Oil/Gas	370 feet S
		43.5	Glencoe Mine	Unknown	690 feet S
		43.7	Glencoe Mine Waste Rock Dump	Unknown	400 feet S
		45.7-46.2	FMC Mine Reclamation	Coal	Crossed
		47.3-48.6	Elkol Strip Mine	Coal	Crossed
		47.4	Mine	Unknown	1,000 feet S
		48.0-48.7	Active Coal Lease	Coal	Crossed
		56.2-56.4	Mine Surface Disturbance	Unknown	Crossed
		63.6-65.3	Active Mining Claim	2 or More Minerals	Crossed
		76.5-76.9	Gravel Pit	Gravel	10 feet W
		78.8-79.0	Gravel Pit	Gravel	Crossed
	Alternative 4F	1.1-2.0	Active Solid Mineral Lease	Trona	720 feet N
		2.0-2.2	Active Solid Mineral Lease	Trona	Crossed
		19.3	Whiskey Butte Oil/Gas Well	Oil/Gas	720 feet N
		19.8	Whiskey Butte Oil/Gas Well	Oil/Gas	831 feet N
		20.0	Whiskey Butte Oil/Gas Well	Oil/Gas	670 feet N
		20.2	Whiskey Butte Oil/Gas Well	Oil/Gas	720 feet S
		20.5	Whiskey Butte Oil/Gas Well	Oil/Gas	560 feet N
		20.7	Whiskey Butte Oil/Gas Well	Oil/Gas	790 feet S
		20.9	Whiskey Butte Oil/Gas Well	Oil/Gas	860 feet N
		21.1	Whiskey Butte Oil/Gas Well	Oil/Gas	880 feet S
		21.5	Whiskey Butte Oil/Gas Well	Oil/Gas	650 feet S
		22.0	Whiskey Butte Oil/Gas Well	Oil/Gas	360 feet S
		22.2	Whiskey Butte Oil/Gas Well	Oil/Gas	660 feet N
		22.4	Whiskey Butte Oil/Gas Well	Oil/Gas	450 feet N
		22.5	Whiskey Butte Oil/Gas Well	Oil/Gas	600 feet S
		22.7	Whiskey Butte Oil/Gas Well	Oil/Gas	340 feet N
		22.8	Whiskey Butte Oil/Gas Well	Oil/Gas	850 feet S
		23.0	Whiskey Butte Oil/Gas Well	Oil/Gas	400 feet S
		23.4	Whiskey Butte Oil/Gas Well	Oil/Gas	450 feet S
		23.8	Whiskey Butte Oil/Gas Well	Oil/Gas	410 feet N
		24.0	Whiskey Butte Oil/Gas Well	Oil/Gas	400 feet S
		24.1	Whiskey Butte Oil/Gas Well	Oil/Gas	770 feet N
		24.1	Whiskey Butte Oil/Gas Well	Oil/Gas	950 feet S
		24.3	Whiskey Butte Oil/Gas Well	Oil/Gas	450 feet N

Table D.12-1. Mining Activities Within 1,000 Feet of Transmission Line Routes, Observed From Aerial Photograph Reconnaissance and Topographic Maps cont.

Segment Number	Proposed Alternative or Route Name[1/]	Milepost Location	Land Use/Feature Type	Mineral Product	Location
4 (cont.)[2/]	Alternative 4F (cont.)	24.4	Whiskey Butte Oil/Gas Well	Oil/Gas	900 feet N
		24.6	Whiskey Butte Oil/Gas Well	Oil/Gas	730 feet N
		24.6	Whiskey Butte Oil/Gas Well	Oil/Gas	470 feet S
		25.0	Cow Hollow Oil/Gas Well	Oil/Gas	700 feet N
		27.0	Cow Hollow Oil/Gas Well	Oil/Gas	1,000 feet N
		27.4	Cow Hollow Oil/Gas Well	Oil/Gas	780 feet S
		27.4	Cow Hollow Oil/Gas Well	Oil/Gas	860 feet S
		28.0	Cow Hollow Oil/Gas Well	Oil/Gas	670 feet N
		28.5	Cow Hollow Oil/Gas Well	Oil/Gas	260 feet S
		29.1	Cow Hollow Oil/Gas Well	Oil/Gas	440 feet S
		48.6	Active Coal Lease	Coal	430 feet W
5	Proposed-Total Length	51.4	Borrow Pit	Sand/Gravel	300 feet W
	Alternative 5B	20.0-20.2	Active MMD Claim	Sand/Gravel	500 feet S
	Alternative 5D	15.9	Borrow Pit	Sand/Gravel	Crossed
7	Alternative 7B	21.3-21.4	Borrow Pit	Sand/Gravel	340 feet N
		21.3-21.5	Active MMD Claim	Sand/Gravel	Crossed
	Alternative 7K	40.2	Borrow Pit	Sand/Gravel	500 feet N
		77.5-79.9	Active Geothermal Lease	Geothermal	Crossed
		95.4-95.7	Active MMD Claim	Stone/Riprap	160 feet N
		95.5	Borrow Pit	Stone/Riprap	160 feet N
		107.7-108.7	Active Mining Claim	Unknown	Crossed
		109.4	Active Mining Claim	Unknown	690 feet S
		112.2-112.7	Active Mining Claim	Unknown	Crossed
		112.7-113.2	Active Mining Claim	Unknown	820 feet W
		120.4-121.9	Active Mining Claim	Specialty Stone	Crossed
		137.1-137.6	Active Mining Claim	Gold	130 feet N
8	Proposed – Total Length	21.9-22.0	Gravel Pit	Gravel	250 feet S
		57.4	Gravel Pit	Sand/Gravel	280 feet S
		88.5	Gravel Pit	Gravel	220 feet S
		91.2	Gravel Pit	Gravel	Crossed
		117.5	Clay Pit	Clay	Crossed
	Alternative 8A	39.9	Gravel Pit	Sand/Gravel	Crossed
	Alternative 8B	29.2-29.5	Galey Gravel Pit	Gravel	450 feet S
		34.9-35.1	Active MMD Claim-BLM Pit	Pumice/Cinders	10 feet E
		40.7-40.8	Cinder Pit	Sand/Gravel	510 feet NW

Table D.12-1. Mining Activities Within 1,000 Feet of Transmission Line Routes, Observed From Aerial Photograph Reconnaissance and Topographic Maps cont.

Segment Number	Proposed Alternative or Route Name[1/]	Milepost Location	Land Use/Feature Type	Mineral Product	Location
9	Proposed – Total Length	3.7-4.0	Gravel Pit	Sand/Gravel	Crossed
		14.7	Active MMD Claim-BLM Pit	Sand/Gravel	430 feet S
		32.6-33.6	Active Mining Claim	Unknown	Crossed
		57.7	Gravel Pit	Sand/Gravel	450 feet SW
		116.6-116.8	Gravel Pit	Sand/Gravel	450 feet SW
		150.6-150.9	Active MMD Claim-BLM Pit	Sand/Gravel	Crossed
		160.7-161.3	Active MMD Claim-BLM Pit	Specialty Stone	Crossed
		161.0-161.1	Clay Pit	Clay	Crossed
	Alternative 9A	5.9-6.2	Gravel Pit	Sand/Gravel	Crossed
		6.3	Gravel Pit	Sand/Gravel	310 feet N
	Alternative 9B	16.7	Active MMD Claim-BLM Pit	Sand/Gravel	950 feet S
		40.2	Gravel Pit	Sand/Gravel	420 feet S
		40.2-40.4	Active MMD Claim-ITD Pit	Sand/Gravel	Crossed
	Alternative 9C	9.6-9.9	Active MMD Claim-BLM Pit	Sand/Gravel	560 feet S
	Alternative 9D	5.8-5.9	Active MMD Claim-Owyhee Co. Pit	Sand/Gravel	920 feet NE
		8.3-8.5	Gravel Pit	Sand/Gravel	340 feet N
		14.8-14.9	Active MMD Claim-BLM Pit	Common Clay	340 feet W
		25.2-25.5	Active MMD Claim-BLM Pit	Common Clay	Crossed
	Alternative 9F	28.4-28.7	Active MMD Claim-BLM Pit	Common Clay	Crossed
	Alternative 9G	5.8-5.9	Active MMD Claim-Owyhee Co. Pit	Sand/Gravel	920 feet NE
		8.3-8.5	Gravel Pit	Sand/Gravel	340 feet N
		14.8-14.9	Active MMD Claim-BLM Pit	Common Clay	340 feet W
		25.2-25.5	Active MMD Claim-BLM Pit	Common Clay	Crossed
	Alternative 9H	28.4-28.7	Active MMD Claim-BLM Pit	Common Clay	Crossed
	Alternative 9E (revised)	2.5-5.9	Active Geothermal Lease	Geothermal	Crossed
		5.9-6.4	Active Mining Claim	Unknown	Crossed
		40.7-41.3	Active Mining Claim	Unknown	Crossed
		42.2-42.8	Active Mining Claim	Unknown	Crossed
		44.6-44.7	Active Mining Claim	Placer	820 feet NE

Note: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Some or all alternatives in Segments 5, 6, 7, 8, 9, and 10 do not contain mining activities. Alternatives without mining activities do not appear in this table.

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
1W	1W(a) Proposed - Total Length	**73.8**	Quaternary alluvium	6.1	3[1/]
			Casper Formation	1.9	3
			Chugwater Formation or group	2.7	3
			Cloverly and Morrison Formations	0.2	5
			Cloverly, Morrison, and Sundance Formations	1.9	5
			Cody Shale	1.4	3
			Dune sand and loess	0.2	2[2/]
			Fox Hills Sandstone	2.7	3
			Frontier Formation	1.6	3
			Goose Egg Formation	8.1	2
			Granite Gneiss	2.2	1[3/]
			Granitic rocks	5.2	1[3/]
			Lance Formation	5.6	5
			Madison limestone, Darby Formation, Bighorn dolomite, Gallatin Limestone, GrosVentre Formation and Flathead Sandstone	0.8	3[4/]
			Mesaverde Formation or group	3.7	3
			Mowry and Thermopolis shales	1.8	4[4/]
			Niobrara Formation	0.7	5
			Steele Shale	3.1	3
			Tensleep Sandstone and Amsden Formation	0.3	3
			Upper Miocene Rocks	3.0	[5/]
			White River Formation	12.8	5
			White River Formation - upper conglomerate member	7.9	5
			Paleontology Risk Factor	**249.6**	
	Proposed – Comparison portion for Alternative 1W(a)-B	**16.5**	Quaternary alluvium	3.0	3[1/]
			Cody Shale	1.4	3
			Dune sand and loess	0.2	2[2/]
			Fox Hills Sandstone	2.7	3
			Lance Formation	5.6	5
			Mesa Verde Formation or group	3.7	3
			Paleontology Risk Factor	**60.8**	
	Alternative 1W(a)-B	**20.9**	Quaternary alluvium	1.0	3[1/]
			Cody Shale	2.1	3
			Dune sand and loess	4.4	2[2/]
			Fox Hills Sandstone	1.1	3
			Lance Formation	3.8	5
			Mesa Verde Formation or group	8.5	3
			Paleontology Risk Factor	**65.9**	
	1W(c) Proposed – Total Length	**73.6**	Quaternary alluvium	7.8	3[1/]
			Casper Formation	2.5	3
			Chugwater Formation or group	7.7	3
			Cloverly and Morrison Formations	0.2	5
			Cloverly, Morrison, and Sundance Formations	0.5	5
			Cody Shale	4.0	3
			Fox Hills Sandstone	1.0	3
			Frontier Formation	0.8	3
			Goose Egg Formation	3.8	2
			Granite Gneiss	2.3	1[3/]
			Granitic rocks	5.9	1[3/]
			Lance Formation	5.0	5
			Madison limestone, Darby Formation, Bighorn dolomite, Gallatin Limestone, GrosVentre Formation and Flathead Sandstone	0.7	3[4/]
			Mesaverde Formation or group	0.6	3
			Mowry and Thermopolis shales	0.9	4[4/]
			Niobrara Formation	3.7	5
			Steele Shale	2.2	3
			Upper Miocene Rocks	2.5	[5/]
			White River Formation	13.8	5
			White River Formation - upper conglomerate member	7.8	5
			Paleontology Risk Factor	**256.3**	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

PFYC - Potential Fossil Yield Classification

Footnote explanations are provided on the last page of this table

Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
2	Proposed - Total Length	**91.9**	Quaternary undifferentiated (alluvium, colluvium, gravel, lacustrine)	12.9	3[1/]
			Ferris Formation	7.0	5
			Fort Union Formation	12.5	3
			Hanna Formation	15.6	5
			Lance Formation	4.2	5
			Lewis Shale	3.9	3
			Medicine Bow Formation	1.7	3
			Mesa Verde Formation or group	6.3	3
			Miocene Rocks	3.8	[5/]
			Niobrara Formation	0.5	5
			Steele Shale	3.5	3
			Steele Shale and Niobrara Formations	10.3	5[4/]
			Wasatch Formation	9.7	5
			Paleontology Risk Factor	**358.9**	
	Proposed – Comparison portion for Alternative 2A	**16.8**	Quaternary alluvium	2.9	3[1/]
			Lewis Shale	1.6	3
			Medicine Bow Formation	1.1	3
			Mesa Verde Formation or group	1.4	3
			Miocene Rocks	2.5	[5/]
			Steele Shale	3.5	3
			Steele Shale and Niobrara Formations	3.9	5[4/]
			Paleontology Risk Factor	**51.0**	
	Alternative 2A	**16.0**	Quaternary undfferentiated (alluvium, colluvium, gravel)	3.0	3[1/]
			Lewis Shale	2.7	3
			Medicine Bow Formation	1.3	3
			Mesa Verde Formation or group	2.2	3
			Miocene Rocks	1.3	[5/]
			Steele Shale	1.7	3
			Steele Shale and Niobrara Formations	3.9	5[4/]
			Paleontology Risk Factor	**52.2**	
	Proposed – Comparison portion for Alternative 2B	**12.5**	Quaternary alluvium	2.9	3[1/]
			Mesaverde Formation or group	1.0	3
			Miocene Rocks	1.3	[5/]
			Steele Shale	3.5	3
			Steele Shale and Niobrara Formations	3.9	5[4/]
			Paleontology Risk Factor	**41.7**	
	Alternative 2B	**12.2**	Quaternary alluvium	3.7	3[1/]
			Lewis Shale	0.5	3
			Mesaverde Formation or group	1.4	3
			Miocene Rocks	1.5	[5/]
			Steele Shale	1.6	3
			Steele Shale and Niobrara Formations	3.5	5[4/]
			Paleontology Risk Factor	**39.1**	
3	Segment 3 Proposed – Total Length	**45.9**	Quaternary undifferentiated (alluvium, colluvium, lacustrine)	3.6	3[1/]
			Dune sand and loess	5.0	2[2/]
			Fort Union Formation	5.0	3
			Fox Hills Sandstone and Lewis Shale	2.5	3
			Green River Formation: Luman Tongue	11.2	5
			Lance Formation	2.3	5
			Wasatch Formation	16.4	5
			Paleontology Risk Factor	**192.8**	
	Segment 3A Proposed - Total Length	**5.1**	Fox Hills Sandstone and Lewis Shale	3.7	3
			Mesaverde Group, Almond Formation	1.4	3
			Paleontology Risk Factor	**15.3**	

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
4	Segment 4 Proposed - Total Length	**197.6**	Quaternary undfferentiated (alluvium, colluvium, gravel, landslide)	28.9	3[1/]
			Ankareh Formation, Thaynes Limestone, Woodside Shale, and Dinwoody Formation	0.6	3
			Aspen Shale	1.7	3
			Baxter Shale	3.2	3
			Bear River Formation	0.4	3
			Bridger Formation	32.1	5
			Dune sand and loess	1.8	2[2/]
			Evanston Formation	1.5	3
			Fort Union Formation	1.3	3
			Fowkes Formation	0.9	3
			Fox Hills Sandstone and Lewis Shale	1.2	3
			Frontier Formation	2.2	3
			Gannett Group	1.2	3
			Green River and Wasatch Formations	30.7	5
			Hilliard Shale	5.8	3
			Mesa Verde Group	19.7	3
			Nugget Sandstone	1.3	3
			Phosphoria Formation	0.2	3
			Sage Junction, Quealy, Cokeville, Thomas Fork, and Smiths Formations	0.9	3
			Salt Lake Formation	0.4	3
			Stump Formation, Preuss Sandstone or Redbeds, and Twin Creek Limestone	2.0	3
			Wasatch Formation	6.5	5
			Water	0.7	0
			Wells and Amsden Formations, Madison Limestone	0.4	3A
			Blacksmith, Bancroft, and Ute Limestones	1.0	3A
			Bloomington Formation (Cambrian siltstone/limestone)	0.2	[5/]
			Lead Bell Shale	0.7	3A
			Nounan Limestone	0.5	[5/]
			St. Charles Limestone	1.9	3A
			Twin Creek Limestone	5.2	3A[6/]
			Nugget Sandstone	0.2	2[8/]
			Garden City Formation	1.9	3A
			Swan Peak Quartzite	1.7	3A
			Brigham Quartzite	6	3A
			Bonneville and Alpine Formations	2.2	4A[9/]
			Main Canyon Formation	1.1	[5/]
			Ankareh Formation	0.1	3[12/]
			Thaynes Limestone	1.9	5A[7/]
			Timothy Sandstone	0.2	2
			Salt Lake Formation	24.3	3A[6/]
			Salt Lake and Starlight Formations, undifferentiated	3.0	4A[4/]
			Paleontology Risk Factor	**731.0**	
	Proposed – Comparison portion for Alternatives 4B-4F	**85.2**	Quaternary undfferentiated (alluvium, colluvium, gravel, landslide)	13.2	3[1/]
			Ankareh Formation, Thaynes Limestone, Woodside Shale, and Dinwoody Formation	0.6	3
			Aspen Shale	1.7	3
			Bear River Formation	0.4	3
			Bridger Formation	21.5	5
			Dune sand and loess	1.8	2[2/]
			Evanston Formation	1.5	3
			Fowkes Formation	0.9	3
			Frontier Formation	2.2	3
			Gannett Group	1.2	3
			Green River and Wasatch Formations	20.0	5
			Hilliard Shale	5.8	3
			Nugget Sandstone	1.3	2
			Phosphoria Formation	0.2	3
			Sage Junction, Quealy, Cokeville, Thomas Fork, and Smiths Formations	0.9	3

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
4 (cont.)	Proposed – Comparison portion for Alternatives 4B-4F (cont.)	85.2	Salt Lake Formation	0.4	3
			Stump Formation, Preuss Sandstone or Redbeds, and Twin Creek Limestone	2.0	3
			Wasatch Formation	3.0	5
			Water	0.7	0
			Wells and Amsden Formations, Madison Limestone	0.4	3A
			Twin Creek Limestone	2.7	3A
			Salt Lake Formation	2.9	3A
			Paleontology Risk Factor	**339.7**	
	Alternative 4B	**100.2**	Adaville Formation	1.0	3
			Quaternary undfferentiated (alluvium, colluvium, gravel)	13.7	3[1/]
			Ankareh Formation, Thaynes Limestone, Woodside Shale, and Dinwoody Formation	1.1	3
			Aspen Shale	0.7	3
			Bridger Formation	27.9	5
			Evanston Formation	4.1	3
			Fowkes Formation	2.0	3
			Frontier Formation	1.3	3
			Gannett Group	0.1	3
			Green River and Wasatch Formations	12.3	5
			Hilliard Shale	3.9	3
			Nugget Sandstone	2.6	3
			Salt Lake Formation	4.0	3
			Stump Fm., Preuss Redbeds, Twin Creek Limestone	0.8	3
			Wasatch Formation	17.4	5
			Twin Creek Limestone	4.0	3A
			Salt Lake Formation	3.2	3A
			Paleontology Risk Factor	**415.5**	
	Alternative 4C	**101.6**	Adaville Formation	1.0	3
			Quaternary undfferentiated (alluvium, colluvium, gravel)	18.3	3[1/]
			Ankareh Formation, Thaynes limestone, Woodside shale, and Dinwoody Formation	1.1	3
			Aspen Shale	0.7	3
			Bridger Formation	27.9	5
			Evanston Formation	2.7	3
			Fowkes Formation	1.9	3
			Frontier Formation	1.3	3
			Gannett Group	1.0	3
			Green River and Wasatch Formations	12.0	5
			Hilliard Shale	3.9	3
			Nugget Sandstone	1.9	3
			Sage Junction, Quely, Cokeville, Thomas Fork, and Smiths Formations	2.9	3
			Salt Lake Formation	1.9	3
			Stump Fm., Preuss Redbeds, Twin Creek Limestone	1.0	3
			Wasatch Formation	15.0	5
			Twin Creek Limestone	4.0	3A
			Salt Lake Formation	3.2	3A
			Paleontology Risk Factor	**414.9**	
	Alternative 4D	**100.7**	Adaville Formation	1.0	3
			Quaternary undifferentiated (alluvium, colluvium, gravel)	13.7	3[1/]
			Aspen Shale	0.7	3
			Bridger Formation	27.9	5
			Evanston Formation	4.1	3
			Fowkes Formation	2.0	3
			Frontier Formation	1.3	3
			Gannett group	0.1	3
			Green River and Wasatch Formations	19.3	5
			Hilliard Shale	3.9	3
			Nugget Sandstone	2.3	3
			Salt Lake Formation	4.0	3

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
4 (cont.)	Alternative 4D (cont.)	**100.7**	Stump Fm., Preuss Redbeds, Twin Creek Limestone	0.8	3
			Wasatch Formation	12.4	5
			Twin Creek Limestone	4.0	3A
			Salt Lake Formation	3.2	3A
			Paleontology Risk Factor	**421.3**	
	Alternative 4E	**102.2**	Adaville Formation	1.0	3
			Quaternary undifferentiated (alluvium, colluvium, gravel)	18.3	3[1/]
			Aspen Shale	0.7	3
			Bridger Formation	27.9	5
			Evanston Formation	2.7	3
			Fowkes Formation	1.9	3
			Frontier Formation	1.3	3
			Gannett Group	1.0	3
			Green River and Wasatch Formations	19.0	5
			Hilliard Shale	3.9	3
			Nugget Sandstone	1.7	3
			Sage Junction, Quealy, Cokeville, Thomas Fork, and Smiths Formations	2.9	3
			Salt Lake Formation	1.9	3
			Stump Fm., Preuss Redbeds, Twin Creek Limestone	1.0	3
			Wasatch Formation	9.9	5
			Twin Creek Limestone	4.0	3A
			Salt Lake Formation	3.2	3A
			Paleontology Risk Factor	**420.5**	
	Alternative 4F	**87.5**	Quaternary undifferentiated (alluvium, colluvium, gravel)	9.3	3[1/]
			Ankareh Formation, Thaynes Limestone, Woodside Shale, and Dinwoody Formation	0.9	3
			Aspen Shale	1.7	3
			Bear River Formation	0.4	3
			Bridger Formation	21.5	5
			Dune sand and loess	1.8	2[2/]
			Evanston Formation	0.4	3
			Fowkes Formation	0.6	3
			Frontier Formation	2.2	3
			Gannett Group	0.9	3
			Green River and Wasatch Formations	18.9	5
			Hilliard Shale	5.8	3
			Nugget Sandstone	0.9	3
			Phosphoria Formation	0.5	3
			Sage Junction, Quealy, Cokeville, Thomas Fork, and Smiths Formations	1.1	3
			Salt Lake Formation	0.4	3
			Stump Fm., Pruess Sandstone or Redbeds, and Twin Creek Limestone	1.6	3
			Wasatch Formation	12.0	5
			Wells and Amsden Formations	0.8	3
			Twin Creek Limestone	2.7	3A
			Salt Lake Formation	2.9	3A
			Paleontology Risk Factor	**364.9**	
	Proposed – Comparison portion for Alternative 4G	**2.4**	Garden City Formation	1.0	3A
			St. Charles Limestone	1.2	3A
			Pleistocene surficial deposits	0.2	3A
			Paleontology Risk Factor	**7.2**	
	Alternative 4G	**2.6**	Quaternary undifferentiated (alluvium, colluvium, gravel)	2.2	3A
			Ankareh Formation, Thaynes Limestone, Woodside Shale, and Dinwoody Formation	0.3	3A
			Aspen Shale	0.1	3A
			Paleontology Risk Factor	**7.8**	
5	Proposed – Total Length	**55.7**	Nounan Dolomite	0.2	[5/]
			St. Charles Limestone	0.5	3A
			Deep Creek Formation	1.4	[5/]
			Great Blue Limestone	1.0	[5/]
			Fish Haven Dolomite	1.4	3A
			Garden City Formation	2.8	3A
			Swan Peak Quartzite	2.1	3A
			PreCambrian undifferentiated	3.4	1
			Oquirrh Formation	10.2	[5/]
			Quaternary undifferentiated (alluvium, colluvium, terrace, dunes, loess)	22.4	3[1/]
			Sunbeam Formation	3.4	[5/]

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
5 (cont.)	Proposed – Total Length (cont.)	**55.7**	Quaternary travertine	0.3	5/
			Salt Lake Formation	0.5	3A
			Starlight Formation	4.8	4A
			Starlight and Salt Lake Formations, undifferentiated	1.1	4A
			Paleontology Risk Factor	**116.1**	
	Proposed – Comparison portion for Alternatives 5A,B	**22.3**	Nounan Dolomite	0.2	5/
			St. Charles Limestone	0.5	3A
			Fish Haven Dolomite	1.4	3A
			Garden City Formation	2.8	3A
			Swan Peak Quartzite	1.9	3A
			Oquirrh Formation	7.2	5/
			Quaternary undifferentiated (alluvium, colluvium, terrace, dunes, loess)	6.3	3 1/
			Quaternary travertine	0.3	2
			Salt Lake Formation	0.5	3A
			Starlight and Salt Lake Formations, undifferentiated	1.1	4A 4/
			Paleontology Risk Factor	**45.2**	
	Alternative 5A	**29.7**	Swan Peak Quartzite	0.7	3A
			Oquirrh Formation	0.2	5/
			Upper Paleozoic, undifferentiated	14.2	5/
			Quaternary undifferentiated (alluvium, colluvium)	11.4	3 1/
			Laketown Dolomite	1.0	3A
			Salt Lake Formation	2.2	3A
			Paleontology Risk Factor	**45.9**	
	Alternative 5B	**40.4**	Swan Peak Quartzite	0.7	3A
			Oquirrh Formation	7.2	5/
			Upper Paleozoic, undifferentiated	10.5	5/
			Quaternary undifferentiated (alluvium, colluvium, gravel, loess)	14.1	3 1/
			Laketown Dolomite	1.0	3A
			Salt Lake Formation	7.0	3A
			Paleontology Risk Factor	**68.4**	
	Proposed – Comparison portion for Alternative 5C	**32.9**	Nounan Dolomite	0.2	5/
			St. Charles Limestone	0.5	3A
			Deep Creek Formation	1.4	5/
			Great Blue Limestone	1.0	5/
			Fish Haven Dolomite	0.9	3A
			Garden City Formation	0.8	3A
			Swan Peak Quartzite	1.5	3A
			Oquirrh Formation	10.2	5/
			Quaternary undifferentiated (alluvium, gravel, loess)	14.3	3 1/
			Quaternary travertine	0.3	5/
			Salt Lake Formation	0.5	3A
			Starlight Formation	0.1	4A
			Starlight and Salt Lake Formations, undifferentiated	1.1	4A 4/
			Paleontology Risk Factor	**59.7**	
	Alternative 5C	**26.0**	St. Charles Limestone	0.2	3A
			Fish Haven Dolomite	0.8	3A
			Garden City Formation	1.0	3A
			Swan Peak Quartzite	1.4	3A
			Quaternary undifferentiated (alluvium, gravel, loess)	19.3	3 1/
			Starlight Formation	0.1	4A
			Starlight and Salt Lake Formations, undifferentiated	3.2	4A 4/
			Paleontology Risk Factor	**81.3**	
	Proposed – Comparison portion for Alternative 5D	**19.2**	Deep Creek Formation	1.4	5/
			Great Blue Limestone	1.0	5/
			Oquirrh Formation	13.2	5/
			Quaternary undifferentiated (alluvium, terrace deposits, dune sand, gravel, loess)	3.4	3 1/
			Sunbeam Formation	0.1	5/
			Starlight Formation	0.1	4A
			Paleontology Risk Factor	**10.6**	

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Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
5 (cont.)	Alternative 5D	**17.0**	Oquirrh Formation	0.1	[5/]
			Quaternary undifferentiated (alluvium, terrace deposits, dune sand, gravel, loess)	16.3	3
			Sunbeam Formation	0.6	[5/]
			Paleontology Risk Factor	**48.9**	
	Proposed - Comparison portion for Alternative 5E	**5.8**	Quaternary undifferentiated (alluvium, terrace deposits, dune sand, gravel, loess)	2.4	3[1/]
			Sunbeam Formation	3.4	[5/]
			Paleontology Risk Factor	**7.2**	
	Proposed - Comparison portion for Alternative 5E	**5.3**	Quaternary undifferentiated (alluvium, terrace deposits, dune sand, gravel, loess)	2.2	3[1/]
			Sunbeam Formation	3.0	[5/]
			Paleontology Risk Factor	**6.6**	
6	Proposed - Total Length	**0.5**	Quaternary dune sand	0.2	2
			Wendell Grade Basalt	0.3	1
			Paleontology Risk Factor	**0.7**	
7	Proposed - Total Length	**118.2**	Albion Range metamorphic rocks	2.9	1[3/]
			Dolomite of Cassia County	0.8	[5/]
			Nounan Dolomite	0.5	[5/]
			St. Charles Limestone	0.3	3A
			Unknown quartzite	2.9	1[3/]
			Manning Canyon Shale	0.2	[5/]
			Fish Haven Dolomite	1.7	3A
			Garden City Formation	2.0	3A
			Swan Peak Quartzite	3.8	3A
			PreCambrian undifferentiated	2.7	1[3/]
			Permian Limestone	0.2	[5/]
			Oquirrh Formation	10.5	[5/]
			Snake River Basalt	12.4	1[3/]
			Quaternary undifferentiated (alluvial fan, gravel, loess)	60.2	3[1/]
			Basalt of Table Mountain	3.0	1[3/]
			Quaternary travertine	0.1	[5/]
			Tertiary basalt	1.4	1[3/]
			Basalt of Table Mountain	0.1	1[3/]
			Idavada Volcanics	5.5	3A[11/]
			Salt Lake Formation	1.1	3A
			Starlight Formation	4.3	4A
			Starlight and Salt Lake Formations, undifferentiated	1.1	4A[4/]
			Rhyolitic lava	0.4	1[3/]
			Paleontology Risk Factor	**271.2**	
	Proposed – Comparison portion for Alternatives 7A,B	**35.1**	Nounan Dolomite	0.5	[5/]
			St. Charles Limestone	0.3	3A
			Fish Haven Dolomite	1.7	3A
			Garden City Formation	2.0	3A
			Swan Peak Quartzite	3.8	3A
			Oquirrh Formation	7.3	[5/]
			Quaternary undifferentiated (alluvial fan, gravel, loes, travertines)	16.3	3[1/]
			Basalt of Table Mountain	0.1	1[3/]
			Salt Lake Formation	1.0	3A
			Starlight Formation	0.7	4A
			Starlight and Salt Lake Formations, undifferentiated	1.1	4A[4/]
			Paleontology Risk Factor	**82.6**	
	Alternative 7A	**37.7**	Swan Peak Quartzite	0.4	3A
			Oquirrh Formation	7.1	[5/]
			Upper Paleozoic, undifferentiated	7.0	[5/]
			Quaternary undifferentiated (alluvium ,gravel, loess)	18.3	3[1/]
			Laketown Dolomite	0.5	3A
			Salt Lake Formation	2.4	3A
			Starlight Formation	2.0	4A
			Paleontology Risk Factor	**72.8**	

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7 (cont.)	Alternative 7B	**46.2**	Swan Peak Quartzite	0.4	3A
			Oquirrh Formation	6.1	[5/]
			Upper Paleozoic, undifferentiated	9.9	[5/]
			Quaternary undifferentiated (alluvium ,gravel, loess)	20.1	3[1/]
			Laketown Dolomite	0.5	3A
			Salt Lake Formation	7.2	3A
			Starlight Formation	2.0	4A
			Paleontology Risk Factor	**92.6**	
	Proposed – Comparison portion for Alternative 7C	**20.1**	Quaternary alluvium	9.0	3[1/]
			Snake River Basalt	11.2	1[3/]
			Paleontology Risk Factor	**38.2**	
	Alternative 7C	**20.3**	Oquirrh Formation	4.1	[5/]
			Quaternary alluvium	5.9	3[1/]
			Snake River Basalt	10.3	1[3/]
			Paleontology Risk Factor	**28.0**	
	Proposed – Comparison portion for Alternative 7D	**6.2**	Unknown quartzite	0.8	1[3/]
			Quaternary alluvium	2.4	3[1/]
			Snake River Basalt	1.2	1[3/]
			Tertiary basalt	1.4	1[3/]
			Rhyolitic lava	0.4	1[3/]
			Paleontology Risk Factor	**11.0**	
	Alternative 7D	**6.8**	Unknown quartzite	0.8	1[3/]
			Quaternary alluvium	4.3	3[1/]
			Snake River Basalt	1.7	1[3/]
			Paleontology Risk Factor	**15.4**	
	Proposed – Comparison portion for Alternative 7E	**3.8**	Albion Range metamorphic rocks	1.8	1[3/]
			Unknown quartzite	0.5	1[3/]
			Quaternary alluvium	1.5	3[1/]
			Paleontology Risk Factor	**6.8**	
	Alternative 7E	**4.5**	Albion Range metamorphic rocks	3.2	1[3/]
			Unknown quartzite	0.6	1[3/]
			Quaternary alluvium	0.7	3[1/]
			Paleontology Risk Factor	**5.9**	
	Proposed – Comparison portion for Alternative 7F	**10.5**	Albion Range metamorphic rocks	2.9	1[3/]
			Dolomite of Cassia County	0.8	[5/]
			Unknown quartzite	2.1	1[3/]
			Manning Canyon Shale	0.2	[5/]
			Permian Limestone	0.2	[5/]
			Quaternary alluvium	4.3	3[1/]
			Paleontology Risk Factor	**17.9**	
	Alternative 7F	**10.8**	Albion Range metamorphic rocks	1.2	1[3/]
			Dolomite of Cassia County	0.5	[5/]
			Schist of Mahogony Peaks	0.6	1[3/]
			Dayley Creek quartzite	1.7	1[3/]
			Unknown quartzite	1.3	1[3/]
			Quaternary alluvium	5.5	3[1/]
			Paleontology Risk Factor	**20.5**	
	Proposed – Comparison portion for Alternative 7G	**3.3**	Idavada Volcanics	3.3	3A[11/]
			Paleontology Risk Factor	**9.9**	
	Alternative 7G	**3.4**	Idavada Volcanics	3.4	3A[11/]
			Paleontology Risk Factor	**10.2**	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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PFYC - Potential Fossil Yield Classification

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
7 (cont.)	Proposed – Comparison portion for Alternative 7K	**118.2**	Albion Range metamorphic rocks	2.9	1[3/]
			Dolomite of Cassia County	0.8	[5/]
			Nounan Dolomite	0.5	[5/]
			St. Charles Limestone	0.3	3A
			Unknown quartzite	2.9	1[3/]
			Manning Canyon Shale	0.2	[5/]
			Fish Haven Dolomite	1.7	3A
			Garden City Formation	2.0	3A
			Swan Peak Quartzite	3.8	3A
			PreCambrian undifferentiated	2.7	1[3/]
			Permian Limestone	0.2	[5/]
			Oquirrh Formation	10.5	[5/]
			Snake River Basalt	12.4	1[3/]
			Quaternary undifferentiated (alluvial fan, gravel, loess)	60.2	3[1/]
			Basalt of Table Mountain	3.0	1[3/]
			Quaternary travertine	0.1	[5/]
			Tertiary basalt	1.4	1[3/]
			Basalt of Table Mountain	0.1	1[3/]
			Idavada Volcanics	5.5	3A[11/]
			Salt Lake Formation	1.1	3A
			Starlight Formation	4.3	4A
			Starlight and Salt Lake Formations, undifferentiated	1.1	4A[4/]
			Rhyolitic lava	0.4	1[3/]
			Paleontology Risk Factor	**271.2**	
	Alternative 7K	**148.1**	Gneiss	2.0	1[3/]
			Unknown quartzite	1.2	1[3/]
			Pogonip Group - marble	0.4	1[3/]
			Swan Peak Quartzite	0.4	3A
			PreCambrian undifferentiated	2.7	1[3/]
			Elba quartzite	3.7	1[3/]
			Oquirrh Formation	11.7	[5/]
			Permian Limestone-includes Phosphoria Formation	0.4	5A
			Upper Paleozoic, undifferentiated	9.9	[5/]
			Quaternary undifferentiated (alluvium, gravel, loess)	71.2	3[1/]
			Laketown Dolomite	0.5	3A
			Idavada Volcanics	11.8	3A[11/]
			Salt Lake Formation	15.2	3A
			Starlight Formation	5.5	4A
			Tertiary lava and tuffs	1.1	[5/]
			Goose Creek rhyolite ash flow tuffs	9.7	[5/]
			Rhyolitic lava	0.7	1[3/]
			Paleontology Risk Factor	**332.0**	
8	Proposed – Total Length	**131.5**	Quaternary undifferentiated (alluvium, gravel, fluvial, landslide)	23.4	3[1/]
			Bruneau Formation - basalt	23.4	4A
			Bonneville flood deposits	1.2	3A
			Snake River Basalt	21.3	1[3/]
			Bruneau Formation lake sediments	5.6	4A
			Quaternary dune sand	0.2	2[2/]
			McKinney Basalt	8.4	1[3/]
			Glenns Ferry Formation	20.6	5A
			Thousand Springs basalt	4.2	1[3/]
			Idaho Group sediments (fluvial, lacustrine, eolian)	4.4	[5/]
			Wendell Grade Basalt	15.0	1[3/]
			Banbury Basalt	0.9	1[3/]
			Basalt, undifferentiated	0.3	1[3/]
			Chalky Volcanic field	1.1	5A[10/]
			Poison Creek/Chalk Hills, undifferentiated	1.5	5A
			Water	0.2	0
			Paleontology Risk Factor	**656.3**	

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PFYC - Potential Fossil Yield Classification

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
8 (cont.)	Proposed – Comparison portion for Alternative 8A	**51.9**	Quaternary undifferentiated (alluvium, landslide)	3.2	3[1/]
			Bruneau Formation - basalt	3.2	1[3/]
			Bruneau Formation lake sediments	1.9	4A
			McKinney Basalt	8.4	1[3/]
			Glenns Ferry Formation	15.3	5A
			Thousand Springs basalt	4.2	1[3/]
			Wendell Grade Basalt	15.0	1[3/]
			Banbury Basalt	0.9	1[3/]
			Paleontology Risk Factor	**135.0**	
	Alternative 8A	**53.6**	Quaternary undifferentiated (alluvium, landslide)	2.7	3[1/]
			Bruneau Formation - basalt	1.8	4A
			Bruneau Formation lake sediments	4.0	4A
			Bonneville flood deposits-Melon Gravel	0.9	3A
			Idaho Group-Black Mesa Gravel	4.0	3A
			Tuana Gravel	5.8	3A
			Glenns Ferry Formation	11.3	5A
			Thousand Springs basalt	3.0	1[3/]
			Wendell Grade Basalt	20.1	1[3/]
			Paleontology Risk Factor	**143.0**	
	Proposed – Comparison portion for Alternative 8B	**45.3**	Quaternary undifferentiated (alluvium, gravel, fluvial)	10.3	3[1/]
			Bonneville flood deposits	1.2	3A
			Snake River Basalt	21.3	1[3/]
			Quaternary dune sand	0.2	2[2/]
			Glenns Ferry Formation	4.8	5A
			Idaho Group sediments (fluvial, lacustrine, eolian)	4.4	[5/]
			Basalt, undifferentiated	0.3	1[3/]
			Chalky Volcanic field	1.1	5A[10/]
			Poison Creek/Chalk Hills, undifferentiated	1.5	5A
			Water	0.2	0
				93.5	
	Alternative 8B	**45.8**	Quaternary undifferentiated (alluvium, gravel, fluvial)	11.4	3[1/]
			Bonneville flood deposits	2.6	3A
			Snake River Basalt	8.4	1[3/]
			Glenns Ferry Formation	5.5	5A
			Idaho Group sediments (fluvial, lacustrine, eolian)	17.0	[5/]
			Poison Creek/Chalk Hills, undifferentiated	0.8	5A
			Paleontology Risk Factor	**81.9**	
	Proposed – Comparison portion for Alternative 8C	**6.5**	Quaternary undifferentiated (alluvium, gravel, fluvial)	6.2	3[1/]
			Idaho Group sediments (fluvial, lacustrine, eolian)	0.3	[5/]
			Paleontology Risk Factor	**18.6**	
	Alternative 8C	**6.4**	Quaternary undifferentiated (alluvium, gravel, fluvial)	6.2	3[1/]
			Idaho Group sediments (fluvial, lacustrine, eolian)	0.2	[5/]
			Paleontology Risk Factor	**18.6**	
	Proposed – Comparison portion for Alternative 8D	**6.9**	Snake River Basalt	6.9	1[3/]
			Paleontology Risk Factor	**6.9**	
	Alternative 8D	**8.1**	Quaternary alluvium	0.3	3[1/]
			Snake River Basalt	7.0	1[3/]
			Idaho Group sediments (fluvial, lacustrine, eolian)	0.8	[5/]
			Paleontology Risk Factor	**7.9**	
	Proposed – Comparison portion for Alternative 8E	**7.0**	Bonneville flood deposits	1.2	3A
			Quaternary dune sand	0.2	2[2/]
			Snake River Basalt	3.9	1[3/]
			Glenns Ferry Formation	1.3	5A
			Basalt, undifferentiated	0.1	1[3/]
			Water	0.2	0
			Paleontology Risk Factor	**14.5**	
	Alternative 8E	**18.3**	Snake River Basalt	17.1	1[3/]
			Quaternary landslide	0.2	3[1/]
			Glenns Ferry Formation	0.9	5A
			Water	0.1	0
			Paleontology Risk Factor	**22.2**	

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
9	Proposed - Total Length	**162.2**	Quaternary alluvium	15.4	3[1/]
			Bruneau Formation-basalt	0.3	4A
			Bruneau Formation lake sediments	23.2	4A
			Quaternary Crowsnest Gravels	0.6	3[1/]
			Idaho Group-Black Mesa Gravel	5.5	3A
			Bruneau Formation	3.0	4A
			Tuana Gravel	9.7	3A
			Glenns Ferry Formation	43.7	5A
			Banbury Basalt	30.6	1[3/]
			Chalk Hills Formation	0.7	5A
			Chalky Volcanic field	0.6	5A[10/]
			Idavada Volcanics	14.3	3A[11/]
			Snake River Basalt	8.2	1[3/]
			Poison Creek/Chalk Hills, undifferentiated	6.1	5A
			Snake River Rhyolite	0.4	1[3/]
			Paleontology Risk Factor	**537.2**	
	Proposed – Comparison portion for Alternative 9A	**7.8**	Glenns Ferry Formation	4.2	5A
			Banbury Basalt	3.6	1[3/]
			Paleontology Risk Factor	**24.6**	
	Alternative 9A	**7.7**	Quaternary alluvium	0.7	3[1/]
			Glenns Ferry Formation	2.6	5A
			Banbury Basalt	3.0	1[3/]
			Idavada Volcanics	1.4	3A[11/]
			Paleontology Risk Factor	**22.3**	
	Proposed – Comparison portion for Alternative 9B	**49.1**	Quaternary alluvium	0.1	3[1/]
			Bruneau Formation lake sediments	7.4	4A
			Idaho Group-Black Mesa Gravel	5.5	3A
			Tuana Gravel	8.7	3A
			Glenns Ferry Formation	9.1	5A
			Banbury Basalt	8.9	1[3/]
			Idavada Volcanics	9.4	3A[11/]
			Paleontology Risk Factor	**155.1**	
	Alternative 9B	**52.3**	Quaternary alluvium	1.6	3[1/]
			Bruneau Formation - basalt	0.1	4A
			Bruneau Formation lake sediments	8.1	4A
			Idaho Group-Black Mesa Gravel	6.1	3A
			Tuana Gravel	9.4	3A
			Glenns Ferry Formation	16.0	5A
			Banbury Basalt	7.8	1[3/]
			Idavada Volcanics	3.3	3A[11/]
			Paleontology Risk Factor	**181.8**	
	Proposed – Comparison portion for Alternative 9C	**14.4**	Quaternary alluvium	0.1	3[1/]
			Banbury Basalt	7.4	1[3/]
			Idavada Volcanics	6.9	3A[11/]
			Paleontology Risk Factor	**28.4**	
	Alternative 9C	**14.4**	Tuana Gravel	0.2	3A
			Glenns Ferry Formation	0.2	5A
			Banbury Basalt	7.2	1[3/]
			Idavada Volcanics	6.8	3A[11/]
			Paleontology Risk Factor	**29.2**	
	Proposed – Comparison portion for Alternatives 9D,F,G,H	**57.2**	Quaternary alluvium	12.3	3[1/]
			Bruneau Formation lake sediments	10.0	4A
			Bruneau Formation	3.0	4A
			Glenns Ferry Formation	24.5	5A
			Chalk Hills Formation	0.7	5A
			Snake River Basalt	4.2	1[3/]
			Poison Creek/Chalk Hills, undifferentiated	2.4	5A
			Paleontology Risk Factor	**231.1**	

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
9 (cont.)	Alternative 9D	**60.2**	Quaternary alluvium	2.1	3[1/]
			Bruneau Formation - basalt	2.9	4A
			Snake River Basalt	16.2	1[3/]
			Bruneau Formation lake sediments	16.0	4A
			Bonneville flood deposits-Melon Gravel	0.2	3A
			Glenns Ferry Formation	21.7	5A
			Poison Creek/Chalk Hills, undifferentiated	0.9	5A
			Water	0.1	0
			Paleontology Risk Factor	**211.7**	
	Alternative 9F	**63.3**	Quaternary alluvium	3.3	3[1/]
			Bruneau Formation - Basalt	1.7	4A
			Snake River Basalt	16.2	1[3/]
			Bruneau Formation lake sediments	13.7	4A
			Bonneville flood deposits-Melon Gravel	0.2	3A
			Bruneau Formation	0.8	4A
			Glenns Ferry Formation	26.4	5A
			Poison Creek/Chalk Hills, undifferentiated	0.9	5A
			Water	0.1	0
			Paleontology Risk Factor	**228.0**	
	Alternative 9G	**57.8**	Quaternary alluvium	1.9	3[1/]
			Bruneau Formation - Basalt	2.9	4A
			Snake River Basalt	16.2	1[3/]
			Bruneau Formation lake sediments	16.0	4A
			Bonneville flood deposits-Melon Gravel	0.2	3A
			Glenns Ferry Formation	20.1	5A
			Poison Creek/Chalk Hills, undifferentiated	0.4	5A
			Water	0.1	0
			Paleontology Risk Factor	**200.6**	
	Alternative 9H	**61.0**	Quaternary alluvium	3.1	3[1/]
			Bruneau Formation - Basalt	1.7	4A
			Snake River Basalt	16.2	1[3/]
			Bruneau Formation lake sediments	13.7	4A
			Bonneville flood deposits-Melon Gravel	0.2	3A
			Bruneau Formation	0.8	4A
			Glenns Ferry Formation	24.8	4A
			Poison Creek/Chalk Hills, undifferentiated	0.4	5A
			Water	0.1	0
			Paleontology Risk Factor	**216.9**	

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Table D.13-1. Paleontology Risk Factors for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (miles)	Formation Name	Miles Crossed	PFYC
9 (cont.)	Proposed - Comparison portion for Alternative 9E (revised)	**61.4**	Quaternary alluvium	12.3	3[1/]
			Bruneau Formation lake sediments	10.0	4A
			Bruneau Formation	3.0	4A
			Glenns Ferry Formation	24.5	5A
			Chalk Hills Formation	0.7	5A
			Snake River Basalt	8.2	1[3/]
			Poison Creek/Chalk Hills, undifferentiated	2.8	5A
			Paleontology Risk Factor	**237.1**	
	Alternative 9E (revised)	**70.6**	Quaternary alluvium	8.2	3[1/]
			Bruneau Formation lake sediments	1.7	4A
			Idaho Group-Black Mesa Gravel	4.3	3A
			Glenns Ferry Formation	20.1	5A
			Banbury Basalt	1.8	1[3/]
			Chalk Hills Formation	9.2	5A
			Idavada Volcanics	5.0	3A[11/]
			Snake River Basalt	8.0	1[3/]
			Poison Creek/Chalk Hills, undifferentiated	12.4	5A
			Paleontology Risk Factor	**277.6**	
10	Proposed – Total Length	**34.4**	Quaternary alluvium	1.5	3[1/]
			Snake River Basalt	16.4	1[3/]
			Hansen Butte basalt	8.5	1[3/]
			Hazelton Butte basalt	0.5	1[3/]
			Skeleton Butte basalt	4.2	1[3/]
			Thousand Springs basalt	0.1	1[3/]
			Wendell Grade Basalt	2.9	1[3/]
			Idavada Volcanics	0.3	3A[11/]
			Paleontology Risk Factor	**38.0**	

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PFYC - Potential Fossil Yield Classification

[1/] Quaternary sediments (alluvium, gravel, loess, landslides) were designated PFYC Class 3. They may have fit Class 2 (less than 10,000 years old). Idaho classes unconsolidated Pleistocene deposits as Class 3A.

[2/] Quaternary dune sand designated as PFYC Class 2 -which includes recent aeolian deposits.

[3/] Iigneous, metamorphic, and PreCambrian rocks classified as PFYC Class 1-unless given a different formation-specific definition in Wyoming or Idaho.

[4/] Where multiple formations were grouped, the highest single PFYC Class was used for the entire group.

[5/] PFYC rankings for this formation were not designated in Wyoming or Idaho PFYC codes, and not readily defined by PFYC criteria (BLM, IM 2008-009).

[6/] Salt Lake Formation and Twin Creek Limestone classed as Class 3 in Wyoming and Class 3A in Idaho.

[7/] Thaynes Limestone and Phosphoria Formation classed as Class 3 in Wyoming and Class 5A in Idaho.

[8/] Nugget Sandstone classed as Class 3 in Wyoming and Class 2 in Idaho.

[9/] Bonneville flood deposits classed as Class 4A in Idaho Falls, Idaho district and Class 3A in Twin Falls district. Melon Gravel is classed as Class 3A in Boise district.

[10/] The Chalky Point locality was discussed in the Chalk Hills formation in Idaho PFYC literature. It is unknown if the Chalky volcanics is the same as Chalky Point. However, given similar nomenclature and proximity to Chalk Hills, the Chalky volcanics were assumed as Class 5A.

[11/] USGS includes the Idavada Volcanics as part of the Challis Volcanic Group, which is classed as Class 3A.

[12/] The Ankareh Formation is not mentioned in Idaho classifications, but classed as Class 3 in Wyoming.

Table D.14-1. OPS Earthquake Hazard for Proposed and Alternative Routes

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Earthquake Zone Rank		
			Low	Medium	High
			< 70	70 to 84	85 to 100
1W	1W(a) Proposed – Total Length	73.8	73.8		
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	16.5		
	Alternative 1W(a)-B	20.9	20.9		
	1W(c) Proposed – Total Length	73.6	73.6		
2	Proposed – Total Length	91.9	91.9		
	Proposed – Compare to Alternative 2A	16.8	16.8		
	Alternative 2A	16.0	16.0		
	Proposed – Compare to Alternative 2B	12.5	12.5		
	Alternative 2B	12.2	12.2		
3	Segment 3 Proposed – Total Length	45.9	45.9		
	Segment 3A Proposed – Total Length	5.1	5.1		
4[1/]	Proposed – Total Length	197.6	89.6	16.5	91.5
	Proposed – Compare to Alternatives 4B-4F	85.2	38.0	16.5	30.6
	Alternative 4B	100.2	38.8	18.3	43.2
	Alternative 4C	101.6	38.8	18.3	44.6
	Alternative 4D	100.8	38.8	18.4	43.6
	Alternative 4E	102.2	38.8	18.4	45.0
	Alternative 4F	87.5	38.0	16.7	32.8
5	Proposed – Total Length	55.7		10.0	45.6
	Proposed – Compare to Alternatives 5A,B	22.3			22.3
	Alternative 5A	29.7			29.7
	Alternative 5B	40.4			40.4
	Proposed – Compare to Alternative 5C	32.9		4.3	28.6
	Alternative 5C	26.0		2.9	23.1
	Proposed – Compare to Alternative 5D	19.2		10.0	9.2
	Alternative 5D	17.0		7.7	9.3
	Proposed – Compare to Alternative 5E	5.8		5.8	
	Alternative 5E	5.3		5.3	
6	Proposed – Total Length	0.5	0.3	0.2	

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Blank cells indicate zero miles or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.14-1. OPS Earthquake Hazard for Proposed and Alternative Routes cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Earthquake Zone Rank		
			Low	Medium	High
			< 70	70 to 84	85 to 100
7	Proposed – Total Length	118.2	41.2	31.2	45.7
	Proposed – Compare to Alternatives 7A,B	35.1		1.0	34.1
	Alternative 7A	37.7		0.9	36.8
	Alternative 7B	46.2		0.9	45.3
	Proposed – Compare to Alternative 7C	20.1		20.1	
	Alternative 7C	20.3		20.3	
	Proposed – Compare to Alternative 7D	6.2	1.3	4.9	
	Alternative 7D	6.8	2.1	4.7	
	Proposed – Compare to Alternative 7E	3.8	3.8		
	Alternative 7E	4.5	4.5		
	Proposed – Compare to Alternative 7F	10.5	10.5		
	Alternative 7F	10.8	10.0	0.8	
	Proposed – Compare to Alternative 7G	3.3	3.3		
	Alternative 7G	3.4	3.4		
	Proposed – Comparison portion for Alternative 7K	118.2	41.2	31.2	45.7
	Alternative 7K	148.1	31.9	30.9	85.2
8	Proposed – Total Length	131.5	131.5		
	Proposed – Compare to Alternative 8A	51.9	51.9		
	Alternative 8A	53.6	53.6		
	Proposed – Compare to Alternative 8B	45.3	45.3		
	Alternative 8B	45.8	45.8		
	Alternative 8B – Compare to Alternative 8C	6.5	6.5		
	Alternative 8C	6.4	6.4		
	Proposed – Compare to Alternative 8D	6.9	6.9		
	Alternative 8D	8.1	8.1		
	Proposed – Compare to Alternative 8E	7.0	7.0		
	Alternative 8E	18.3	18.3		
9	Proposed – Total Length	162.2	162.2		
	Proposed – Compare to Alternative 9A	7.8	7.8		
	Alternative 9A	7.7	7.7		
	Proposed – Compare to Alternative 9B	49.1	49.1		
	Alternative 9B	52.3	52.3		
	Proposed – Compare to Alternative 9C	14.4	14.4		
	Alternative 9C	14.4	14.4		
	Proposed – Compare to Alternative 9D,F,G,H	57.2	57.2		
	Alternative 9D	60.1	60.1		
	Alternative 9F	63.3	63.3		
	Alternative 9G	57.8	57.8		
	Alternative 9H	61.0	61.0		
	Proposed – Compare to Alternative 9E (revised)	61.4	61.4		
	Alternative 9E (revised)	70.6	70.6		
10	Proposed – Total Length	34.4	34.4		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

Table D.14-2. Affected Miles by Earthquake Magnitude Buffers

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Buffered Mileage		
			Magnitude 0.1 to 6	Magnitude 6.0 to 6.9	Magnitude >7
1W	1W(a) Proposed – Total Length	73.8	53.4		
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	16.5		
	Alternative 1W(a)-B	20.9	20.9		
	1W(c) Proposed – Total Length	73.6	49.7		
2	Proposed – Total Length	91.9	85.7		
	Proposed – Comparison portion for Alternative 2A	16.8	16.8		
	Alternative 2A	16.0	16.0		
	Proposed – Comparison portion for Alternative 2B	12.5	12.5		
	Alternative 2B	12.2	12.2		
3	Segment 3 Proposed – Total Length	45.9	30.0		
	Segment 3A Proposed – Total Length	5.1	5.1		
4[1/]	Proposed – Total Length	197.6	166.1	24.4	
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	66.4		
	Alternative 4B	100.2	82.2		
	Alternative 4C	101.6	79.5		
	Alternative 4D	100.8	82.8		
	Alternative 4E	102.2	80.1		
	Alternative 4F	87.5	64.9		
5	Proposed – Total Length	55.7	7.3	49.0	4.5
	Proposed – Comparison portion for Alternatives 5A,B	22.3		22.3	
	Alternative 5A	29.7		29.7	
	Alternative 5B	40.4	9.9	40.4	
	Proposed – Comparison portion for Alternative 5C	32.9		32.0	
	Alternative 5C	26.0		24.8	
	Proposed – Comparison portion for Alternative 5D	19.2		12.5	4.5
	Alternative 5D	17.0		13.0	3.1
	Proposed – Comparison portion for Alternative 5E	5.8			4.5
	Alternative 5E	5.3			4.3
6	Proposed – Total Length	0.5	0.3		0.5

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.14-2. Affected Miles by Earthquake Magnitude Buffers cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Buffered Mileage		
			Magnitude 0.1 to 6	Magnitude 6.0 to 6.9	Magnitude >7
7	Proposed – Total Length	118.2	6.8	58.9	4.9
	Proposed – Comparison portion for Alternatives 7A,B	35.1		35.1	
	Alternative 7A	37.7		37.7	
	Alternative 7B	46.2	11.1	46.2	
	Proposed – Comparison portion for Alternative 7C	20.1		7.0	4.9
	Alternative 7C	20.3		10.4	
	Proposed – Comparison portion for Alternative 7D	6.2			
	Alternative 7D	6.8			
	Proposed – Comparison portion for Alternative 7E	3.8			
	Alternative 7E	4.5			
	Proposed – Comparison portion for Alternative 7F	10.5			
	Alternative 7F	10.8			
	Proposed – Comparison portion for Alternative 7G	3.3			
	Alternative 7G	3.4			
	Proposed – Comparison portion for Alternative 7K	118.2	6.8	58.9	4.9
	Alternative 7K	148.1	70.7	89.2	
8	Proposed – Total Length	131.5	27.4		65.9
	Proposed – Comparison portion for Alternative 8A	51.9	27.4		51.9
	Alternative 8A	53.6	25.8		53.6
	Proposed – Comparison portion for Alternative 8B	45.3			
	Alternative 8B	45.8			
	Alternative 8B – 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	18.3			
9	Proposed – Total Length	162.2			
	Proposed – Comparison portion for Alternative 9A	7.8			
	Alternative 9A	7.7			
	Proposed – Comparison portion for Alternative 9B	49.1			
	Alternative 9B	52.3			21.6
	Proposed – Comparison portion for Alternative 9C	14.4			
	Alternative 9C	14.4			
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2			
	Alternative 9D	60.1			
	Alternative 9F	63.3			
	Alternative 9G	57.8			
	Alternative 9H	61.0			
	Proposed – Comparison portion for Alternative 9E (revised)	61.4			
	Alternative 9E (revised)	70.6			
10	Proposed – Total Length	34.4	14.0		26.6

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

Table D.14-3. Miles of Landslide Hazard Ranking Crossed by Alternative

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Buffered Mileage		
			Low Risk <70	Medium Risk 70-84	High Risk 85-100
1W	1W(a) Proposed – Total Length	73.8	69.5		4.3
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	16.5		
	Alternative 1W(a)-B	20.9	20.9		
	1W(c) Proposed – Total Length	73.6	69.9		3.7
2	Proposed – Total Length	91.9	91.9		
	Proposed – Compare to Alternative 2A	16.8	16.8		
	Alternative 2A	16.0	16.0		
	Proposed – Compare to Alternative 2B	12.5	12.5		
	Alternative 2B	12.2	12.2		
3	Segment 3 Proposed – Total Length	45.9	34.6	11.4	
	Segment 3A Proposed – Total Length	5.1		5.1	
4[1/]	Proposed – Total Length	197.6	143.9	13.9	39.8
	Proposed – Compare to Alternatives 4B-4F	85.2	43.9	3.0	38.2
	Alternative 4B	100.2	50.1	5.0	45.1
	Alternative 4C	101.6	46.5	16.7	38.4
	Alternative 4D	100.8	50.1	5.0	45.7
	Alternative 4E	102.2	46.5	16.7	39.0
	Alternative 4F	87.5	43.9	2.4	41.2
5	Proposed – Total Length	55.7	55.7		
	Proposed – Compare to Alternatives 5A,B	22.3	22.3		
	Alternative 5A	29.7	29.7		
	Alternative 5B	40.4	40.4		
	Proposed – Compare to Alternative 5C	32.9	32.9		
	Alternative 5C	26.0	26.0		
	Proposed – Compare to Alternative 5D	19.2	19.2		
	Alternative 5D	17.0	17.0		
	Proposed – Compare to Alternative 5E	5.8	5.8		
	Alternative 5E	5.3	5.3		
6	Proposed – Total Length	0.5	0.5		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.14-3. Miles of Landslide Hazard Ranking Crossed by Alternative cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Buffered Mileage		
			Low Risk <70	Medium Risk 70-84	High Risk 85-100
7	Proposed – Total Length	118.2	118.2		
	Proposed – Compare to Alternatives 7A,B	35.1	35.1		
	Alternative 7A	37.7	37.7		
	Alternative 7B	46.2	46.2		
	Proposed – Compare to Alternative 7C	20.1	20.1		
	Alternative 7C	20.3	20.3		
	Proposed – Compare to Alternative 7D	6.2	6.2		
	Alternative 7D	6.8	6.8		
	Proposed – Compare to Alternative 7E	3.8	3.8		
	Alternative 7E	4.5	4.5		
	Proposed – Compare to Alternative 7F	10.5	10.5		
	Alternative 7F	10.8	10.8		
	Proposed – Compare to Alternative 7G	3.3	3.3		
	Alternative 7G	3.4	3.4		
	Proposed – Comparison portion for Alternative 7K	118.2	118.2		
	Alternative 7K	148.1	148.1		
8	Proposed – Total Length	131.5	124.3	7.2	
	Proposed – Compare to Alternative 8A	51.9	47.1	4.8	
	Alternative 8A	53.6	53.6		
	Proposed – Compare to Alternative 8B	45.3	42.9	2.4	
	Alternative 8B	45.8	42.3	3.4	
	Alternative 8B – Compare to Alternative 8C	6.5	6.5		
	Alternative 8C	6.4	6.4		
		6.9			
	Alternative 8D	8.1	8.1		
	Proposed – Compare to Alternative 8E	7.0	4.6	2.4	
	Alternative 8E	18.3	18.3		
9	Proposed – Total Length	162.2	162.2		
	Proposed – Compare to Alternative 9A	7.8	7.8		
	Alternative 9A	7.7	7.7		
	Proposed – Compare to Alternative 9B	49.1	49.1		
	Alternative 9B	52.3	52.3		
	Proposed – Compare to Alternative 9C	14.4	14.4		
	Alternative 9C	14.4	14.4		
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	57.2		
	Alternative 9D	60.1	60.1		
	Alternative 9F	63.3	63.3		
	Alternative 9G	57.8	57.8		
	Alternative 9H	61.0	61.0		
	Proposed – Compare to Alternative 9E (revised)	61.4	61.4		
	Alternative 9E (revised)	70.6	70.6		
10	Seg 10 Proposed – Total Length	34.4	34.4		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

Table D.14-4. Acres of Construction Disturbance within Subsidence Areas

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Total Disturbance Acreage	Mineral				
				Coal	Oil and Gas	Trona	Abandoned Underground Mines	Total Subsidence Potential Area[1/]
1W	1W(a) Proposed – Total Length	73.8	775		43		9	43
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	148		7		3	7
	Alternative 1W(a)-B	20.9	271		34		18	38
	1W(c) Proposed – Total Length	73.6	956		60		10	64
2	Proposed – Total Length	91.9	1,778	73	677		28	694
	Proposed – Comparison portion for Alternative 2A	16.8	309		110			110
	Alternative 2A	16.0	355		153		12	165
	Proposed – Comparison portion for Alternative 2B	12.5	237		93			93
	Alternative 2B	12.2	209		68			68
3	Segment 3 Proposed – Total Length	45.9	832	22	362			362
	Segment 3A Proposed – Total Length	5.1	60	8	19			19
4[2/]	Proposed – Total Length	197.6	3,892	24	890	96	37	971
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	1,711		608	19	37	650
	Alternative 4B	100.2	2,080	15	779	93	73	905
	Alternative 4C	101.6	2,070	15	696	93	55	804
	Alternative 4D	100.8	2,107	15	824	94	73	951
	Alternative 4E	102.2	2,078	15	735	94	55	844
	Alternative 4F	87.5	1,726		568	19	25	598
5	Proposed-Total Length	55.7	1,179					
	Proposed – Comparison portion for Alternatives 5A,B	22.3	461					
	Alternative 5A	29.7	644					
	Alternative 5B	40.4	842					
	Proposed – Comparison portion for Alternative 5C	32.9	731					
	Alternative 5C	26.0	509					
	Proposed – Comparison portion for Alternative 5D	19.2	484					
	Alternative 5D	17.0	416					
	Proposed – Comparison portion for Alternative 5E	5.8	174					
	Alternative 5E	5.3	165					
6	Proposed-Total Length	0.5	65					

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] The Total Subsidence Potential Area is a GIS analysis of the dissolved area of all four categories. If categories overlap, the total area may be less than the sum of the categories.

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.14-4. Acres of Construction Disturbance within Subsidence Areas cont.

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Total Disturbance Acreage	Mineral				
				Coal	Oil and Gas	Trona	Abandoned Underground Mines	Total Subsidence Potential Area
7	Proposed-Total Length	118.2	2,252					
	Proposed – Comparison portion for Alternatives 7A,B	35.1	652					
	Alternative 7A	37.7	774					
	Alternative 7B	46.2	920					
	Proposed – Comparison portion for Alternative 7C	20.1	372					
	Alternative 7C	20.3	362					
	Proposed – Comparison portion for Alternative 7D	6.2	132					
	Alternative 7D	6.8	153					
	Proposed – Comparison portion for Alternative 7E	3.8	72					
	Alternative 7E	4.5	96					
	Proposed – Comparison portion for Alternative 7F	10.5	225					
	Alternative 7F	10.8	213					
	Proposed – Comparison portion for Alternative 7G	3.3	64					
	Alternative 7G	3.4	87					
	Proposed – Comparison portion for Alternative 7K	118.2	2,249					
	Alternative 7K	148.1	2,859					
8	Proposed – Total Length	131.5	2,518					
	Proposed – Comparison portion for Alternative 8A	51.9	963					
	Alternative 8A	53.6	978					
	Proposed – Comparison portion for Alternative 8B	45.3	899					
	Alternative 8B	45.8	916					
	Proposed – Comparison portion for Alternative 8C	6.5	163					
	Alternative 8C	6.4	140					
	Proposed – Comparison portion for Alternative 8D	6.9	147					
	Alternative 8D	8.1	174					
	Proposed – Comparison portion for Alternative 8E	7.0	124					
	Alternative 8E	18.3	334					
9	Proposed – Total Length	162.2	3,293					
	Proposed – Comparison portion for Alternative 9A	7.8	147					
	Alternative 9A	7.7	162					
	Proposed – Comparison portion for Alternative 9B	49.1	1,037					
	Alternative 9B	52.3	965					
	Proposed – Comparison portion for Alternative 9C	14.4	304					
	Alternative 9C	14.4	320					
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	1,145					
	Alternative 9D	60.1	1,046					
	Alternative 9F	63.3	1,165					
	Alternative 9G	57.8	1,058					
	Alternative 9H	61.0	1,162					
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	1,230					
	Alternative 9E (revised)	70.6	1,289					
10	Proposed – Total Length	34.4	670					

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value

[1/] The Total Subsidence Potential Area is a GIS analysis of the dissolved area of all four categories. If categories overlap, the total area may be less than the sum of the categories.

Table D.14-5. Acres of Operations Disturbance within Subsidence Areas

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Total Disturbance Acreage	Mineral				
				Coal	Oil and Gas	Trona	Abandoned Underground Mines	Total Subsidence Potential Area[1/]
1W	1W(a) Proposed – Total Length	73.8	177		13		5	13
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	27		1		0	1
	Alternative 1W(a)-B	20.9	44		4		2	5
	1W(c) Proposed – Total Length	73.6	124		12			12
2	Proposed – Total Length	91.9	245	9	78		6	82
	Proposed – Comparison portion for Alternative 2A	16.8	28		11			11
	Alternative 2A	16.0	40		19		1	21
	Proposed – Comparison portion for Alternative 2B	12.5	21		8			8
	Alternative 2B	12.2	17		8			8
3	Segment 3 Proposed – Total Length	45.9	140	3	46			46
	Segment 3A Proposed – Total Length	5.1	12	1	4			4
4[2/]	Proposed – Total Length	197.6	530	3	115	9	6	126
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	213		81	2	6	87
	Alternative 4B	100.2	273	2	109	12	9	125
	Alternative 4C	101.6	265	2	94	12	7	107
	Alternative 4D	100.8	280	2	118	12	9	134
	Alternative 4E	102.2	269	2	101	12	7	114
	Alternative 4F	87.5	214		80	2	3	83
5	Proposed-Total Length	55.7	169					
	Proposed – Comparison portion for Alternatives 5A,B	22.3	58					
	Alternative 5A	29.7	80					
	Alternative 5B	40.4	82					
	Proposed – Comparison portion for Alternative 5C	32.9	94					
	Alternative 5C	26.0	56					
	Proposed – Comparison portion for Alternative 5D	19.2	63					
	Alternative 5D	17.0	53					
	Proposed – Comparison portion for Alternative 5E	5.8	24					
	Alternative 5E	5.3	24					
6	Proposed-Total Length	0.5	61					

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value

[1/] The Total Subsidence Potential Area is a GIS analysi of the dissolved area of all four categories. If categories overlap, the total area may be less than the sum of the categories.

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.14-5. Acres of Operations Disturbance within Subsidence Areas cont.

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Total Disturbance Acreage	Mineral				
				Coal	Oil and Gas	Trona	Abandoned Underground Mines	Total Subsidence Potential Area
7	Proposed-Total Length	118.2	265					
	Proposed – Comparison portion for Alternatives 7A,B	35.1	71					
	Alternative 7A	37.7	93					
	Alternative 7B	46.2	96					
	Proposed – Comparison portion for Alternative 7C	20.1	36					
	Alternative 7C	20.3	28					
	Proposed – Comparison portion for Alternative 7D	6.2	11					
	Alternative 7D	6.8	13					
	Proposed – Comparison portion for Alternative 7E	3.8	5					
	Alternative 7E	4.5	9					
	Proposed – Comparison portion for Alternative 7F	10.5	23					
	Alternative 7F	10.8	23					
	Proposed – Comparison portion for Alternative 7G	3.3	6					
	Alternative 7G	3.4	6					
	Proposed – Comparison portion for Alternative 7K	118.2	264					
	Alternative 7K	148.1	382					
8	Proposed – Total Length	131.5	249					
	Proposed – Comparison portion for Alternative 8A	51.9	102					
	Alternative 8A	53.6	103					
	Proposed – Comparison portion for Alternative 8B	45.3	87					
	Alternative 8B	45.8	69					
	Proposed – Comparison portion for Alternative 8C	6.5	15					
	Alternative 8C	6.4	16					
	Proposed – Comparison portion for Alternative 8D	6.9	15					
	Alternative 8D	8.1	15					
	Proposed – Comparison portion for Alternative 8E	7.0	10					
	Alternative 8E	18.3	26					
9	Proposed – Total Length	162.2	360					
	Proposed – Comparison portion for Alternative 9A	7.8	15					
	Alternative 9A	7.7	14					
	Proposed – Comparison portion for Alternative 9B	49.1	122					
	Alternative 9B	52.3	83					
	Proposed – Comparison portion for Alternative 9C	14.4	27					
	Alternative 9C	14.4	26					
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	106					
	Alternative 9D	60.1	84					
	Alternative 9F	63.3	93					
	Alternative 9G	57.8	87					
	Alternative 9H	61.0	96					
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	116					
	Alternative 9E (revised)	70.6	135					
10	Proposed – Total Length	34.4	74					

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value

Table D.14-6. Miles of Each Depth to Shallow Bedrock Category Crossed by Proposed and Alternative Routes

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Depth to Bedrock (feet)			
			1 to 4	4 to 8	8 to 12	Total Shallow Bedrock
1W	1W(a) Proposed – Total Length	73.8	4.6		14.3	18.9
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	3.3			3.3
	Alternative 1W(a)-B	20.9				
	1W(c) Proposed – Total Length	73.6	7.1		13.7	20.9
2	Proposed – Total Length	91.9				
	Proposed – Comparison portion for Alternative 2A	16.8				
	Alternative 2A	16.0				
	Proposed – Comparison portion for Alternative 2B	12.5				
	Alternative 2B	12.2				
3	Segment 3 Proposed – Total Length	45.9	31.0	3.1		34.1
	Segment 3A Proposed – Total Length	5.1	2.5			2.5
4[1/]	Proposed – Total Length	197.6	60.3	2.8	10.2	73.3
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	31.8			31.8
	Alternative 4B	100.2	53.0			53.0
	Alternative 4C	101.6	45.3			45.3
	Alternative 4D	100.8	54.1			54.1
	Alternative 4E	102.2	46.3			46.3
	Alternative 4F	87.5	35.8			35.8
5	Proposed-Total Length	55.7	2.4	13.5		16.0
	Proposed – Comparison portion for Alternatives 5A,B	22.3	2.4	11.1		13.6
	Alternative 5A	29.7	5.4	10.5		15.9
	Alternative 5B	40.4	2.6	14.9		17.5
	Proposed – Comparison portion for Alternative 5C	32.9	2.4	10.3		12.8
	Alternative 5C	26.0	2.4	1.5		3.9
	Proposed – Comparison portion for Alternative 5D	19.2		2.4		2.4
	Alternative 5D	17.0		1.5		1.5
	Proposed – Comparison portion for Alternative 5E	5.8		1.0		1.0
	Alternative 5E	5.3		0.7		0.7
6	Proposed-Total Length	0.5	0.3	0.2		0.5

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.14-6. Miles of Each Depth to Shallow Bedrock Category Crossed by Proposed and Alternative Routes cont.

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Depth to Bedrock (feet)			
			1 to 4	4 to 8	8 to 12	Total Shallow Bedrock
7	Proposed – Total Length	118.2	17.6	23.3	6.9	47.8
	Proposed – Comparison portion for Alternatives 7A,B	35.1	2.4	10.8		13.2
	Alternative 7A	37.7	5.4	10.3		15.7
	Alternative 7B	46.2	2.2	15.0		17.2
	Proposed – Comparison portion for Alternative 7C	20.1	12.0			12.0
	Alternative 7C	20.3	10.2			10.2
	Proposed – Comparison portion for Alternative 7D	6.2	2.2		0.8	3.0
	Alternative 7D	6.8	3.2		0.8	4.0
	Proposed – Comparison portion for Alternative 7E	3.8		1.1	2.7	3.8
	Alternative 7E	4.5		0.1	4.4	4.5
	Proposed – Comparison portion for Alternative 7F	10.5		3.7	6.1	9.8
	Alternative 7F	10.8		1.4	5.9	7.3
	Proposed – Comparison portion for Alternative 7G	3.3		1.0		1.0
	Alternative 7G	3.4		0.2		0.2
	Proposed – Comparison portion for Alternative 7K	118.2	17.6	23.3	6.9	47.8
	Alternative 7K	148.1	11.8	37.1	14.5	63.4
8	Proposed – Total Length	131.5	25.3	77.1	10.2	112.6
	Proposed – Comparison portion for Alternative 8A	51.9	12.3	22.2	5.5	40.0
	Alternative 8A	53.6	12.0	24.5	4.9	41.4
	Proposed – Comparison portion for Alternative 8B	45.3	13.0	20.6	4.6	38.3
	Alternative 8B	45.8	1.6	24.4	8.5	34.5
	Alternative 8B – Comparison portion for Alternative 8C	6.5		6.5		6.5
	Alternative 8C	6.4		6.4		6.4
	Proposed – Comparison portion for Alternative 8D	6.9		3.9		3.9
	Alternative 8D	8.1		4.3		4.3
	Proposed – Comparison portion for Alternative 8E	7.0	2.5		2.5	5.0
	Alternative 8E	18.3	1.9		11.8	13.7
9	Proposed – Total Length	162.2	72.0	33.0	30.2	135.3
	Proposed – Comparison portion for Alternative 9A	7.8	5.7		2.1	7.8
	Alternative 9A	7.7	4.1		3.6	7.7
	Proposed – Comparison portion for Alternative 9B	49.1	17.1	29.5		46.7
	Alternative 9B	52.3	3.0	41.7	4.2	48.9
	Proposed – Comparison portion for Alternative 9C	14.4	12.8			12.8
	Alternative 9C	14.4	5.2	1.8	4.2	11.2
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	43.3		5.0	48.3
	Alternative 9D	60.1	12.4		7.8	20.2
	Alternative 9F	63.3	19.7		7.8	27.5
	Alternative 9G	57.8	9.2		11.1	20.3
	Alternative 9H	61.0	16.5		11.1	27.6
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	44.0		8.6	52.6
	Alternative 9E (revised)	70.6	54.0		8.7	62.7
10	Proposed – Total Length	34.4	6.8	0.4	0.6	7.8

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero miles or null value

Table D.14-7. Miles of Shallow Bedrock in Landslide, Subsidence, or Coal (Methane) Zones

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Bedrock/ Landslide[1/]	Bedrock/ Subsidence	Bedrock/ Coal	Bedrock in All Zones[2/]
1W	1W(a) Proposed – Total Length	73.8		0.6		0.6
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5				
	Alternative 1W(a)-B	20.9				
	1W(c) Proposed – Total Length	73.6		0.5		0.5
2	Proposed – Total Length	91.9				
	Proposed – Comparison portion for Alternative 2A	16.8				
	Alternative 2A	16.0				
	Proposed – Comparison portion for Alternative 2B	12.5				
	Alternative 2B	12.2				
3	Segment 3 Proposed – Total Length	45.9	6.3	16.6	0.5	19.7
	Segment 3A Proposed – Total Length	5.1	2.5	1.0	1.0	2.5
4[3/]	Proposed – Total Length	197.6	34.6	28.8	0.8	44.4
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	29.9	18.2	0.8	31.1
	Alternative 4B	100.2	43.6	31.5	3.9	49.0
	Alternative 4C	101.6	35.8	25.9	3.9	41.3
	Alternative 4D	100.8	44.6	33.0	3.9	50.0
	Alternative 4E	102.2	36.9	27.4	3.9	42.3
	Alternative 4F	87.5	33.9	15.4	0.8	35.1
5	Proposed-Total Length	55.7				
	Proposed – Comparison portion for Alternatives 5A,B	22.3				
	Alternative 5A	29.7				
	Alternative 5B	40.4				
	Proposed – Comparison portion for Alternative 5C	32.9				
	Alternative 5C	26.0				
	Proposed – Comparison portion for Alternative 5D	19.2				
	Alternative 5D	17.0				
	Proposed – Comparison portion for Alternative 5E	5.8				
	Alternative 5E	5.3				
6	Proposed-Total Length	0.5				

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Landslide is defined as medium or high landslide hazards as shown on Table D.14-3.

[2/] Bedrock in all zones is a GIS analysis of the dissolved area of all three bedrock categories. If categories overlap, the distance may be less than the sum of the three numbers.

[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.14-7. Miles of Shallow Bedrock in Landslide, Subsidence, or Coal (Methane) Zones cont.

Segment Number	Proposed Alternative or Route Name	Segment Length (Miles)	Bedrock/ Landslide[1/]	Bedrock/ Subsidence	Bedrock/ Coal	Bedrock in All Zones[2/]
7	Proposed-Total Length	118.2				
	Proposed – Comparison portion for Alternatives 7A,B	35.1				
	Alternative 7A	37.7				
	Alternative 7B	46.2				
	Proposed – Comparison portion for Alternative 7C	20.1				
	Alternative 7C	20.3				
	Proposed – Comparison portion for Alternative 7D	6.2				
	Alternative 7D	6.8				
	Proposed – Comparison portion for Alternative 7E	3.8				
	Alternative 7E	4.5				
	Proposed – Comparison portion for Alternative 7F	10.5				
	Alternative 7F	10.8				
	Proposed – Comparison portion for Alternative 7G	3.3				
	Alternative 7G	3.4				
	Proposed – Comparison portion for Alternative 7K	118.2				
	Alternative 7K	148.1				
8	Proposed – Total Length	131.5	0.8			0.8
	Proposed – Comparison portion for Alternative 8A	51.9				
	Alternative 8A	53.6				
	Proposed – Comparison portion for Alternative 8B	45.3	0.8			0.8
	Alternative 8B	45.8	2.7			2.7
	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	0.8			0.8
	Alternative 8E	18.3				
9	Proposed – Total Length	162.2				
	Proposed – Comparison portion for Alternative 9A	7.8				
	Alternative 9A	7.7				
	Proposed – Comparison portion for Alternative 9B	49.1				
	Alternative 9B	52.3				
	Proposed – Comparison portion for Alternative 9C	14.4				
	Alternative 9C	14.4				
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2				
	Alternative 9D	60.1				
	Alternative 9F	63.3				
	Alternative 9G	57.8				
	Alternative 9H	61.0				
	Proposed – Comparison portion for Alternative 9E (revised)	61.4				
	Alternative 9E (revised)	70.6				
10	Proposed – Total Length	34.4				

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Blank cells indicate zero miles or null value

[1/] Landslide is defined as medium or high landslide hazards as shown on Table D.14-3.

[2/] Bedrock in all zones is a GIS analysis of the dissolved area of all three bedrock categories. If categories overlap, the distance may be less than the sum of the three numbers.

Table D.15-1. Analysis of Soil Factors in Construction Disturbance Areas (in acres)

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Acres	Highly Wind Erodible	High K Factor	Slope > 25%	Low T Factor	Prime Farmland	Compaction Prone	Stony/ Rocky	Droughty Soil	Shallow Bedrock	Hydric Soil
1W	1W(a) Proposed – Total Length	73.8	775	260	37	37	37			37	297	37	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	148	108	24	24	24			24	133	24	
	Alternative 1W(a)-B	20.9	271	98	5	5	5			5	102	5	
	1W(c) Proposed – Total Length	73.6	956	316	73	73	73			73	389	73	
2	Proposed – Total Length	91.9	1,778	1,115	59						1,114		
	Proposed – Comparison portion for Alternative 2A	16.8	309	289							289		
	Alternative 2A	16.0	355	321							321		
	Proposed – Comparison portion for Alternative 2B	12.5	237	237							237		
	Alternative 2B	12.2	209	209							209		
3	Segment 3 Proposed – Total Length	45.9	832	832	218		578				614	531	
	Segment 3A Proposed – Total Length	5.1	60	60	29		31				31	31	
4[1/]	Proposed – Total Length	197.6	3,890	1,917	1,788	696	1,768		145	922	2,425	1,145	205
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	1,710	1,080	559	72	898		27	561	1,134	673	86
	Alternative 4B	100.2	2,080	1,356	808	1	1,195		24	623	1,412	1,059	88
	Alternative 4C	101.6	2,070	1,355	819		1,049		24	639	1,412	936	67
	Alternative 4D	100.8	2,107	1,383	809	1	1,240		24	627	1,398	1,104	88
	Alternative 4E	102.2	2,077	1,375	808		1,075		24	631	1,385	961	67
	Alternative 4F	87.5	1,725	1,109	577	135	972		27	485	1,059	759	85
5	Proposed – Total Length	55.7	1,179	97	1,028	351	445	473		462	540	64	
	Proposed – Comparison portion for Alternatives 5A,B	22.3	461	18	396	255	254	29		255	255	64	
	Alternative 5A	29.7	644	24	515	330	330	182		330	330	128	
	Alternative 5B	40.4	842		790	368	368	265		368	368	51	
	Proposed – Comparison portion for Alternative 5C	32.9	731	18	666	268	268	292		268	268	64	
	Alternative 5C	26.0	509	48	509	106	91	92		91	91	54	
	Proposed – Comparison portion for Alternative 5D	19.2	484	79	404	37	85	390		37	116		
	Alternative 5D	17.0	416	72	343	3	55	337		3	76		
	Proposed – Comparison portion for Alternative 5E	5.8	174	79	95		48	126			79		
	Alternative 5E	5.3	165	90	74		42	122			90		
6	Proposed – Total Length	0.5	65	65			63	2			65	30	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.15-1. Analysis of Soil Factors in Construction Disturbance Areas (in acres) cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Acres	Highly Wind Erodible	High K Factor	Slope > 25%	Low T Factor	Prime Farmland	Compaction Prone	Stony/ Rocky	Droughty Soil	Shallow Bedrock	Hydric Soil
7	Proposed – Total Length	118.2	2,252	483	2,159	520	745	1,272		601	896	357	
	Proposed – Comparison portion for Alternatives 7A,B	35.1	652	14	594	278	241	254		278	278	58	
	Alternative 7A	37.7	774	24	648	354	321	312		354	354	125	
	Alternative 7B	46.2	920		875	366	333	325		366	366	44	
	Proposed – Comparison portion for Alternative 7C	20.1	372	34	372		232	287			232	232	
	Alternative 7C	20.3	362	12	361	<1	179	269		<1	179	179	
	Proposed – Comparison portion for Alternative 7D	6.2	132	15	132	11	59	59		11	70	59	
	Alternative 7D	6.8	153	25	153	11	82	82		11	92	82	
	Proposed – Comparison portion for Alternative 7E	3.8	72	17	72	55		17		55	55		
	Alternative 7E	4.5	96	9	96	82		9		82	82		
	Proposed – Comparison portion for Alternative 7F	10.5	225	102	225	104		102		104	104		
	Alternative 7F	10.8	213	37	213	113		37		113	113		
	Proposed – Comparison portion for Alternative 7G	3.3	64	50	64		14	50					
	Alternative 7G	3.4	87	77	87		10	77					
	Proposed – Comparison portion for Alternative 7K	118.2	2,249	482	2,156	519	745	1,271		600	895	357	
	Alternative 7K	148.1	2,859	939	2,620	873	1,402	733		960	1,227	215	
8	Proposed – Total Length	131.5	2,518	691	1,842		2,062	486		3	1,511	496	
	Proposed – Comparison portion for Alternative 8A	51.9	963	580	337		637	359			653	221	
	Alternative 8A	53.6	978	644	332		283	244		10	687	200	
	Proposed – Comparison portion for Alternative 8B	45.3	899	110	849		769	126		3	385	275	
	Alternative 8B	45.8	916	238	859		700	422			294	34	
	Alternative 8B – Comparison portion for Alternative 8C	6.5	163		163		163				80		
	Alternative 8C	6.4	140		139		139				57		
	Proposed – Comparison portion for Alternative 8D	6.9	147		147		87	7			80		
	Alternative 8D	8.1	174		174		98	8			90		
	Proposed – Comparison portion for Alternative 8E	7.0	124	59	93		93	59			44	53	
	Alternative 8E	18.3	334	287	334		245	287			17	30	
9	Proposed – Total Length	162.2	3,293	1,486	1,588	33	2,131	1,062		534	1,812	1,430	
	Proposed – Comparison portion for Alternative 9A	7.8	147		86		147	61		61	61	86	
	Alternative 9A	7.7	162		68		162	94		94	94	68	
	Proposed – Comparison portion for Alternative 9B	49.1	1,037	138	885		407	40		64	202	343	
	Alternative 9B	52.3	965	210	700		205	135		134	304	71	
	Proposed – Comparison portion for Alternative 9C	14.4	304		291		304	12		65	65	239	
	Alternative 9C	14.4	320	39	225		280	133		144	144	136	
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	1,145	973	273		953	293			870	851	
	Alternative 9D	60.1	1,046	982	692		396	800			362	236	
	Alternative 9F	63.3	1,165	1,094	699		524	790			480	357	
	Alternative 9G	57.8	1,058	1,020	692		443	834			387	199	
	Alternative 9H	61.0	1,162	1,125	692		564	817			491	321	
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	1,230	1,039	362		1,042	359			868	872	
	Alternative 9E (revised)	70.6	1,289	770	709		1,095	383			580	906	
10	Proposed – Total Length	34.4	670	318	528		291	181		125	266	138	
Total of All Proposed Segments (grey shaded areas)		**990.4**	**18,268**	**7,640**	**9,349**	**1,710**	**8,224**	**3,476**	**145**	**2,757**	**9,960**	**4,332**	**205**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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Table D.15-2. Analysis of Soil Factors in Operations Disturbance Areas (in acres)

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Acres	Erosion Factors			Sensitive Soils		Factors Affecting Reclamation					Permanent Soil Loss
				Highly Wind Erodible	High K Factor	Slope > 25%	Low T Factor	Prime Farmland	Compaction Prone	Stony/ Rocky	Droughty Soil	Shallow Bedrock	Hydric Soil	
1W	1W(a) Proposed – Total Length	73.8	177	58	6	6	6			6	64	6		177
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	27	20	4	4	4			4	24	4		27
	Alternative 1W(a)-B	20.9	44	15	1	1	1			1	16	1		44
	1W(c) Proposed – Total Length	73.6	124	40	8	8	8			8	48	8		124
2	Proposed – Total Length	91.9	245	121	7						121			245
	Proposed – Comparison portion for Alternative 2A	16.8	28	27							27			28
	Alternative 2A	16.0	40	37							37			40
	Proposed – Comparison portion for Alternative 2B	12.5	21	21							21			21
	Alternative 2B	12.2	17	17							17			17
3	Segment 3 Proposed – Total Length	45.9	140	140	76		60				63	57		140
	Segment 3A Proposed – Total Length	5.1	12	12	3		9				9	9		12
4[1/]	Proposed – Total Length	197.6	529	279	277	92	228		12	139	316	141	16	529
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	212	137	69	10	111		2	73	142	90	6	212
	Alternative 4B	100.2	273	185	109	<1	157		2	83	190	146	7	273
	Alternative 4C	101.6	265	188	99		138		2	74	180	127	6	265
	Alternative 4D	100.8	280	192	109	<1	166		2	85	191	154	7	280
	Alternative 4E	102.2	269	195	96		142		2	72	177	132	6	269
	Alternative 4F	87.5	214	142	74	23	127		2	61	130	106	7	214
5	Proposed – Total Length	55.7	169	22	138	47	92	49		80	100	9		169
	Proposed – Comparison portion for Alternatives 5A,B	22.3	58	2	49	37	37	4		37	37	9		58
	Alternative 5A	29.7	80	2	62	50	50	18		50	50	18		80
	Alternative 5B	40.4	82		86	46	46	22		46	46	6		92
	Proposed – Comparison portion for Alternative 5C	32.9	94	2	84	37	37	37		37	37	9		94
	Alternative 5C	26.0	56	4	55	14	12	9		12	12	6		55
	Proposed – Comparison portion for Alternative 5D	19.2	63	20	43	3	21	40		3	23			63
	Alternative 5D	17.0	53	21	32	1	21	28		1	22			53
	Proposed – Comparison portion for Alternative 5E	5.8	24	20	4		19	5			20			24
	Alternative 5E	5.3	24	21	4		18	6			21			24
6	Proposed – Total Length	0.5	61	61			60	1			61	28		61

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.15-2. Analysis of Soil Factors in Operations Disturbance Areas (in acres) cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Acres	Erosion Factors			Sensitive Soils		Factors Affecting Reclamation					Permanent Soil Loss
				Highly Wind Erodible	High K Factor	Slope > 25%	Low T Factor	Prime Farmland	Compaction Prone	Stony/ Rocky	Droughty Soil	Shallow Bedrock	Hydric Soil	
7	Proposed – Total Length	118.2	265	39	253	68	128	113		99	130	40		265
	Proposed – Comparison portion for Alternatives 7A,B	35.1	71	2	64	38	35	20		38	38	7		71
	Alternative 7A	37.7	93	3	74	51	49	28		51	51	19		93
	Alternative 7B	46.2	96		91	44	42	28		44	44	5		96
	Proposed – Comparison portion for Alternative 7C	20.1	36	3	36		25	30			25	25		36
	Alternative 7C	20.3	28	<1	28		15	21			15	15		28
	Proposed – Comparison portion for Alternative 7D	6.2	11	2	11	1	4	4		1	4	4		11
	Alternative 7D	6.8	13	3	13	1	5	5		1	6	5		13
	Proposed – Comparison portion for Alternative 7E	3.8	5	1	5	4		1		4	4			5
	Alternative 7E	4.5	9	<1	9	7		<1		7	7			9
	Proposed – Comparison portion for Alternative 7F	10.5	23	9	23	11		9		11	11			23
	Alternative 7F	10.8	23	6	23	12		6		12	12			23
	Proposed – Comparison portion for Alternative 7G	3.3	6	4	6		2	4						6
	Alternative 7G	3.4	6	5	6		<1	5						6
	Proposed – Comparison portion for Alternative 7K	118.2	264	39	253	68	128	113		99	130	40		264
	Alternative 7K	148.1	382	109	349	115	211	77		139	175	30		381
8	Proposed – Total Length	131.5	249	78	173		207	44		<1	156	61		248
	Proposed – Comparison portion for Alternative 8A	51.9	102	70	28		71	34			78	36		102
	Alternative 8A	53.6	103	73	30		41	23		2	78	33		103
	Proposed – Comparison portion for Alternative 8B	45.3	87	7	85		76	11		<1	36	24		87
	Alternative 8B	45.8	69	10	68		55	27			21	<1		69
	Alternative 8B – Comparison portion for Alternative 8C	6.5	15		15		15				5			15
	Alternative 8C	6.4	16		16		16				3			16
	Proposed – Comparison portion for Alternative 8D	6.9	15		15		8	1			7			15
	Alternative 8D	8.1	15		15		8	2			6			15
	Proposed – Comparison portion for Alternative 8E	7.0	10	5	8		8	5			3	4		10
	Alternative 8E	18.3	26	21	26		20	21			2	4		26
9	Proposed – Total Length	162.2	360	149	187	4	223	99		51	183	145		360
	Proposed – Comparison portion for Alternative 9A	7.8	15		10		15	5		5	5	10		15
	Alternative 9A	7.7	14		6		14	8		8	8	6		14
	Proposed – Comparison portion for Alternative 9B	49.1	122	22	100		37	3		3	25	34		122
	Alternative 9B	52.3	83	18	59		16	11		12	28	4		83
	Proposed – Comparison portion for Alternative 9C	14.4	27		26		27	t[2/]		3	3	24		27
	Alternative 9C	14.4	26	2	17		24	11		12	12	12		26
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	106	89	27		91	25			79	81		106
	Alternative 9D	60.1	84	76	58		32	63			27	20		84
	Alternative 9F	63.3	93	85	58		44	60			36	32		93
	Alternative 9G	57.8	87	85	60		37	70			28	15		87
	Alternative 9H	61.0	96	94	60		49	67			38	28		96
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	116	95	37		101	31			79	85		116
	Alternative 9E (revised)	70.6	135	85	72		115	43			63	93		135
10	Proposed – Total Length	34.4	74	37	50		49	13		10	35	24		74
Total of All Proposed Segments (grey shaded areas)		**990.4**	**2,405**	**1,036**	**1,178**	**225**	**1,070**	**319**	**12**	**393**	**1,286**	**528**	**16**	**2,404**

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[2/] "t" indicates only a trace amount (<0.1 acre) of impact

Table D.15-3. Soil Impacts on National Forest-Construction Areas (in acres)

Segment Number	Proposed or Alternative Name	Total Segment Acres	Total National Forest Acres	Highly Erodible Soil (High K Factor)	Low Soil Loss Tolerance (Low T Factor)	hhm[1/]	hmm[2/]
	Medicine Bow-Routt National Forests						
1W	1W(a) Proposed – Total Length	775	16				
	1W(c) Proposed – Total Length	956	24				
Total of All Medicine Bow NF Segments (grey shaded areas)		**1,731**	**40**				
	Caribou-Targhee National Forest						
4	Proposed – Total Length	3,890	148	148		8	20
	Proposed – Comparison Portion for Alternative 4G	30	30			7	12
	Alternative 4G	40	48			2	16
	Sawtooth National Forest						
7	Proposed – Comparison portion for Alternative 7K	2,246	<1	<1			
	Alternative 7K	2,855	230	123	227		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

[1/] "hhm" means two of the three soils in the map unit have a high erosion hazard and one has moderate hazard. Between 50 and 75 percent of the area has high hazard.

[2/] "hmm" means only one of the three soils has a high erosion hazard with the remaining in moderate hazard. These areas have less than 50 percent in high erosion hazard.

Table D.15-4. Soil Impacts on National Forest-Operations Areas (in acres)

Segment Number	Proposed or Alternative Name	Total Segment Acres	Total Forest Acres	Highly Erodible Soil (High K Factor)	Low Soil Loss Tolerance (Low T Factor)	Permanent Soil Loss	hhm[2/]	hmm[3/]
	Medicine Bow-Routt National Forests							
1W	1W(a) Proposed – Total Length	177	3			3		
	1W(c) Proposed – Total Length	124	3			3		
Total of All Medicine Bow NF Segments (grey shaded areas)		**301**	**6**			**6**		
	Caribou-Targhee National Forest							
4	Proposed – Total Length	529	19	19		19	2	3
	Proposed – Comparison portion for Alternative 4G		5				1	2
	Alterntive 4G							
	Sawtooth National Forest							
7	Proposed – Comparison portion for Alternative 7K	264	t[1/]	t[1/]		t[1/]		
	Alternative 7K	381	38	21	37	38		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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/] "hhm" means two of the three soils in the map unit have a high erosion hazard and one has moderate hazard. Between 50 and 75 percent of the area has high hazard.

[3/] "hmm" means only one of the three soils has a high erosion hazard with the remaining in moderate hazard. These areas have less than 50 percent in high erosion hazard.

Table D.16-1. Surface Water Road Crossings by Crossing Type

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Crossings[1/]	Number of Crossings															Estimated Disturbance Area (Acres)[2/]	Total Drive-through	Total Cut/Fill	Total Culvert
				Ephemeral			Intermittent Dry				Intermittent Wet			Perennial			Artificial					
				Drive Through	Cut/Fill	TMDL/ 303(d)	Drive Through	Cut/Fill	Temporary Culvert	TMDL/ 303(d)	Avoid	Temporary Culvert	TMDL/ 303(d)	Permanent Culvert	Avoid	TMDL/ 303(d)	Avoid	TMDL/ 303(d)				
1W	1W(a) Proposed – Total Length	73.8	230	81	74		12	27				28		1	2		5		2	93	101	29
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	31	5	4		3	8				6					5			8	12	6
	Alternative 1W(a)-B	20.9	23	6	5		4	8												9	14	
	1W(c) Proposed – Total Length	73.6	185	70	51		13	29				10		2	4		6		1	82	81	12
2	Proposed – Total Length	91.9	192	96	68		2	4	8			1		9[3/]	1		4		<1	97	72	18
	Proposed – Comparison portion for Alternative 2A	16.8	31	16	11			1	2											16	12	2
	Alternative 2A	16.0	45	23	17				3			2							<1	23	17	5
	Proposed – Comparison portion for Alternative 2B	12.5	24	12	8			1	2											12	9	2
	Alternative 2B	12.2	21	12	8							1							<1	12	8	1
3	Segment 3 Proposed – Total Length	45.9	96	39	25		6	13				3		4	6				1	45	38	7
	Segment 3A Proposed – Total Length	5.1	12	7	3		1	1						1	1					7	3	1
4[5/]	Proposed – Total Length	197.6	442	123	100	5	37	85				17		20	30	9	16		3	156	189	41
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	242	63	52	1	23	55				10		10	15		13		t[4/]	85	108	20
	Alternative 4B	100.2	375	137	112	1	13	31				50		5	8		18		4	146	147	55
	Alternative 4C	101.6	354	131	106	1	14	32				43		4	7		17		4	140	142	47
	Alternative 4D	100.8	413	158	129	1	13	31				50		5	8		18		5	166	165	55
	Alternative 4E	102.2	387	149	121	1	14	32				43		4	7		17		4	158	157	47
	Alternative 4F	87.5	220	60	49	1	16	36				4		18	26		10		2	74	87	22
5	Proposed – Total Length	55.7	170	71	31	61											7		1	71	30	
	Proposed – Comparison portion for Alternatives 5A,B	22.3	77	20	9	47													1	18	8	
	Alternative 5A	29.7	78	19	8	21	4	3		2		12		3	5				2	18	9	15
	Alternative 5B	40.4	96	37	16	21	7	4		1		3		3	4				1	32	15	6
	Proposed – Comparison portion for Alternative 5C	32.9	145	65	28	51											1		1	57	25	
	Alternative 5C	26.0	52	21	9	17	1	1									3		<1	30	13	
	Proposed – Comparison portion for Alternative 5D	19.2	75	47	20	6											2		<1	43	19	
	Alternative 5D	17.0	51	27	11	6	2	2									3		<1	24	11	
	Proposed – Comparison portion for Alternative 5E	5.8	5	3	1												1			3	1	
	Alternative 5E	5.3	6	4	2												1			4	2	
6	Proposed – Total Length	0.5																				

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] The number of crossings are based on the disturbance acres for each stream crossing type and have been rounded to the nearest whole number; therefore numbers are inexact and columns/rows may not sum exactly

[2/] Estimated Disturbance Acres are in addition to the disturbance area of the road that would be needed for stream crossings

[3/] These nine crossings are not all perennial, some will require a permanent culvert

[4/] "t" indicates only a trace amount (<0.1 acre) of disturbance

[5/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-1. Surface Water Road Crossings by Crossing Type cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Crossings[1/]	Number of Crossings: Ephemeral			Intermittent Dry				Intermittent Wet			Perennial			Artificial		Estimated Disturbance Area (Acres)[2/]	Total Drive-through	Total Cut/Fill	Total Culvert
				Drive Through	Cut/Fill	TMDL/ 303(d)	Drive Through	Cut/Fill	Temporary Culvert	TMDL/ 303(d)	Avoid	Temporary Culvert	TMDL/ 303(d)	Permanent Culvert	Avoid	TMDL/ 303(d)	Avoid	TMDL/ 303(d)				
7	Proposed – Total Length	118.2	259	56	74	51		2	11			3	1	15	3	1	42		2	53	72	31
	Proposed – Comparison portion for Alternatives 7A,B	35.1	82	16	22	44													1	12	16	2
	Alternative 7A	37.7	106	20	26	22		2	8	5		12		8	2			1	1	11	16	11
	Alternative 7B	46.2	98	24	31	23		2	9			1		7	1				1	17	24	9
	Proposed – Comparison portion for Alternative 7C	20.1	17	3	5									1			8			3	5	3
	Alternative 7C	20.3	24	10	12				1								1			9	13	2
	Proposed – Comparison portion for Alternative 7D	6.2	17	4	6				1			2					4			4	6	1
	Alternative 7D	6.8	17	4	5							2					6		<1	4	5	2
	Proposed – Comparison portion for Alternative 7E	3.8	5											4	1							3
	Alternative 7E	4.5	7											6	1				<1			5
	Proposed – Comparison portion for Alternative 7F	10.5	32	3	4			1	6			1		14	3					3	4	12
	Alternative 7F	10.8	19	3	5			1	5			1		3	1				<1	3	5	4
	Proposed – Comparison portion for Alternative 7G	3.3	4	2	2															2	2	
	Alternative 7G	3.4	0																			
	Proposed – Comparison portion for Alternative 7K	118.2	259	56	74	51		2	11			3	1	15	3	1	42		1	53	72	15
	Alternative 7K	148.1	494	137	179	30		11	59	1		9		38	8	1	19	2	<1	133	184	28
8	Proposed – Total Length	131.5	266	114	56	19	7	15		2		1	1	3	9		37	2	1	110	66	3
	Proposed – Comparison portion for Alternative 8A	51.9	59	16	11	1	1	2						2	6		20		t[4/]	19	11	2
	Alternative 8A	53.6	54	9	7	1	1	2		2				1	3		27	1	<1	12	8	1
	Proposed – Comparison portion for Alternative 8B	45.3	116	47	33	18	3	6		2							5	2	<1	46	27	
	Alternative 8B	45.8	71	21	15	28		1		2							3	1	<1	13	7	
	Proposed – Comparison portion for Alternative 8C	6.5	18	8	5	2		1		2									<1	7	5	
	Alternative 8C	6.4	21	11	7	2		1											<1	10	6	
	Proposed – Comparison portion for Alternative 8D	6.9	10	2	1	5												2	<1			
	Alternative 8D	8.1	9	2	2	3												2	<1			
	Proposed – Comparison portion for Alternative 8E	7.0	6	1													5			1		
	Alternative 8E	18.3	14	7	5		1	1												9	5	
9	Proposed – Total Length	162.2	322	106	84	17	3	6	7	6		15		2	2	2	72		2	108	90	25
	Proposed – Comparison portion for Alternative 9A	7.8	16	4	3											2	7			4	6	2
	Alternative 9A	7.7	14	1	1									1		5	6		t[4/]	1	7	1
	Proposed – Comparison portion for Alternative 9B	49.1	70	20	16	10	1	3	4	5		6		1	1		3		<1	22	19	3
	Alternative 9B	52.3	57	20	15	6								1	1		14		<1	18	18	4
	Proposed – Comparison portion for Alternative 9C	14.4	27	13	11												3			13	11	1
	Alternative 9C	14.4	21	4	3	1							1				12		t[4/]	4	3	2
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	136	45	35			1	1	2					1		51		t[4/]	44	36	13
	Alternative 9D	60.1	42	21	17	3											1		<1	20	16	2
	Alternative 9F	63.3	57	27	21	3											6		<1	25	20	3
	Alternative 9G	57.8	35	17	14	3											1		<1	16	13	2
	Alternative 9H	61.0	50	23	18	3											6		<1	21	17	3
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	136	45	35			1	1	2					1		51					
	Alternative 9E (revised)	70.6	109	44	35	19						1	1	3	4		1	1	<1	58	56	7
10	Proposed – Total Length	34.4	26	8		5				3							10			14	1	1

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] The number of crossings are based on the disturbance acres for each stream crossing type and have been rounded to the nearest whole number; therefore numbers are inexact and columns/rows may not sum exactly

[2/] Estimated Disturbance Acres are in addition to the disturbance area of the road that would be needed for stream crossings

[3/] These nine crossings are not all perennial, some will require a permanent culvert (pertains to Segment 2 on page 1 of this table)

[4/] "t" indicates only a trace amount (<0.1 acre) of disturbance

Table D.16-2. Potential Construction Disturbance (in Acres per Risk Rank) In Areas of Flood Hazard Risk

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Flood Hazard Rank		
			0 to 69	70 to 84	85 to 100
			Low Risk	Moderate Risk	High Risk
1W	1W(a) Proposed – Total Length	73.8	689	26	61
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	117	14	17
	Alternative 1W(a)-B	20.9	229	15	28
	1W(c) Proposed – Total Length	73.6	893	5	59
2	Proposed – Total Length	91.9	1,579	35	167
	Proposed – Comparison portion for Alternative 2A	16.8	251	4	54
	Alternative 2A	16.0	262		93
	Proposed – Comparison portion for Alternative 2B	12.5	193	4	40
	Alternative 2B	12.2	139	2	68
3	Segment 3 Proposed – Total Length	45.9	771	63	
	Segment 3A Proposed – Total Length	5.1	60		
4[1/]	Proposed – Total Length	197.6	3,269	355	273
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	1,271	245	198
	Alternative 4B	100.2	1,577	321	185
	Alternative 4C	101.6	1,618	302	153
	Alternative 4D	100.8	1,602	321	186
	Alternative 4E	102.2	1,625	302	154
	Alternative 4F	87.5	1,329	201	198
5	Proposed – Total Length	55.7	745	307	127
	Proposed – Comparison portion for Alternatives 5A,B	22.3	412	7	42
	Alternative 5A	29.7	521	45	78
	Alternative 5B	40.4	719	43	80
	Proposed – Comparison portion for Alternative 5C	32.9	450	223	59
	Alternative 5C	26.0	331	88	90
	Proposed – Comparison portion for Alternative 5D	19.2	92	300	92
	Alternative 5D	17.0	37	214	165
	Proposed – Comparison portion for Alternative 5E	5.8	13	93	68
	Alternative 5E	5.3	13	97	55
6	Proposed – Total Length	0.5	44	21	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-2. Potential Construction Disturbance (in Acres per Risk Rank) In Areas of Flood Hazard Risk cont.

			Flood Hazard Rank		
			0 to 69	70 to 84	85 to 100
Segment Number	**Proposed or Alternative Name**	**Segment Length (Miles)**	**Low Risk**	**Moderate Risk**	**High Risk**
7	Proposed – Total Length	118.2	1,806	245	200
	Proposed – Comparison portion for Alternatives 7A,B	35.1	428	124	101
	Alternative 7A	37.7	594	89	92
	Alternative 7B	46.2	712	83	125
	Proposed – Comparison portion for Alternative 7C	20.1	250	48	74
	Alternative 7C	20.3	254	75	33
	Proposed – Comparison portion for Alternative 7D	6.2	94	35	3
	Alternative 7D	6.8	104	40	9
	Proposed – Comparison portion for Alternative 7E	3.8	72		
	Alternative 7E	4.5	96		
	Proposed – Comparison portion for Alternative 7F	10.5	225		
	Alternative 7F	10.8	213		
	Proposed – Comparison portion for Alternative 7G	3.3	64		
	Alternative 7G	3.4	87		
	Proposed – Comparison portion for Alternative 7K	118.2	1,804	245	200
	Alternative 7K	148.1	2,723	24	112
8	Proposed – Total Length	131.5	2,134	56	328
	Proposed – Comparison portion for Alternative 8A	51.9	816	18	128
	Alternative 8A	53.6	833	22	123
	Proposed – Comparison portion for Alternative 8B	45.3	745	23	131
	Alternative 8B	45.8	721		195
	Proposed – Comparison portion for Alternative 8C	6.5	163		
	Alternative 8C	6.4	140		
	Proposed – Comparison portion for Alternative 8D	6.9	95		52
	Alternative 8D	8.1	89		85
	Proposed – Comparison portion for Alternative 8E	7.0	93		31
	Alternative 8E	18.3	291	17	27
9	Proposed – Total Length	162.2	2,664	267	363
	Proposed – Comparison portion for Alternative 9A	7.8	147		
	Alternative 9A	7.7	162		
	Proposed – Comparison portion for Alternative 9B	49.1	848	58	130
	Alternative 9B	52.3	802	8	155
	Proposed – Comparison portion for Alternative 9C	14.4	187	59	58
	Alternative 9C	14.4	206	8	106
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	885	91	168
	Alternative 9D	60.1	874	62	111
	Alternative 9F	63.3	921	90	154
	Alternative 9G	57.8	876	34	147
	Alternative 9H	61.0	924	63	176
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	941	91	198
	Alternative 9E (revised)	70.6	999	108	182
10	Proposed – Total Length	34.4	630		41

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

Table D.16-3. Potential Operations (in Acres per Risk Rank) Disturbance In Areas of Flood Hazard Risk

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Flood Hazard Rank		
			0 to 69	70 to 84	85 to 100
			Low Risk	Moderate Risk	High Risk
1W	1W(a) Proposed – Total Length	73.8	143	10	23
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	21	3	3
	Alternative 1W(a)-B	20.9	37	3	4
	1W(c) Proposed – Total Length	73.6	105	<1	19
2	Proposed – Total Length	91.9	179	4	62
	Proposed – Comparison portion for Alternative 2A	16.8	19	1	8
	Alternative 2A	16.0	26		13
	Proposed – Comparison portion for Alternative 2B	12.5	13	1	7
	Alternative 2B	12.2	12	t[1/]	5
3	Segment 3 Proposed – Total Length	45.9	134	6	
	Segment 3A Proposed – Total Length	5.1	12		
4[2/]	Proposed – Total Length	197.6	465	39	26
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	164	27	21
	Alternative 4B	100.2	215	35	23
	Alternative 4C	101.6	213	32	20
	Alternative 4D	100.8	222	35	23
	Alternative 4E	102.2	216	32	21
	Alternative 4F	87.5	172	22	21
5	Proposed – Total Length	55.7	120	37	12
	Proposed – Comparison portion for Alternatives 5A,B	22.3	52	2	5
	Alternative 5A	29.7	60	7	13
	Alternative 5B	40.4	79	6	7
	Proposed – Comparison portion for Alternative 5C	32.9	57	27	10
	Alternative 5C	26.0	38	7	11
	Proposed – Comparison portion for Alternative 5D	19.2	21	36	7
	Alternative 5D	17.0	16	24	13
	Proposed – Comparison portion for Alternative 5E	5.8	12	10	2
	Alternative 5E	5.3	12	10	2
6	Proposed – Total Length	0.5	42	18	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] "t" indicates only a trace amount (<0.1 acre) of impact

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-3. Potential Operations (in Acres per Risk Rank) Disturbance In Areas of Flood Hazard Risk cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Flood Hazard Rank		
			0 to 69	70 to 84	85 to 100
			Low Risk	Moderate Risk	High Risk
7	Proposed – Total Length	118.2	226	18	21
	Proposed – Comparison portion for Alternatives 7A,B	35.1	52	7	12
	Alternative 7A	37.7	70	9	14
	Alternative 7B	46.2	79	8	10
	Proposed – Comparison portion for Alternative 7C	20.1	27	4	5
	Alternative 7C	20.3	20	5	2
	Proposed – Comparison portion for Alternative 7D	6.2	8	2	1
	Alternative 7D	6.8	8	3	2
	Proposed – Comparison portion for Alternative 7E	3.8	5		
	Alternative 7E	4.5	9		
	Proposed – Comparison portion for Alternative 7F	10.5	23		
	Alternative 7F	10.8	23		
	Proposed – Comparison portion for Alternative 7G	3.3	6		
	Alternative 7G	3.4	6		
	Proposed – Comparison portion for Alternative 7K	118.2	226	18	21
	Alternative 7K	148.1	369	4	9
8	Proposed – Total Length	131.5	210	8	31
	Proposed – Comparison portion for Alternative 8A	51.9	88	4	10
	Alternative 8A	53.6	93	1	9
	Proposed – Comparison portion for Alternative 8B	45.3	70	3	14
	Alternative 8B	45.8	53		16
	Proposed – Comparison portion for Alternative 8C	6.5	15		
	Alternative 8C	6.4	16		
	Proposed – Comparison portion for Alternative 8D	6.9	10		6
	Alternative 8D	8.1	8		8
	Proposed – Comparison portion for Alternative 8E	7.0	7		3
	Alternative 8E	18.3	23	2	2
9	Proposed – Total Length	162.2	296	27	37
	Proposed – Comparison portion for Alternative 9A	7.8	15		
	Alternative 9A	7.7	14		
	Proposed – Comparison portion for Alternative 9B	49.1	106	5	11
	Alternative 9B	52.3	73	1	10
	Proposed – Comparison portion for Alternative 9C	14.4	19	5	2
	Alternative 9C	14.4	19	<1	7
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	82	9	15
	Alternative 9D	60.1	69	5	9
	Alternative 9F	63.3	75	7	11
	Alternative 9G	57.8	74	3	10
	Alternative 9H	61.0	80	5	12
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	86	9	21
	Alternative 9E (revised)	70.6	98	12	25
10	Proposed – Total Length	34.4	69		5

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

Table D.16-5. Surface Water Diversions Within One-Half Mile Buffer of Transmission Lines

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Surface Water Diversions
1W	1W(a) Proposed – Total Length	73.8	3
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	0
	Alternative 1W(a)-B	20.9	0
	1W(c) Proposed – Total Length	73.6	2
2	Proposed – Total Length	91.9	0
	Proposed – Comparison portion for Alternative 2A	16.8	0
	Alternative 2A	16.0	0
	Proposed – Comparison portion for Alternative 2B	12.5	0
	Alternative 2B	12.2	0
3	Segment 3 Proposed – Total Length	45.9	0
	Segment 3A Proposed – Total Length	5.1	0
4[1/]	Proposed – Total Length	197.6	127
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	10
	Alternative 4B	100.2	22
	Alternative 4C	101.6	21
	Alternative 4D	100.8	21
	Alternative 4E	102.2	20
	Alternative 4F	87.5	10
5	Proposed – Total Length	55.7	119
	Proposed – Comparison portion for Alternatives 5A,B	22.3	30
	Alternative 5A	29.7	26
	Alternative 5B	40.4	28
	Proposed – Comparison portion for Alternative 5C	32.9	29
	Alternative 5C	26.0	29
	Proposed – Comparison portion for Alternative 5D	19.2	25
	Alternative 5D	17.0	98
	Proposed – Comparison portion for Alternative 5E	5.8	21
	Alternative 5E	5.3	17
6	Proposed – Total Length	0.5	5
7	Proposed – Total Length	118.2	693
	Proposed – Comparison portion for Alternatives 7A,B	35.1	46
	Alternative 7A	37.7	59
	Alternative 7B	46.2	31
	Proposed – Comparison portion for Alternative 7C	20.1	57
	Alternative 7C	20.3	113
	Proposed – Comparison portion for Alternative 7D	6.2	67
	Alternative 7D	6.8	63
	Proposed – Comparison portion for Alternative 7E	3.8	10
	Alternative 7E	4.5	7
	Proposed – Comparison portion for Alternative 7F	10.5	56
	Alternative 7F	10.8	14
	Proposed – Comparison portion for Alternative 7G	3.3	63
	Alternative 7G	3.4	66
	Proposed – Comparison portion for Alternative 7K	118.2	693
	Alternative 7K	148.1	311
8	Proposed – Total Length	131.5	324
	Proposed – Comparison portion for Alternative 8A	51.9	169
	Alternative 8A	53.6	591
	Proposed – Comparison portion for Alternative 8B	45.3	78
	Alternative 8B	45.8	239
	Proposed – Comparison portion for Alternative 8C	6.5	11
	Alternative 8C	6.4	23
	Proposed – Comparison portion for Alternative 8D	6.9	0
	Alternative 8D	8.1	119
	Proposed – Comparison portion for Alternative 8E	7.0	10
	Alternative 8E	18.3	11
9	Proposed – Total Length	162.2	562
	Proposed – Comparison portion for Alternative 9A	7.8	16
	Alternative 9A	7.7	19
	Alternative 9B	52.3	144
	Proposed – Comparison portion for Alternative 9C	14.4	16
	Alternative 9C	14.4	55
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	308
	Alternative 9D	60.1	140
	Alternative 9F	63.3	184
	Alternative 9G	57.8	134
	Alternative 9H	61.0	178
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	317
	Alternative 9E (revised)	70.6	189
10	Proposed – Total Length	34.4	169

Source: IDWR

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-6. Number of Surface Water Road Crossings by Stream Type

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Perennial			Intermittent - Wet		Intermittent - Dry			Ephemeral			Artificial[1/]			Total					
			Non-listed	Sediment-Impaired	Temperature - Impaired	Non-listed	Sediment-Impaired	Non-listed	Sediment-Impaired	Temperature - Impaired	Non-listed	Sediment-Impaired	Temperature - Impaired	Non-listed	Sediment-Impaired	Temperature - Impaired	Stream Crossings	Percent Ephemeral, Non-listed	Sediment-Impaired	Percent of SI to total crossings	Temperature-Impaired	Percent of TI to Total Crossings
1W	1W(a) Proposed – Total Length	73.8	3			28		39			155			5			230	67				
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5				6		11			9			5			31	29				
	Alternative 1W(a)-B	20.9						12			11						23	48				
	1W(c) Proposed – Total Length	73.6	6			10		42			121			6			185	65				
2	Proposed – Total Length	91.9	10			1		13			164			4			192	90				
	Proposed – Comparison portion for Alternative 2A	16.8						4			27						31	87				
	Alternative 2A	16.0				2		3			40						45	95				
	Proposed – Comparison portion for Alternative 2B	12.5						4			20						24	83				
	Alternative 2B	12.2				1					20						21	95				
3	Segment 3 Proposed – Total Length	45.9	10			3		19			64						96	67				
	Segment 3A Proposed – Total Length	5.1	2					2			10						14	86				
4[3/]	Proposed – Total Length	197.6	50	8	1	17		122			223	5		16			442	50	5	1.1		
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	25			10		78			115	1		13			242	48	1			
	Alternative 4B	100.2	13			50		44			249	1		18			375	66	1			
	Alternative 4C	101.6	11			43		45			237	1		17			354	67	1			
	Alternative 4D	100.8	13			50		44			287	1		18			413	69	1			
	Alternative 4E	102.2	11			43		45			270	1		17			387	70	1			
	Alternative 4F	87.5	44			4		52			109	1		10			220	50	1			
5	Proposed – Total Length	55.7									102	61		7			170	60	64	37.4		
	Proposed – Comparison portion for Alternatives 5A,B	22.3									29	47					76	38	51	66.2		
	Alternative 5A	29.7	8			12		7	2		27	21					77	35	31	39.7		
	Alternative 5B	40.4	7			3		11	1		53	21					96	55	39	40.6		
	Proposed – Comparison portion for Alternatives 5C	32.9									93	51		1			145	47	64	43.8		
	Alternative 5C	26.0						2			30	17		3			52	58	6	11.5		
	Proposed – Comparison portion for Alternatives 5D	19.2									67	6		2			75	83	12	16.0		
	Alternative 5D	17.0						4			38	6		3			51	61	14	27.5		
	Proposed – Comparison portion for Alternatives 5E	5.8									4			1			5	80				
	Alternative 5E	5.3									5			1			6	83				
6	Proposed – Total Length	0.5																				

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Blank cells indicate null value
SI = sediment-impaired; TI = temperature-impaired

[1/] Artificial = pipe, aqueduct, canal, drain, ditch or artificial path (natural stream channelized into pipe, ditch or culvert)

[2/] The number of crossings are based on the disturbance acres for each stream crossing type and have been rounded to the nearest whole number; therefore numbers are inexact and columns/rows may not sum exactly

[3/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-6. Number of Surface Water Road Crossings by Stream Type cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Perennial			Intermittent - Wet		Intermittent - Dry			Ephemeral			Artificial[1/]			Total					
			Non-listed	Sediment-Impaired	Temperature - Impaired	Non-listed	Sediment-Impaired	Non-listed	Sediment-Impaired	Temperature - Impaired	Non-listed	Sediment-Impaired	Temperature - Impaired	Non-listed	Sediment-Impaired	Temperature - Impaired	Stream Crossings	Percent Ephemeral, Non-listed	Sediment-Impaired	Percent of SI to total crossings	Temperature-Impaired	Percent of TI to Total Crossings
7	Proposed – Total Length	118.2	18	1		3	1	13			130	51		42			259	42	57	21.9		
	Proposed – Comparison portion for Alternatives 7A,B	35.1									38	44					82	23	55	66.3		
	Alternative 7A	37.7	10			12		10	5		46	22			1		106	25	45	42.5		
	Alternative 7B	46.2	8			1		11			55	23					98	14	37	37.8		
	Proposed – Comparison portion for Alternative 7C	20.1	1								8			8			17	47				
	Alternative 7C	20.3						1			22			1			24	92				
	Proposed – Comparison portion for Alternative 7D	6.2				2		1			10			4			17	59				
	Alternative 7D	6.8				2					9			6			17	53				
	Proposed – Comparison portion for Alternative 7E	3.8	5														5					
	Alternative 7E	4.5	7														7					
	Proposed – Comparison portion for Alternative 7F	10.5	17			1		7			7						32	22				
	Alternative 7F	10.8	4			1		6			8						19	42				
	Proposed – Comparison portion for Alternative 7G	3.3									4						4	100				
	Alternative 7G	3.4																				
	Proposed – Comparison portion for Alternative 7K	118.2	18	1		3	1	13			130	51		42			259	42	57	21.9		
	Alternative 7K	148.1	46	1		9		70		1	316	22	8	19	1	1	494	64	16	3.3	9	1.9
8	Proposed – Total Length	131.5	12			1	1	22	2		170	16	3	37	1	1	266	59	36	13.8		
	Proposed – Comparison portion for Alternative 8A	51.9	8					3			27	1		20			59	46	1	1.7		
	Alternative 8A	53.6	4					3	2		16	1		27	1		54	30	2	3.8		
	Proposed – Comparison portion for Alternative 8B	45.3						9	2		80	15	3	5	1	1	116	57	34	30.4		
	Alternative 8B	45.8						1	2		36	26	2	3	1		71	25	46	66.7		
	Proposed – Comparison portion for Alternative 8C	6.5						1	2		13	2					18	61	6	33.3		
	Alternative 8C	6.4						1			18	2					21	71	5	23.8		
	Proposed – Comparison portion for Alternative 8D	6.9									3	4	1		1	1	10	38	8	100.0		
	Alternative 8D	8.1									4	2	1		1	1	9	50	8	100.0		
	Proposed – Comparison portion for Alternative 8E	7.0									1			5			6	17				
	Alternative 8E	18.3						2			12						14	86				
9	Proposed – Total Length	162.2	4	2		15		16	5	1	190	14	3	72			322	59	15	4.7	5	1.6
	Proposed – Comparison portion for Alternative 9A	7.8		2							7			7			16	44				
	Alternative 9A	7.7	1	4	1						2			6			14	15			1	7.7
	Proposed – Comparison portion for Alternative 9B	49.1	2			6		8	5		36	10		3			70	50	13	18.6		
	Alternative 9B	52.3	2								35	6		14			57	53	8	14.0		
	Proposed – Comparison portion for Alternative 9C	14.4									24			3			27	89				
	Alternative 9C	14.4					1				7	1		12			21	33	2	9.5		
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	1					2	1	1	80			51			136	59			1	0.7
	Alternative 9D	60.1									38	3		1			42	86	5	11.9		
	Alternative 9F	63.3									48	3		6			57	79	5	8.8	1	1.8
	Alternative 9G	57.8									31	3		1			35	83	5	14.3		
	Alternative 9H	61.0									41	3		6			50	76	5	10.0	1	2.0
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	1					2	1	1	80			51			136					
	Alternative 9E (revised)	70.6	7			1	1				79	12	7	1	1		109	65	19	13.6	8	5.7
10	Proposed – Total Length	34.4							3		8	5		10			26	31				
	Total of Proposed Only[2/]		**141**	**11**	**1**	**83**	**2**	**288**	**10**	**1**	**1,337**	**152**	**6**	**199**	**1**	**1**	**2,202**	**60**	**177**		**5**	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Blank cells indicate null value
SI = sediment-impaired; TI = temperature-impaired
Source: DEQ
[1/] Artificial = pipe, aqueduct, canal, drain, ditch or artificial path (natural stream channelized into pipe, ditch or culvert)
[2/] The number of crossings are based on the disturbance acres for each stream crossing type and have been rounded to the nearest whole number; therefore numbers are inexact and columns/rows may not sum exactly

Table D.16-7. Potential Construction Disturbance (in Acres per Depth Range) in Areas Containing Shallow Groundwater

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Depth to Groundwater					Total Acres	Percent
			1 to 4 feet	4 to 7 feet	7 to 10 feet	10 to 14 feet	14+ feet		
1W	1W(a) Proposed – Total Length	73.8					777	777	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5					148	148	
	Alternative 1W(a)-B	20.9					271	271	
	1W(c) Proposed – Total Length	73.6					957	957	
2	Proposed – Total Length	91.9					1,780	1,780	
	Proposed – Comparison portion for Alternative 2A	16.8					309	309	
	Alternative 2A	16.0					355	355	
	Proposed – Comparison portion for Alternative 2B	12.5					238	238	
	Alternative 2B	12.2					209	209	
3	Segment 3 Proposed – Total Length	45.9					833	833	
	Segment 3A Proposed – Total Length	5.1					60	60	
4[1/]	Proposed – Total Length	197.6	205	28			3,663	3,896	6.0
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	86	28			1,598	1,712	6.6
	Alternative 4B	100.2	88	72			1,922	2,083	7.7
	Alternative 4C	101.6	67	56			1,949	2,072	5.9
	Alternative 4D	100.8	88	53			1,968	2,110	6.7
	Alternative 4E	102.2	67	37			1,976	2,080	5.0
	Alternative 4F	87.5	85	28			1,614	1,727	6.5
5	Proposed – Total Length	55.7			18		1,160	1,179	1.5
	Proposed – Comparison portion for Alternatives 5A,B	22.3			18		443	461	3.9
	Alternative 5A	29.7			24		620	644	3.7
	Alternative 5B	40.4					842	842	0.0
	Proposed – Comparison portion for Alternatives 5C	32.9			18		713	731	2.5
	Alternative 5C	26.0			35		474	509	7.0
	Proposed – Comparison portion for Alternatives 5D	19.2					484	484	
	Alternative 5D	17.0					416	416	
	Proposed – Comparison portion for Alternatives 5E	5.8					174	174	
	Alternative 5E	5.3					165	165	
6	Proposed – Total Length	0.5					65	65	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-7. Potential Construction Disturbance (in Acres per Depth Range) in Areas Containing Shallow Groundwater cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Depth to Groundwater					Total Acres	Percent
			1 to 4 feet	4 to 7 feet	7 to 10 feet	10 to 14 feet	14+ feet		
7	Proposed – Total Length	118.2	28		14	203	2,007	2,252	10.9
	Proposed – Comparison portion for Alternatives 7A,B	35.1	28		14		611	652	6.3
	Alternative 7A	37.7	15		25		735	774	5.0
	Alternative 7B	46.2	32				888	920	3.5
	Proposed – Comparison portion for Alternative 7C	20.1					372	372	
	Alternative 7C	20.3					362	362	
	Proposed – Comparison portion for Alternative 7D	6.2					132	132	
	Alternative 7D	6.8					153	153	
	Proposed – Comparison portion for Alternative 7E	3.8					72	72	
	Alternative 7E	4.5					96	96	
	Proposed – Comparison portion for Alternative 7F	10.5					225	225	
	Alternative 7F	10.8					213	213	
	Proposed – Comparison portion for Alternative 7G	3.3					64	64	
	Alternative 7G	3.4					87	87	
	Proposed – Comparison portion for Alternative 7K	118.2	28		14	203	2,004	2,249	10.9
	Alternative 7K	148.1	2				2,857	2,859	0.1
8	Proposed – Total Length	131.5					2,518	2,518	
	Proposed – Comparison portion for Alternative 8A	51.9					963	963	
	Alternative 8A	53.6					978	978	
	Proposed – Comparison portion for Alternative 8B	45.3					899	899	
	Alternative 8B	45.8					916	916	
	Proposed – Comparison portion for Alternative 8C	6.5					163	163	
	Alternative 8C	6.4					140	140	
	Proposed – Comparison portion for Alternative 8D	6.9					147	147	
	Alternative 8D	8.1					174	174	
	Proposed – Comparison portion for Alternative 8E	7.0					124	124	
	Alternative 8E	18.3					334	334	
9	Proposed – Total Length	162.2					3,293	3,293	
	Proposed – Comparison portion for Alternative 9A	7.8					147	147	
	Alternative 9A	7.7					162	162	
	Proposed – Comparison portion for Alternative 9B	49.1					1,037	1,037	
	Alternative 9B	52.3					965	965	
	Proposed – Comparison portion for Alternative 9C	14.4					304	304	
	Alternative 9C	14.4					320	320	
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2					1,145	1,145	
	Alternative 9D	60.1					1,046	1,046	
	Alternative 9F	63.3					1,165	1,165	
	Alternative 9G	57.8					1,058	1,058	
	Alternative 9H	61.0					1,162	1,162	
	Proposed – Comparison portion for Alternative 9E (revised)	61.4					1,230	1,230	
	Alternative 9E (revised)	70.6					1,289	1,289	
10	Proposed – Total Length	34.4					671	671	

Source: STATSGO

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

Table D.16-8. Potential Operations Disturbance (in Acres per Depth Range) in Areas Containing Shallow Groundwater

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Depth to Groundwater					Total Acres	Percent
			1 to 4 feet	4 to 7 feet	7 to 10 feet	10 to 14 feet	14+ feet		
1W	1W(a) Proposed – Total Length	73.8					177	177	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5					27	27	
	Alternative 1W(a)-B	20.9					44	44	
	1W(c) Proposed – Total Length	73.6					124	124	
2	Proposed – Total Length	91.9					245	245	
	Proposed – Comparison portion for Alternative 2A	16.8					28	28	
	Alternative 2A	16.0					40	40	
	Proposed – Comparison portion for Alternative 2B	12.5					21	21	
	Alternative 2B	12.2					17	17	
3	Segment 3 Proposed – Total Length	45.9					140	140	
	Segment 3A Proposed – Total Length	5.1					12	12	
4[1/]	Proposed – Total Length	197.6	16	3			510	530	3.7
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	6	3			203	213	4.6
	Alternative 4B	100.2	7	7			259	273	5.2
	Alternative 4C	101.6	6	6			254	265	4.4
	Alternative 4D	100.8	7	6			268	280	4.5
	Alternative 4E	102.2	6	4			259	269	3.7
	Alternative 4F	87.5	7	3			204	214	4.6
5	Proposed – Total Length	55.7			2		166	169	1.5
	Proposed – Comparison portion for Alternatives 5A,B	22.3			2		56	58	4.3
	Alternative 5A	29.7			2		78	80	2.9
	Alternative 5B	40.4					92	92	
	Proposed – Comparison portion for Alternatives 5C	32.9			2		91	94	2.7
	Alternative 5C	26.0			3		52	56	6.1
	Proposed – Comparison portion for Alternatives 5D	19.2					63	63	
	Alternative 5D	17.0					53	53	
	Proposed – Comparison portion for Alternatives 5E	5.8					24	24	
	Alternative 5E	5.3					24	24	
6	Proposed – Total Length	0.5					61	61	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-8. Potential Operations Disturbance (in Acres per Depth Range) in Areas Containing Shallow Groundwater cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Depth to Groundwater					Total Acres	Percent
			1 to 4 feet	4 to 7 feet	7 to 10 feet	10 to 14 feet	14+ feet		
7	Proposed – Total Length	118.2	2		2	19	242	265	8.7
	Proposed – Comparison portion for Alternatives 7A,B	35.1	2		2		67	71	5.5
	Alternative 7A	37.7	1		3		89	93	4.4
	Alternative 7B	46.2	2				94	96	2.3
	Proposed – Comparison portion for Alternative 7C	20.1					36	36	
	Alternative 7C	20.3					28	28	
	Proposed – Comparison portion for Alternative 7D	6.2					11	11	
	Alternative 7D	6.8					13	13	
	Proposed – Comparison portion for Alternative 7E	3.8					5	5	
	Alternative 7E	4.5					9	9	
	Proposed – Comparison portion for Alternative 7F	10.5					23	23	
	Alternative 7F	10.8					23	23	
	Proposed – Comparison portion for Alternative 7G	3.3					6	6	
	Alternative 7G	3.4					6	6	
	Proposed – Comparison portion for Alternative 7K	118.2	2		2	19	241	264	8.7
	Alternative 7K	148.1	0				381	382	0.1
8	Proposed – Total Length	131.5					249	249	
	Proposed – Comparison portion for Alternative 8A	51.9					102	102	
	Alternative 8A	53.6					103	103	
	Proposed – Comparison portion for Alternative 8B	45.3					87	87	
	Alternative 8B	45.8					69	69	
	Proposed – Comparison portion for Alternative 8C	6.5					15	15	
	Alternative 8C	6.4					16	16	
	Proposed – Comparison portion for Alternative 8D	6.9					15	15	
	Alternative 8D	8.1					15	15	
	Proposed – Comparison portion for Alternative 8E	7.0					10	10	
	Alternative 8E	18.3					26	26	
9	Proposed – Total Length	162.2					360	360	
	Proposed – Comparison portion for Alternative 9A	7.8					15	15	
	Alternative 9A	7.7					14	14	
	Proposed – Comparison portion for Alternative 9B	49.1					122	122	
	Alternative 9B	52.3					83	83	
	Proposed – Comparison portion for Alternative 9C	14.4					27	27	
	Alternative 9C	14.4					26	26	
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2					106	106	
	Alternative 9D	60.1					84	84	
	Alternative 9F	63.3					93	93	
	Alternative 9G	57.8					87	87	
	Alternative 9H	61.0					96	96	
	Proposed – Comparison portion for Alternative 9E (revised)	61.4					116	116	
	Alternative 9E (revised)	70.6					135	135	
10	Proposed – Total Length	34.4					74	74	

Source: STATSGO

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero acres or null value

Table D.16-10. Potable Water Wells within One-Half Mile of Transmission Lines

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Potable Water Wells
1W	1W(a) Proposed – Total Length	73.8	24
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	22
	Alternative 1W(a)-B	20.9	37
	1W(c) Proposed – Total Length	73.6	56
2	Proposed – Total Length	91.9	7
	Proposed – Comparison portion for Alternative 2A	16.8	6
	Alternative 2A	16.0	4
	Proposed – Comparison portion for Alternative 2B	12.5	5
	Alternative 2B	12.2	12
3	Segment 3 Proposed – Total Length	45.9	6
	Segment 3A Proposed – Total Length	5.1	
4[1/]	Proposed – Total Length	197.6	36
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	4
	Alternative 4B	100.2	11
	Alternative 4C	101.6	15
	Alternative 4D	100.8	7
	Alternative 4E	102.2	11
	Alternative 4F	87.5	7
5	Proposed – Total Length	55.7	40
	Proposed – Comparison portion for Alternatives 5A,B	22.3	7
	Alternative 5A	29.7	4
	Alternative 5B	40.4	7
	Proposed – Comparison portion for Alternatives 5C	32.9	8
	Alternative 5C	26.0	4
	Proposed – Comparison portion for Alternatives 5D	19.2	10
	Alternative 5D	17.0	28
	Proposed – Comparison portion for Alternatives 5E	5.8	9
	Alternative 5E	5.3	7
6	Proposed – Total Length	0.5	4
7	Proposed – Total Length	118.2	89
	Proposed – Comparison portion for Alternatives 7A,B	35.1	7
	Alternative 7A	37.7	12
	Alternative 7B	46.2	6
	Proposed – Comparison portion for Alternative 7C	20.1	5
	Alternative 7C	20.3	12
	Proposed – Comparison portion for Alternative 7D	6.2	
	Alternative 7D	6.8	5
	Proposed – Comparison portion for Alternative 7E	3.8	14
	Alternative 7E	4.5	10
	Proposed – Comparison portion for Alternative 7F	10.5	15
	Alternative 7F	10.8	1
	Proposed – Comparison portion for Alternative 7G	3.3	5
	Alternative 7G	3.4	7
	Proposed – Comparison portion for Alternative 7K	118.2	89
	Alternative 7K	148.1	28
8	Proposed – Total Length	131.5	201
	Proposed – Comparison portion for Alternative 8A	51.9	83
	Alternative 8A	53.6	127
	Proposed – Comparison portion for Alternative 8B	45.3	99
	Alternative 8B	45.8	135
	Proposed – Comparison portion for Alternative 8C	6.5	14
	Alternative 8C	6.4	26
	Proposed – Comparison portion for Alternative 8D	6.9	1
	Alternative 8D	8.1	9
	Proposed – Comparison portion for Alternative 8E	7.0	2
	Alternative 8E	18.3	1
9	Proposed – Total Length	162.2	91
	Proposed – Comparison portion for Alternative 9A	7.8	5
	Alternative 9A	7.7	2
	Proposed – Comparison portion for Alternative 9B	49.1	5
	Alternative 9B	52.3	23
	Proposed – Comparison portion for Alternative 9C	14.4	1
	Alternative 9C	14.4	16
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	46
	Alternative 9D	60.1	21
	Alternative 9F	63.3	35
	Alternative 9G	57.8	21
	Alternative 9H	61.0	35
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	49
	Alternative 9E (revised)	70.6	10
10	Proposed – Total Length	34.4	59

Source: IDWR

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-11. Miles of the Eastern Snake River Plain Aquifer Crossed by Proposed and Alternative Routes

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Snake River Plain Aquifer
1W	1W(a) Proposed – Total Length	73.8	
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	
	Alternative 1W(a)-B	20.9	
	1W(c) Proposed – Total Length	73.6	
2	Proposed – Total Length	91.9	
	Proposed – Comparison portion for Alternative 2A	16.8	
	Alternative 2A	16.0	
	Proposed – Comparison portion for Alternative 2B	12.5	
	Alternative 2B	12.2	
3	Segment 3 Proposed – Total Length	45.9	
	Segment 3A Proposed – Total Length	5.1	
4[1/]	Proposed – Total Length	197.6	
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	
	Alternative 4B	100.2	
	Alternative 4C	101.6	
	Alternative 4D	100.8	
	Alternative 4E	102.2	
	Alternative 4F	87.5	
5	Proposed – Total Length	55.7	3.1
	Proposed – Comparison portion for Alternatives 5A,B	22.3	
	Alternative 5A	29.7	
	Alternative 5B	40.4	
	Proposed – Comparison portion for Alternatives 5C	32.9	
	Alternative 5C	26.0	
	Proposed – Comparison portion for Alternatives 5D	19.2	3.1
	Alternative 5D	17.0	2.6
	Proposed – Comparison portion for Alternatives 5E	5.8	3.1
	Alternative 5E	5.3	2.7
6	Proposed – Total Length	0.5	0.5
7	Proposed – Total Length	118.2	28.7
	Proposed – Comparison portion for Alternatives 7A,B	35.1	
	Alternative 7A	37.7	
	Alternative 7B	46.2	
	Proposed – Comparison portion for Alternative 7C	20.1	
	Alternative 7C	20.3	
	Proposed – Comparison portion for Alternative 7D	6.2	
	Alternative 7D	6.8	
	Proposed – Comparison portion for Alternative 7E	3.8	3.6
	Alternative 7E	4.5	0.7
	Proposed – Comparison portion for Alternative 7F	10.5	5.0
	Alternative 7F	10.8	
	Proposed – Comparison portion for Alternative 7G	3.3	1.4
	Alternative 7G	3.4	2.7
	Proposed – Comparison portion for Alternative 7K	118.2	28.7
	Alternative 7K	148.1	1.0
8	Proposed – Total Length	131.5	42.3
	Proposed – Comparison portion for Alternative 8A	51.9	42.3
	Alternative 8A	53.6	24.5
	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	18.3	
9	Proposed – Total Length	162.2	8.4
	Proposed – Comparison portion for Alternative 9A	7.8	5.4
	Alternative 9A	7.7	2.6
	Proposed – Comparison portion for Alternative 9B	49.1	
	Alternative 9B	52.3	
	Proposed – Comparison portion for Alternative 9C	14.4	
	Alternative 9C	14.4	
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	
	Alternative 9D	60.1	
	Alternative 9F	63.3	
	Alternative 9G	57.8	
	Alternative 9H	61.0	
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	
	Alternative 9E (revised)	70.6	
10	Proposed – Total Length	34.4	34.4

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-12. Estimated Transmission Line Construction Water Requirements per Segment

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Water Requirement (gallons)	Total Water Requirement (acre-feet)	Construction Period (days)	Volume Per Day
1W	1W(a) Proposed – Total Length	73.8	1,726,656	5.3	355	4,864
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	385,410	1.2	75	5,139
	Alternative 1W(a)-B	20.9	487,930	1.5	94	5,191
	1W(c) Proposed – Total Length	73.6	1,561,498	4.8	293	5,329
2	Proposed – Total Length	91.9	2,728,139	8.4	368	7,413
	Proposed – Comparison portion for Alternative 2A	16.8	498,794	1.5	110	4,534
	Alternative 2A	16.0	473,825	1.5	108	4,387
	Proposed – Comparison portion for Alternative 2B	12.5	371,073	1.1	49	7,573
	Alternative 2B	12.2	361,706	1.1	48	7,536
3	Segment 3 Proposed – Total Length	45.9	1,667,196	5.1	401	4,158
	Segment 3A Proposed – Total Length	5.1	157,100	0.6	45	4,158
4[1/]	Proposed – Total Length	197.6	5,884,609	18.1	740	7,952
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	2,536,493	7.8	329	7,710
	Alternative 4B	100.2	2,984,146	9.2	311	9,595
	Alternative 4C	101.6	3,026,851	9.3	365	8,293
	Alternative 4D	100.8	3,002,133	9.2	370	8,114
	Alternative 4E	102.2	3,044,838	9.3	367	8,297
	Alternative 4F	87.5	2,607,177	8.0	372	7,009
5	Proposed – Total Length	55.7	1,614,478	5.0	378	4,271
	Proposed – Comparison portion for Alternatives 5A,B	22.3	647,670	2.0	151	4,289
	Alternative 5A	29.7	862,476	2.6	201	4,291
	Alternative 5B	40.4	1,172,666	3.6	274	4,280
	Proposed – Comparison portion for Alternatives 5C	32.9	953,947	2.9	230	4,148
	Alternative 5C	26.0	753,426	2.3	181	4,163
	Proposed – Comparison portion for Alternatives 5D	19.2	556,881	1.7	134	4,156
	Alternative 5D	17.0	494,375	1.5	121	4,086
	Proposed – Comparison portion for Alternatives 5E	5.8	167,262	0.5	40	4,182
	Alternative 5E	5.3	153,373	0.5	37	4,145
6	Proposed – Total Length	0.5	65,897	0.2	218	302

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-12. Estimated Transmission Line Construction Water Requirements per Segment cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Total Water Requirement (gallons)	Total Water Requirement (acre-feet)	Construction Period (days)	Volume Per Day
7	Proposed – Total Length	118.2	3,518,904	10.8	480	7,331
	Proposed – Comparison portion for Alternatives 7A,B	35.1	1,044,274	3.2	158	6,609
	Alternative 7A	37.7	1,122,647	3.4	169	6,643
	Alternative 7B	46.2	1,375,654	4.2	204	6,743
	Proposed – Comparison portion for Alternative 7C	20.1	598,613	1.8	82	7,300
	Alternative 7C	20.3	603,205	1.9	83	7,268
	Proposed – Comparison portion for Alternative 7D	6.2	185,028	0.6	25	7,401
	Alternative 7D	6.8	201,938	0.6	28	7,212
	Proposed – Comparison portion for Alternative 7E	3.8	113,844	0.3	15	7,590
	Alternative 7E	4.5	133,341	0.4	18	7,408
	Proposed – Comparison portion for Alternative 7F	10.5	313,696	1.0	43	7,295
	Alternative 7F	10.8	320,921	1.0	44	7,294
	Proposed – Comparison portion for Alternative 7G	3.3	98,279	0.3	13	7,560
	Alternative 7G	3.4	100,071	0.3	13	7,698
	Proposed – Comparison portion for Alternative 7K	118.2	3,518,904	10.8	480	7,331
	Alternative 7K	148.1	4,410,863	13.5	517	8,532
8	Proposed – Total Length	131.5	3,802,261	11.7	435	8,741
	Proposed – Comparison portion for Alternative 8A	51.9	1,500,956	4.6	171	8,778
	Alternative 8A	53.6	1,549,783	4.8	178	8,707
	Proposed – Comparison portion for Alternative 8B	45.3	1,308,468	4.0	150	8,723
	Alternative 8B	45.8	1,323,236	4.1	152	8,705
	Proposed – Comparison portion for Alternative 8C	6.5	188,907	0.6	22	8,587
	Alternative 8C	6.4	185,417	0.6	21	8,829
	Proposed – Comparison portion for Alternative 8D	6.9	199,704	0.6	23	8,683
	Alternative 8D	8.1	233,511	0.7	27	8,649
	Proposed – Comparison portion for Alternative 8E	7.0	201,048	0.6	23	8,741
	Alternative 8E	18.3	528,993	1.6	62	8,532
9	Proposed – Total Length	162.2	4,658,923	14.3	504	9,244
	Proposed – Comparison portion for Alternative 9A	7.8	223,564	0.7	24	9,315
	Alternative 9A	7.7	220,833	0.7	24	9,201
	Proposed – Comparison portion for Alternative 9B	49.1	1,410,246	4.3	154	9,157
	Alternative 9B	52.3	1,503,256	4.6	165	9,111
	Proposed – Comparison portion for Alternative 9C	14.4	412,378	1.3	46	8,965
	Alternative 9C	14.4	413,394	1.3	48	8,612
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	1,641,467	5.0	178	9,222
	Alternative 9D	60.1	1,727,271	5.3	181	9,543
	Alternative 9F	63.3	1,818,759	5.6	196	9,279
	Alternative 9G	57.8	1,659,119	5.1	179	9,244
	Alternative 9H	61.0	1,750,607	5.4	189	9,244
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	1,763,242	5.4	189	9,315
	Alternative 9E (revised)	70.6	2,027,442	6.2	220	9,201
10	Proposed – Total Length	34.4	1,021,405	3.1	291	3,510
TOTAL WATER REQUIRED: Proposed Segments			**26,768,979 gallons / 82 acre-feet**			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 4 Proposed – Total Length[1/]	Bear River			X	X
	Bear River (Tributary 01)			X	
	Bear River (Tributary 02)			X	
	Bear River (Tributary 03)			X	
	Bear River (Tributary 04)			X	
	Bear River (Tributary 05)			X	
	Marsh Creek	X			X
	Montpelier Creek			X	
	Sheep Creek			X	
	Sheep Creek (Tributary 01)			X	
	Sheep Creek (Tributary 02)			X	
	Sheep Creek (Tributary 03)			X	
	Sheep Creek (Tributary 04)			X	
	Swan Lake Creek			X	
Segment 4 Proposed – Comparison Portion for Alternatives 4B, C, D, E, F	Bear River			X	
Alternative 4B	Bear River			X	
Alternative 4C	Bear River			X	
Alternative 4D	Bear River			X	
Alternative 4E	Bear River			X	
Alternative 4F	Bear River			X	
Segment 5 Proposed – Total Length	Bannock Creek			X	
	Bannock Creek (Tributary 16)			X	
	Bannock Creek (Tributary 17)			X	
	Bannock Creek (Tributary 18)			X	
	Bannock Creek (Tributary 19)			X	
	Bannock Creek (Tributary 20)			X	
	Bannock Creek (Tributary 21)			X	
	Bannock Creek (Tributary 22)			X	
	Bannock Creek (Tributary 23)			X	
	Bannock Creek (Tributary 24)			X	
	Bannock Creek (Tributary 25)			X	
	Bannock Creek (Tributary 27)			X	
	Deadwood Creek	X			
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 01)	X			
	East Fork Rock Creek (Tributary 02)	X			
	East Fork Rock Creek (Tributary 03)	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 06)	X			
	East Fork Rock Creek (Tributary 08)	X			
	East Fork Rock Creek (Tributary 09)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Hawkins Creek	X			
	Hawkins Creek (Tributary 01)	X			
	Hawkins Creek (Tributary 02)	X			
	Hawkins Creek (Tributary 03)	X			
	Hawkins Creek (Tributary 04)	X			
	Hawkins Creek (Tributary 05)	X			
	Hawkins Creek (Tributary 06)	X			
	Marsh Creek	X			X
	Pilot Spring Creek	X			
	Rattlesnake Creek (Tributary 04)			X	
	Rattlesnake Creek (Tributary 05)			X	
	West Fork Bannock Creek (Tributary 01)			X	

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 5 Proposed – Total Length (cont)	West Fork Bannock Creek (Tributary 02)			X	
	Yellow Dog Creek	X			
	Yellow Dog Creek (Tributary 01)	X			
Segment 5 Proposed – Comparison Portion for Alternatives 5A, B	Bannock Creek			X	
	Bannock Creek (Tributary 16)			X	
	Bannock Creek (Tributary 17)			X	
	Bannock Creek (Tributary 18)			X	
	Bannock Creek (Tributary 19)			X	
	Bannock Creek (Tributary 20)			X	
	Bannock Creek (Tributary 21)			X	
	Bannock Creek (Tributary 22)			X	
	Bannock Creek (Tributary 23)			X	
	Bannock Creek (Tributary 24)			X	
	Bannock Creek (Tributary 25)			X	
	Bannock Creek (Tributary 27)			X	
	Deadwood Creek	X			
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 03)	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 06)	X			
	East Fork Rock Creek (Tributary 09)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Hawkins Creek (Tributary 04)	X			
	Hawkins Creek (Tributary 05)	X			
	Hawkins Creek (Tributary 06)	X			
	Rattlesnake Creek (Tributary 04)			X	
	Rattlesnake Creek (Tributary 05)			X	
	West Fork Bannock Creek (Tributary 01)			X	
	West Fork Bannock Creek (Tributary 02)			X	
	Yellow Dog Creek	X			
	Yellow Dog Creek (Tributary 01)	X			
Alternative 5A	Bannock Creek			X	
	Bannock Creek (Tributary 04)			X	
	Bannock Creek (Tributary 05)			X	
	Bannock Creek (Tributary 06)			X	
	Bannock Creek (Tributary 07)			X	
	Deadwood Creek (Tributary 01)	X			
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Hawkins Creek (Tributary 04)	X			
	Hawkins Creek (Tributary 05)	X			
	Hawkins Creek (Tributary 06)	X			
	South Fork Rock Creek (Tributary 07)	X			
	South Fork Rock Creek (Tributary 09)	X			
	South Fork Rock Creek (Tributary 10)	X			
	South Fork Rock Creek (Tributary 11)	X			
	South Fork Rock Creek (Tributary 32)	X			
	South Fork Rock Creek (Tributary 33)	X			
	South Fork Rock Creek (Tributary 34)	X			
	South Fork Rock Creek (Tributary 35)	X			
	South Fork Rock Creek (Tributary 37)	X			
	South Fork Rock Creek (Tributary 45)	X			

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Alternative 5B	Bannock Creek			X	
	Bannock Creek (Tributary 09)			X	
	Bannock Creek (Tributary 10)			X	
	Bannock Creek (Tributary 11)			X	
	Deadwood Creek (Tributary 01)	X			
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Hawkins Creek (Tributary 04)	X			
	Hawkins Creek (Tributary 05)	X			
	Hawkins Creek (Tributary 06)	X			
	South Fork Rock Creek (Tributary 06)	X			
	South Fork Rock Creek (Tributary 07)	X			
	South Fork Rock Creek (Tributary 09)	X			
	South Fork Rock Creek (Tributary 10)	X			
	South Fork Rock Creek (Tributary 11)	X			
	South Fork Rock Creek (Tributary 12)	X			
	South Fork Rock Creek (Tributary 20)	X			
	South Fork Rock Creek (Tributary 22)	X			
	South Fork Rock Creek (Tributary 25)	X			
	South Fork Rock Creek (Tributary 27)	X			
	South Fork Rock Creek (Tributary 28)	X			
	South Fork Rock Creek (Tributary 32)	X			
	South Fork Rock Creek (Tributary 33)	X			
	South Fork Rock Creek (Tributary 34)	X			
	South Fork Rock Creek (Tributary 36)	X			
	South Fork Rock Creek (Tributary 37)	X			
	South Fork Rock Creek (Tributary 40)	X			
	South Fork Rock Creek (Tributary 41)	X			
	South Fork Rock Creek (Tributary 43)	X			
	South Fork Rock Creek (Tributary 44)	X			
	South Fork Rock Creek (Tributary 45)	X			
Segment 5 Proposed – Comparison Portion for Alternative 5C	Bannock Creek			X	
	Bannock Creek (Tributary 16)			X	
	Bannock Creek (Tributary 17)			X	
	Bannock Creek (Tributary 18)			X	
	Bannock Creek (Tributary 19)			X	
	Bannock Creek (Tributary 20)			X	
	Bannock Creek (Tributary 21)			X	
	Bannock Creek (Tributary 22)			X	
	Bannock Creek (Tributary 23)			X	
	Bannock Creek (Tributary 24)			X	
	Bannock Creek (Tributary 25)			X	
	Bannock Creek (Tributary 27)			X	
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 01)	X			
	East Fork Rock Creek (Tributary 02)	X			
	East Fork Rock Creek (Tributary 03)	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 06)	X			
	East Fork Rock Creek (Tributary 08)	X			
	East Fork Rock Creek (Tributary 09)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Rattlesnake Creek (Tributary 04)			X	

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 5 Proposed – Comparison Portion for Alternative 5C (cont)	Rattlesnake Creek (Tributary 05)			X	
	West Fork Bannock Creek (Tributary 01)			X	
	West Fork Bannock Creek (Tributary 02)			X	
	Yellow Dog Creek	X			
Alternative 5C	Bannock Creek			X	
	Bannock Creek (Tributary 01)			X	
	Bannock Creek (Tributary 02)			X	
	Bannock Creek (Tributary 03)			X	
	Bannock Creek (Tributary 12)			X	
	Bannock Creek (Tributary 13)			X	
	Bannock Creek (Tributary 14)			X	
	Bannock Creek (Tributary 15)			X	
	Bannock Creek (Tributary 26)			X	
	Moonshine Creek			X	
	Moonshine Creek (Tributary 01)			X	
	Moonshine Creek (Tributary 02)			X	
	Moonshine Creek (Tributary 03)			X	
	Rattlesnake Creek			X	
	Rattlesnake Creek (Tributary 01)			X	
	Rattlesnake Creek (Tributary 02)			X	
	Rattlesnake Creek (Tributary 03)			X	
	Rattlesnake Creek (Tributary 04)			X	
	Rattlesnake Creek (Tributary 05)			X	
Segment 5 Proposed – Comparison Portion for Alternative 5D	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 01)	X			
	East Fork Rock Creek (Tributary 02)	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 08)	X			
	East Fork Rock Creek (Tributary 10)	X			
Alternative 5D	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 01)	X			
	East Fork Rock Creek (Tributary 02)	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 08)	X			
	East Fork Rock Creek (Tributary 10)	X			
Segment 7 Proposed – Total Length	Bannock Creek			X	
	Bannock Creek (Tributary 18)			X	
	Bannock Creek (Tributary 19)			X	
	Bannock Creek (Tributary 20)			X	
	Bannock Creek (Tributary 21)			X	
	Bannock Creek (Tributary 22)			X	
	Bannock Creek (Tributary 23)			X	
	Bannock Creek (Tributary 24)			X	
	Bannock Creek (Tributary 25)			X	
	Bannock Creek (Tributary 27)			X	
	Bannock Creek (Tributary 30)			X	
	Deadwood Creek	X			
	Dry Creek	X			X
	Dry Creek (Tributary 01)	X			
	Dry Creek (Tributary 02)	X			
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 03)	X			
	East Fork Rock Creek (Tributary 04)	X			

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 7 Proposed – Total Length (cont)	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 07)	X			
	East Fork Rock Creek (Tributary 08)	X			
	East Fork Rock Creek (Tributary 09)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Hawkins Creek	X			
	Hawkins Creek (Tributary 01)	X			
	Hawkins Creek (Tributary 02)	X			
	Hawkins Creek (Tributary 03)	X			
	Hawkins Creek (Tributary 04)	X			
	Hawkins Creek (Tributary 05)	X			
	Hawkins Creek (Tributary 06)	X			
	Marsh Creek	X			X
	Raft River	X			
	Rock Creek (Tributary 02)	X			
	Sheep Creek	X			
	South Fork Hawkins Creek	X			
	South Fork Rock Creek	X			
	South Fork Rock Creek (Tributary 01)	X			
	South Fork Rock Creek (Tributary 08)	X			
	South Fork Rock Creek (Tributary 09)	X			
	West Fork Bannock Creek (Tributary 01)			X	
	West Fork Bannock Creek (Tributary 02)			X	
	Yellow Dog Creek	X			
	Yellow Dog Creek (Tributary 01)	X			
Segment 7 Proposed – Comparison Portion for Alternatives 7A, B	Bannock Creek			X	
	Bannock Creek (Tributary 18)			X	
	Bannock Creek (Tributary 19)			X	
	Bannock Creek (Tributary 20)			X	
	Bannock Creek (Tributary 21)			X	
	Bannock Creek (Tributary 22)			X	
	Bannock Creek (Tributary 23)			X	
	Bannock Creek (Tributary 24)			X	
	Bannock Creek (Tributary 25)			X	
	Bannock Creek (Tributary 27)			X	
	Bannock Creek (Tributary 30)			X	
	Deadwood Creek	X			
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 03)	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 07)	X			
	East Fork Rock Creek (Tributary 08)	X			
	East Fork Rock Creek (Tributary 09)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Hawkins Creek	X			
	Hawkins Creek (Tributary 04)	X			
	Hawkins Creek (Tributary 05)	X			
	Hawkins Creek (Tributary 06)	X			
	Sheep Creek	X			
	South Fork Rock Creek	X			
	South Fork Rock Creek (Tributary 01)	X			
	South Fork Rock Creek (Tributary 08)	X			
	South Fork Rock Creek (Tributary 09)	X			
	West Fork Bannock Creek (Tributary 01)			X	

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 7 Proposed – Comparison Portion for Alternatives 7A, B (cont)	West Fork Bannock Creek (Tributary 02)			X	
	Yellow Dog Creek	X			
	Yellow Dog Creek (Tributary 01)	X			
Alternative 7A	Bannock Creek			X	
	Bannock Creek (Tributary 04)			X	
	Bannock Creek (Tributary 05)			X	
	Bannock Creek (Tributary 06)			X	
	Bannock Creek (Tributary 07)			X	
	Bannock Creek (Tributary 08)			X	
	Deadwood Creek (Tributary 01)	X			
	Hawkins Creek	X			
	Hawkins Creek (Tributary 06)	X			
	Sheep Creek	X			
	South Fork Rock Creek	X			
	South Fork Rock Creek (Tributary 04)	X			
	South Fork Rock Creek (Tributary 13)	X			
	South Fork Rock Creek (Tributary 14)	X			
	South Fork Rock Creek (Tributary 15)	X			
	South Fork Rock Creek (Tributary 16)	X			
	South Fork Rock Creek (Tributary 17)	X			
	South Fork Rock Creek (Tributary 18)	X			
	South Fork Rock Creek (Tributary 19)	X			
	South Fork Rock Creek (Tributary 20)	X			
	South Fork Rock Creek (Tributary 22)	X			
	South Fork Rock Creek (Tributary 34)	X			
	South Fork Rock Creek (Tributary 35)	X			
	South Fork Rock Creek (Tributary 38)	X			
	South Fork Rock Creek (Tributary 39)	X			
	South Fork Rock Creek (Tributary 40)	X			
	South Fork Rock Creek (Tributary 41)	X			
	South Fork Rock Creek (Tributary 42)	X			
	South Fork Rock Creek (Tributary 43)	X			
	South Fork Rock Creek (Tributary 44)	X			
	South Fork Rock Creek (Tributary 45)	X			
	Warm Springs Creek	X			
	Warm Springs Creek (Tributary 01)	X			
	Warm Springs Creek (Tributary 02)	X			
	Warm Springs Creek (Tributary 03)	X			
Alternative 7B	Bannock Creek			X	
	Bannock Creek (Tributary 09)			X	
	Bannock Creek (Tributary 10)			X	
	Bannock Creek (Tributary 11)			X	
	Deadwood Creek (Tributary 01)	X			
	Hawkins Creek	X			
	Hawkins Creek (Tributary 06)	X			
	Sheep Creek	X			
	South Fork Rock Creek	X			
	South Fork Rock Creek (Tributary 02)	X			
	South Fork Rock Creek (Tributary 04)	X			
	South Fork Rock Creek (Tributary 05)	X			
	South Fork Rock Creek (Tributary 06)	X			
	South Fork Rock Creek (Tributary 17)	X			
	South Fork Rock Creek (Tributary 21)	X			
	South Fork Rock Creek (Tributary 23)	X			
	South Fork Rock Creek (Tributary 24)	X			
	South Fork Rock Creek (Tributary 25)	X			

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Alternative 7B (cont)	South Fork Rock Creek (Tributary 26)	X			
	South Fork Rock Creek (Tributary 27)	X			
	South Fork Rock Creek (Tributary 28)	X			
	South Fork Rock Creek (Tributary 36)	X			
	Warm Springs Creek	X			
	Warm Springs Creek (Tributary 01)	X			
	Warm Springs Creek (Tributary 02)	X			
	Warm Springs Creek (Tributary 03)	X			
Segment 7 Proposed – Comparison Portion for Alternative 7C	Raft River	X			
Alternative 7C	Raft River	X			
Segment 7 Proposed – Comparison Portion for Alternative 7G	Dry Creek	X			X
Alternative 7G	Dry Creek	X			X
Segment 7 Proposed – Comparison Portion for Alternative 7K	Bannock Creek			X	
	Bannock Creek (Tributary 18)			X	
	Bannock Creek (Tributary 19)			X	
	Bannock Creek (Tributary 20)			X	
	Bannock Creek (Tributary 21)			X	
	Bannock Creek (Tributary 22)			X	
	Bannock Creek (Tributary 23)			X	
	Bannock Creek (Tributary 24)			X	
	Bannock Creek (Tributary 25)			X	
	Bannock Creek (Tributary 27)			X	
	Bannock Creek (Tributary 30)			X	
	Deadwood Creek	X			
	Dry Creek	X			X
	Dry Creek (Tributary 01)	X			
	Dry Creek (Tributary 02)	X			
	East Fork Rock Creek	X			
	East Fork Rock Creek (Tributary 03)	X			
	East Fork Rock Creek (Tributary 04)	X			
	East Fork Rock Creek (Tributary 05)	X			
	East Fork Rock Creek (Tributary 07)	X			
	East Fork Rock Creek (Tributary 08)	X			
	East Fork Rock Creek (Tributary 09)	X			
	East Fork Rock Creek (Tributary 10)	X			
	Hawkins Creek	X			
	Hawkins Creek (Tributary 01)	X			
	Hawkins Creek (Tributary 02)	X			
	Hawkins Creek (Tributary 03)	X			
	Hawkins Creek (Tributary 04)	X			
	Hawkins Creek (Tributary 05)	X			
	Hawkins Creek (Tributary 06)	X			
	Marsh Creek	X			X
	Raft River	X			
	Rock Creek (Tributary 02)	X			
	Sheep Creek	X			
	South Fork Hawkins Creek	X			
	South Fork Rock Creek	X			
	South Fork Rock Creek (Tributary 01)	X			
	South Fork Rock Creek (Tributary 08)	X			
	South Fork Rock Creek (Tributary 09)	X			
	West Fork Bannock Creek (Tributary 01)			X	
	West Fork Bannock Creek (Tributary 02)			X	
	Yellow Dog Creek	X			
	Yellow Dog Creek (Tributary 01)	X			

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Alternative 7K	Bannock Creek			X	
	Bannock Creek (Tributary 09)			X	
	Bannock Creek (Tributary 10)			X	
	Bannock Creek (Tributary 11)			X	
	Cold Creek		X		
	Cold Creek (Tributary 01)		X		
	Deadwood Creek (Tributary 01)	X			
	Dry Creek	X			X
	Goose Creek	X	X		
	Goose Creek (Tributary 01)		X		
	Hawkins Creek	X			
	Hawkins Creek (Tributary 01)	X			
	Hawkins Creek (Tributary 02)	X			
	Hawkins Creek (Tributary 03)	X			
	Hawkins Creek (Tributary 06)	X			
	Marsh Creek	X			X
	Raft River	X	X		
	Sheep Creek	X			
	South Fork Hawkins Creek	X			
	South Fork Rock Creek	X			
	South Fork Rock Creek (Tributary 03)	X			
	South Fork Rock Creek (Tributary 04)	X			
	South Fork Rock Creek (Tributary 29)	X			
	South Fork Rock Creek (Tributary 30)	X			
	South Fork Rock Creek (Tributary 31)	X			
	Trapper Creek	X			
	Trapper Creek (Tributary 01)	X			
Segment 8 Proposed – Total Length	Clover Creek	X			X
	Clover Creek (Tributary 01)	X			
	Clover Creek (Tributary 02)	X			
	Cold Springs Creek	X			
	Indian Creek (Tributary 12)			X	
	Indian Creek (Tributary 16)			X	
	Indian Creek (Tributary 17)			X	
	Indian Creek (Tributary 19)			X	
	Indian Creek (Tributary 21)			X	
	Indian Creek (Tributary 22)			X	
	Indian Creek (Tributary 25)			X	X
	Indian Creek (Tributary 26)			X	X
	Indian Creek (Tributary14)			X	
	Little Canyon Creek	X			
	Little Canyon Creek (Tributary 01)	X			
	Malad River	X			
	North Indian Creek (Tributary 04)			X	
	North Indian Creek (Tributary 05)			X	
	Pioneer Reservoir	X			X
	Sand Creek			X	X
	Sand Creek (Tributary 01)			X	
	Sand Creek (Tributary 02)			X	
	Sand Creek (Tributary 03)			X	
	Sand Creek (Tributary 04)			X	
	Sand Creek (Tributary 05)			X	
	Sand Creek (Tributary 06)			X	
	Sand Creek (Tributary 08)			X	
	Sand Creek (Tributary 09)			X	

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 8 Proposed – Total Length (cont)	Sand Creek (Tributary 10)			X	
	Sand Creek (Tributary 11)			X	
	Sand Creek (Tributary 12)			X	
	Sand Creek (Tributary 13)			X	X
	Snake River				X
	South Gooding Main Canal	X			
Segment 8 Proposed – Comparison Portion for Alternative 8A	Clover Creek	X			X
	Clover Creek (Tributary 01)	X			
	Clover Creek (Tributary 02)	X			
	Little Canyon Creek	X			
	Little Canyon Creek (Tributary 01)	X			
	Malad River	X			
	Pioneer Reservoir	X			X
	South Gooding Main Canal	X			
Alternative 8A	Billingsley Creek	X			
	Little Canyon Creek	X			
	Little Canyon Creek (Tributary 01)	X			
	Little Canyon Creek (Tributary 02)	X			
	Little Canyon Creek (Tributary 03)	X			
	Snake River	X			
	Snake River (Tributary 04)	X			
Segment 8 Proposed – Comparison Portion for Alternative 8B	Indian Creek (Tributary 12)			X	
	Indian Creek (Tributary 16)			X	
	Indian Creek (Tributary 17)			X	
	Indian Creek (Tributary 19)			X	
	Indian Creek (Tributary 21)			X	
	Indian Creek (Tributary 22)			X	
	Indian Creek (Tributary 25)			X	X
	Indian Creek (Tributary 26)			X	X
	Indian Creek (Tributary14)			X	
	North Indian Creek (Tributary 04)			X	
	North Indian Creek (Tributary 05)			X	
	Sand Creek			X	X
	Sand Creek (Tributary 01)			X	
	Sand Creek (Tributary 02)			X	
	Sand Creek (Tributary 03)			X	
	Sand Creek (Tributary 04)			X	
	Sand Creek (Tributary 05)			X	
	Sand Creek (Tributary 06)			X	
	Sand Creek (Tributary 08)			X	
	Sand Creek (Tributary 09)			X	
	Sand Creek (Tributary 10)			X	
	Sand Creek (Tributary 11)			X	
	Sand Creek (Tributary 12)			X	
	Sand Creek (Tributary 13)			X	X
	Snake River				X
Alternative 8B	Indian Creek			X	X
	Indian Creek (Tributary 01)			X	
	Indian Creek (Tributary 02)			X	
	Indian Creek (Tributary 03)			X	
	Indian Creek (Tributary 04)			X	
	Indian Creek (Tributary 05)			X	
	Indian Creek (Tributary 06)			X	
	Indian Creek (Tributary 07)			X	
	Indian Creek (Tributary 08)			X	

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Alternative 8B (cont)	Indian Creek (Tributary 09)			X	
	Indian Creek (Tributary 10)			X	
	Indian Creek (Tributary 15)			X	
	Indian Creek (Tributary 17)			X	
	Indian Creek (Tributary 19)			X	
	Indian Creek (Tributary 21)			X	
	Indian Creek (Tributary 22)			X	
	Indian Creek (Tributary 23)			X	
	Indian Creek (Tributary 24)			X	X
	Indian Creek (Tributary 26)			X	X
	Indian Creek (Tributary13)			X	
	North Indian Creek			X	X
	North Indian Creek (Tributary 01)			X	
	North Indian Creek (Tributary 02)			X	
	North Indian Creek (Tributary 06)			X	
	North Indian Creek (Tributary 07)			X	
	North Indian Creek (Tributary 08)			X	
	Sand Creek				X
	Sand Creek (Tributary 04)			X	
	Sand Creek (Tributary 07)			X	
	Sand Creek (Tributary 11)			X	
	Snake River				X
Alternative 8B – Comparison Portion for Alternative 8C	Indian Creek (Tributary 15)			X	
	Indian Creek (Tributary 17)			X	
	Indian Creek (Tributary 19)			X	
	Indian Creek (Tributary 21)			X	
	Indian Creek (Tributary 22)			X	
Alternative 8C	Indian Creek (Tributary 15)			X	
	Indian Creek (Tributary 17)			X	
	Indian Creek (Tributary 18)			X	
	Indian Creek (Tributary 19)			X	
	Indian Creek (Tributary 20)			X	
	Indian Creek (Tributary 21)			X	
	Indian Creek (Tributary 22)			X	
Segment 8 Proposed – Comparison Portion for Alternative 8D	Indian Creek (Tributary 12)			X	
	Indian Creek (Tributary14)			X	
	North Indian Creek (Tributary 04)			X	
	North Indian Creek (Tributary 05)			X	
	Sand Creek			X	X
	Sand Creek (Tributary 06)			X	
	Sand Creek (Tributary 08)			X	
	Sand Creek (Tributary 10)			X	
	Sand Creek (Tributary 13)			X	X
Alternative 8D	Indian Creek (Tributary 11)			X	
	Indian Creek (Tributary14)			X	
	North Indian Creek (Tributary 03)			X	
	North Indian Creek (Tributary 04)			X	
	Sand Creek			X	X
	Sand Creek (Tributary 08)			X	
	Sand Creek (Tributary 09)			X	
	Sand Creek (Tributary 10)			X	
	Sand Creek (Tributary 13)			X	X
	Sand Creek (Tributary 14)			X	X
	Sand Creek (Tributary 15)			X	X
Segment 8 Proposed – Comparison Portion for Alternative 8E	Snake River				X

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 9 Proposed – Total Length	Birch Creek			X	
	Browns Creek			X	
	Bruneau River				X
	Bruneau River (Tributary 01)				X
	Castle Creek	X	X		
	Castle Creek (Tributary 06)		X		
	Catherine Creek			X	
	Cottonwood Creek	X			
	Cottonwood Creek (Tributary 01)	X			
	Deadman Creek			X	
	Deadman Creek (Tributary 01)			X	
	Deadman Creek (Tributary 02)			X	
	Deadman Creek (Tributary 03)			X	
	Deadman Creek (Tributary 04)			X	
	Deadman Creek (Tributary 05)			X	
	Deadman Creek (Tributary 07)			X	
	Deadman Creek (Tributary 09)			X	
	Deadman Creek (Tributary 10)			X	
	Deadman Creek (Tributary 11)			X	
	Deadman Creek (Tributary 12)			X	
	Deadman Creek (Tributary 13)			X	
	Deadman Creek (Tributary 14)			X	
	Deadman Creek (Tributary 15)			X	
	Deadman Creek (Tributary 16)			X	
	Deadman Creek (Tributary 17)			X	
	Deadman Creek (Tributary 18)			X	
	Deadman Creek (Tributary 19)			X	
	Devil Creek		X		
	Jacks Creek	X			X
	McMullen Creek	X			X
	McMullen Creek (Tributary 01)	X			
	McMullen Creek (Tributary 02)	X			
	McMullen Creek (Tributary 03)	X			
	McMullen Creek (Tributary 04)	X			
	McMullen Creek (Tributary 05)	X			
	McMullen Creek (Tributary 06)	X			
	McMullen Creek (Tributary 07)				X
	McMullen Creek (Tributary 08)				X
	McMullen Creek (Tributary 09)				X
	McMullen Creek (Tributary 10)				X
	McMullen Creek (Tributary 11)				X
	Pickett Creek			X	
	Rock Creek	X			
	Rock Creek (Tributary 07)	X			
	Sailor Creek			X	
	Sailor Creek (Tributary 01)			X	
	Sailor Creek (Tributary 02)			X	
	Sailor Creek (Tributary 03)			X	
	Salmon Falls Creek		X		
	Sinker Creek	X	X		
	South Side Canal				X
	Sugar Valley Wash	X			
Segment 9 Proposed – Comparison Portion for Alternative 9A	Cottonwood Creek	X			
	Cottonwood Creek (Tributary 01)	X			
	McMullen Creek (Tributary 07)				X
	Rock Creek (Tributary 07)	X			

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Alternative 9A	Cottonwood Creek	X			
	Cottonwood Creek (Tributary 01)	X			
	McMullen Creek (Tributary 07)				X
Segment 9 Proposed – Comparison Portion for Alternative 9B	Deadman Creek			X	
	Deadman Creek (Tributary 01)			X	
	Deadman Creek (Tributary 02)			X	
	Deadman Creek (Tributary 03)			X	
	Deadman Creek (Tributary 04)			X	
	Deadman Creek (Tributary 05)			X	
	Deadman Creek (Tributary 07)			X	
	Deadman Creek (Tributary 09)			X	
	Deadman Creek (Tributary 10)			X	
	Deadman Creek (Tributary 11)			X	
	Deadman Creek (Tributary 12)			X	
	Deadman Creek (Tributary 13)			X	
	Deadman Creek (Tributary 14)			X	
	Deadman Creek (Tributary 15)			X	
	Deadman Creek (Tributary 16)			X	
	Deadman Creek (Tributary 17)			X	
	Deadman Creek (Tributary 18)			X	
	Deadman Creek (Tributary 19)			X	
	Devil Creek		X		
	Sailor Creek			X	
	Sailor Creek (Tributary 01)			X	
	Sailor Creek (Tributary 02)			X	
	Salmon Falls Creek		X		
Alternative 9B	Deadman Creek			X	
	Deadman Creek (Tributary 05)			X	
	Deadman Creek (Tributary 06)			X	
	Deadman Creek (Tributary 07)			X	
	Deadman Creek (Tributary 08)			X	
	Deadman Creek (Tributary 19)			X	
	Devil Creek		X		
	Sailor Creek			X	
	Sailor Creek (Tributary 01)			X	
	Sailor Creek (Tributary 02)			X	
	Salmon Falls Creek		X		
	Yahoo Creek	X		X	
	Yahoo Creek (Tributary 01)	X			
	Yahoo Creek (Tributary 02)	X			
	Yahoo Creek (Tributary 03)	X			
	Yahoo Creek (Tributary 04)	X			
	Yahoo Creek (Tributary 05)	X			
	Yahoo Creek (Tributary 06)	X			
	Yahoo Creek (Tributary 07)	X			
Segment 9 Proposed – Comparison Portion for Alternative 9C	Devil Creek		X		
	Salmon Falls Creek		X		
Alternative 9C	Devil Creek		X		
	Salmon Falls Creek		X		
Segment 9 Proposed – Comparison Portion for Alternatives 9D, F, G, H	Birch Creek			X	
	Browns Creek			X	
	Bruneau River				X
	Bruneau River (Tributary 01)				X
	Castle Creek	X	X		
	Castle Creek (Tributary 06)		X		

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 9 Proposed – Comparison Portion for Alternatives 9D, F, G, H (cont)	Catherine Creek			X	
	Jacks Creek	X			X
	Pickett Creek			X	
	Sinker Creek	X	X		
	South Side Canal				X
	Sugar Valley Wash	X			
Alternative 9D	Corder Creek (Tributary 01)			X	
	Corder Creek (Tributary 02)			X	
	Corder Creek (Tributary 03)			X	
	Corder Creek (Tributary 04)			X	
	Corder Creek (Tributary 05)			X	
	Jack Creek			X	
	Jack Creek (Tributary 01)			X	
	Jack Creek (Tributary 02)			X	
	Rabbit Creek			X	
	Rabbit Creek (Tributary 01)			X	
	Snake River				X
Alternative 9F	Bruneau River				X
	Bruneau River (Tributary 01)				X
	Corder Creek (Tributary 01)			X	
	Corder Creek (Tributary 02)			X	
	Corder Creek (Tributary 03)			X	
	Corder Creek (Tributary 04)			X	
	Corder Creek (Tributary 05)			X	
	Jack Creek			X	
	Jack Creek (Tributary 01)			X	
	Jack Creek (Tributary 02)			X	
	Jacks Creek	X			X
	Rabbit Creek			X	
	Rabbit Creek (Tributary 01)			X	
	Snake River				X
	South Side Canal				X
	Sugar Valley Wash	X			
Alternative 9G	Corder Creek (Tributary 01)			X	
	Corder Creek (Tributary 02)			X	
	Corder Creek (Tributary 03)			X	
	Corder Creek (Tributary 04)			X	
	Corder Creek (Tributary 05)			X	
	Jack Creek			X	
	Jack Creek (Tributary 01)			X	
	Jack Creek (Tributary 02)			X	
	Rabbit Creek			X	
	Rabbit Creek (Tributary 01)			X	
	Sinker Creek	X	X		
	Snake River				X
Alternative 9H	Bruneau River				X
	Bruneau River (Tributary 01)				X
	Corder Creek (Tributary 01)			X	
	Corder Creek (Tributary 02)			X	
	Corder Creek (Tributary 03)			X	
	Corder Creek (Tributary 04)			X	
	Corder Creek (Tributary 05)			X	
	Jack Creek			X	
	Jack Creek (Tributary 01)			X	
	Jack Creek (Tributary 02)			X	

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Alternative 9H (cont)	Jacks Creek	X			X
	Rabbit Creek			X	
	Rabbit Creek (Tributary 01)			X	
	Sinker Creek	X	X		
	Snake River				X
	South Side Canal				X
	Sugar Valley Wash	X			
Segment 9 Proposed – Comparison Portion for Alternative 9E (revised)	Birch Creek			X	
	Browns Creek			X	
	Bruneau River				X
	Bruneau River (Tributary 01)				X
	Castle Creek	X	X		
	Castle Creek (Tributary 06)		X		
	Catherine Creek			X	
	Jacks Creek	X			X
	Pickett Creek			X	
	Sinker Creek	X	X		
	South Side Canal				X
	Sugar Valley Wash	X			
Alternative 9E (revised)	Birch Creek			X	
	Birch Creek (Tributary 01)			X	
	Birch Creek (Tributary 02)			X	
	Browns Creek			X	
	Browns Creek (Tributary 01)			X	
	Browns Creek (Tributary 02)			X	
	Browns Creek (Tributary 03)			X	
	Browns Creek (Tributary 04)			X	
	Browns Creek (Tributary 05)			X	
	Browns Creek (Tributary 06)			X	
	Browns Creek (Tributary 07)			X	
	Browns Creek (Tributary 08)			X	
	Browns Creek (Tributary 09)			X	
	Browns Creek (Tributary 10)			X	
	Bruneau River				X
	Castle Creek		X		
	Castle Creek (Tributary 01)	X	X		
	Castle Creek (Tributary 02)		X		
	Castle Creek (Tributary 03)		X		
	Castle Creek (Tributary 04)		X		
	Castle Creek (Tributary 05)		X		
	Castle Creek (Tributary 07)		X		
	Castle Creek (Tributary 08)		X		
	Castle Creek (Tributary 09)		X		
	Castle Creek (Tributary 10)		X		
	Castle Creek (Tributary 12)		X		
	Castle Creek (Tributary 13)		X		
	Castle Creek (Tributary 14)		X		
	Castle Creek (Tributary 15)		X		
	Castle Creek (Tributary 16)		X		
	Castle Creek (Tributary 17)		X		
	Pickett Creek			X	
	Pickett Creek (Tributary 01)			X	X
	Poison Creek			X	
	Sinker Creek	X	X		

Table D.16-13. TMDL and 303(d) listed Streams in the Analysis Area cont.

Segment	Stream Name	TMDL Sediment	TMDL Temperature	303(d) listed Sediment	303(d) listed Temperature
Segment 10 Proposed – Total Length	Rock Creek (Tributary 01)	X			
	Rock Creek (Tributary 02)	X			
	Rock Creek (Tributary 03)	X			
	Rock Creek (Tributary 04)	X			
	Rock Creek (Tributary 05)	X			
	Rock Creek (Tributary 06)	X			
	Snake River	X			X
	Snake River (Tributary 01)	X			
	Snake River (Tributary 02)	X			
	Snake River (Tributary 03)	X			

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-14. Acreage Comparison of Construction Related Stream Impacts

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Within 500 feet of Perennial and Intermittent Streams		Within 100 feet of Ephemeral Streams		Within 500 feet of TMDL and 303(d) Listed - Sediment Streams		Total
			Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	Disturbed Acres
1W	1W(a) Proposed – Total Length	73.8	153	19.7	49	6.3			777
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	43	29.4	3	1.8			148
	Alternative 1W(a)-B	20.9	30	11.0	4	1.5			271
	1W(c) Proposed – Total Length	73.6	193	20.2	63	6.6			957
2	Proposed – Total Length	91.9	58	3.3	99	5.6			1,780
	Proposed – Comparison portion for Alternative 2A	16.8	18	5.8	17	5.4			309
	Alternative 2A	16.0	7	2.1	30	8.6			355
	Proposed – Comparison portion for Alternative 2B	12.5	18	7.5	13	5.4			238
	Alternative 2B	12.2	13	6.2	17	8.3			209
3	Segment 3 Proposed – Total Length	45.9	87	10.4	42	5.0			833
	Segment 3A Proposed – Total Length	5.1	10	16.3	5	8.6			60
4[1/]	Proposed – Total Length	197.6	563	14.5	168	4.3	81	2.1	3,897
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	341	19.9	74	4.3	6	0.4	1,714
	Alternative 4B	100.2	255	12.3	151	7.3	5	0.2	2,083
	Alternative 4C	101.6	238	11.5	144	6.9	5	0.2	2,073
	Alternative 4D	100.8	260	12.3	167	7.9	5	0.2	2,110
	Alternative 4E	102.2	238	11.4	152	7.3	5	0.2	2,081
	Alternative 4F	87.5	333	19.3	78	4.5	6	0.4	1,728
5	Proposed – Total Length	55.7	<1		127	10.8	193	16.4	1,179
	Proposed – Comparison portion for Alternatives 5A,B	22.3			45	9.8	129	27.9	461
	Alternative 5A	29.7	89	13.8	46	7.1	101	15.7	644
	Alternative 5B	40.4	97	11.5	62	7.4	110	13.1	843
	Proposed – Comparison portion for Alternatives 5C	32.9	<1		95	13.0	144	19.6	731
	Alternative 5C	26.0	9	1.8	36	7.1	61	12.0	509
	Proposed – Comparison portion for Alternatives 5D	19.2	<1		58	11.9	21	4.3	484
	Alternative 5D	17.0	14	3.3	36	8.7	31	7.4	416
	Proposed – Comparison portion for Alternatives 5E	5.8			8	4.3			174
	Alternative 5E	5.3			7	4.5			165
6	Proposed – Total Length	0.5							65

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value
Acreages for TMDL and 303(d) listed streams overlap with perennial, intermittent, and ephemeral disturbance acres and are not included in the total disturbed acres column

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-14. Acreage Comparison of Construction Related Stream Impacts cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Within 500 feet of Perennial and Intermittent Streams		Within 100 feet of Ephemeral Streams		Within 500 feet of TMDL and 303(d) Listed - Sediment Streams		Total
			Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	Disturbed Acres
7	Proposed – Total Length	118.2	119	5.3	130	5.8	201	8.9	2,252
	Proposed – Comparison portion for Alternatives 7A,B	35.1			72	11.1	156	23.9	652
	Alternative 7A	37.7	101	13.0	71	9.2	123	15.9	775
	Alternative 7B	46.2	101	11.0	76	8.3	136	14.7	921
	Proposed – Comparison portion for Alternative 7C	20.1	14	3.8	6	1.6	13	3.4	372
	Alternative 7C	20.3	12	3.4	19	5.1	8	2.2	362
	Proposed – Comparison portion for Alternative 7D	6.2	6	4.6	6	4.8			132
	Alternative 7D	6.8	13	8.6	6	3.9			153
	Proposed – Comparison portion for Alternative 7E	3.8	25	35.3					72
	Alternative 7E	4.5	29	30.1					96
	Proposed – Comparison portion for Alternative 7F	10.5	83	37.1	3	1.2			225
	Alternative 7F	10.8	64	29.8	12	5.4			213
	Proposed – Comparison portion for Alternative 7G	3.3			7	10.4	2	2.8	64
	Alternative 7G	3.4			5	6.2	9	9.9	87
	Proposed – Comparison portion for Alternative 7K	118.2	118	5.2	129	5.7	200	8.9	2,249
	Alternative 7K	148.1	369	12.9	226	7.9	144	5.0	2,859
8	Proposed – Total Length	131.5	98	3.9	108	4.3	124	4.9	2,518
	Proposed – Comparison portion for Alternative 8A	51.9	26	2.7	15	1.6	29	3.0	963
	Alternative 8A	53.6	26	2.7	11	1.1	21	2.1	978
	Proposed – Comparison portion for Alternative 8B	45.3	27	3.0	49	5.4	88	9.8	899
	Alternative 8B	45.8	16	1.8	49	5.3	131	14.3	916
	Proposed – Comparison portion for Alternative 8C	6.5	16	10.0	15	9.3	15	9.1	163
	Alternative 8C	6.4	9	6.4	9	6.2	14	9.7	140
	Proposed – Comparison portion for Alternative 8D	6.9			2	1.3	22	15.2	147
	Alternative 8D	8.1			5	2.6	23	13.1	174
	Proposed – Comparison portion for Alternative 8E	7.0	2	1.9	3	2.1	<1	0.1	124
	Alternative 8E	18.3	7	2.0	14	4.2			334
9	Proposed – Total Length	162.2	171	5.2	111	3.4	141	4.3	3,294
	Proposed – Comparison portion for Alternative 9A	7.8	3	2.0	2	1.5	4	2.9	147
	Alternative 9A	7.7	7	4.4	<1		7	4.2	162
	Proposed – Comparison portion for Alternative 9B	49.1	73	7.1	20	1.9	72	6.9	1,037
	Alternative 9B	52.3	22	2.3	29	3.0	74	7.7	965
	Proposed – Comparison portion for Alternative 9C	14.4	5	1.5	10	3.2	5	1.5	304
	Alternative 9C	14.4	2	0.6	7	2.2	3	1.1	320
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	35	3.0	54	4.7	38	3.3	1,145
	Alternative 9D	60.1			30	2.8	28	2.7	1,047
	Alternative 9F	63.3			46	3.9	40	3.5	1,165
	Alternative 9G	57.8			25	2.4	37	3.5	1,058
	Alternative 9H	61.0			41	3.6	42	3.6	1,163
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	35	2.8	60	4.9	38	3.1	1,232
	Alternative 9E (revised)	70.6	20	1.6	91	7.1	91	7.0	1,290
10	Proposed – Total Length	34.4	30	4.4	9	1.4	28.3	4.2	671

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

Blank cells indicate zero acres or null value

Acreages for TMDL and 303(d) listed streams overlap with perennial, intermittent, and ephemeral disturbance acres and are not included in the total disturbed acres column

Table D.16-15. Acreage Comparison of Operations Disturbance to Stream Buffers

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Within 500 feet of Perennial and Intermittent Streams		Within 100 feet of Ephemeral Streams		Within 500 feet of TMDL and 303(d) Listed - Sediment Streams		Total Disturbed Acres
			Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	
1W	1W(a) Proposed – Total Length	73.8	40	22.6	10	5.7			177
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	8	27.8	1	1.9			27
	Alternative 1W(a)-B	20.9	6	14.7	1	1.6			44
	1W(c) Proposed – Total Length	73.6	19	15.0	9	7.2			124
2	Proposed – Total Length	91.9	25	10.4	13	5.2			245
	Proposed – Comparison portion for Alternative 2A	16.8	3	9.1	2	5.8			28
	Alternative 2A	16.0	1	2.0	3	8.6			40
	Proposed – Comparison portion for Alternative 2B	12.5	3	12.1	1	5.8			21
	Alternative 2B	12.2	1	4.9	2	9.4			17
3	Segment 3 Proposed – Total Length	45.9	10	7.2	15	11.0			140
	Segment 3A Proposed – Total Length	5.1	1	8.2	1	8.4			12
4[1/]	Proposed – Total Length	197.6	75	14.1	27	5.1	10	1.9	530
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	41	19.4	11	5.2	1	0.6	213
	Alternative 4B	100.2	43	15.8	24	8.8	1	0.4	273
	Alternative 4C	101.6	39	14.7	21	8.0	1	0.5	265
	Alternative 4D	100.8	43	15.4	27	9.5	1	0.4	280
	Alternative 4E	102.2	39	14.5	22	8.3	1	0.4	269
	Alternative 4F	87.5	41	19.2	11	5.2	1	0.6	214
5	Proposed – Total Length	55.7	<1		22	13.1	29	17.4	169
	Proposed – Comparison portion for Alternatives 5A,B	22.3			10	17.0	21	35.6	58
	Alternative 5A	29.7	15	18.7	9	11.1	18	21.9	80
	Alternative 5B	40.4	19	20.9	9	10.0	14	14.8	92
	Proposed – Comparison portion for Alternatives 5C	32.9	<1		21	22.2	25	26.8	94
	Alternative 5C	26.0	1	1.6	7	11.8	9	16.6	56
	Proposed – Comparison portion for Alternatives 5D	19.2	<1		11	17.6	5	8.2	63
	Alternative 5D	17.0	3	6.2	6	10.6	4	7.3	53
	Proposed – Comparison portion for Alternatives 5E	5.8							24
	Alternative 5E	5.3							24
6	Proposed – Total Length	0.5							61

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value
Acreages for TMDL and 303(d) listed streams overlap with perennial, intermittent, and ephemeral disturbance acres and are not included in the total disturbed acres column

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.16-15. Acreage Comparison of Operations Disturbance to Stream Buffers cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Within 500 feet of Perennial and Intermittent Streams		Within 100 feet of Ephemeral Streams		Within 500 feet of TMDL and 303(d) Listed - Sediment Streams		Total Disturbed Acres
			Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	Disturbed Acres	% of Total Disturbance Area	
7	Proposed – Total Length	118.2	14	5.1	20	7.6	28	10.5	265
	Proposed – Comparison portion for Alternatives 7A,B	35.1		0.0	12	16.4	22	31.1	71
	Alternative 7A	37.7	18	18.9	11	11.6	21	22.7	93
	Alternative 7B	46.2	18	19.2	11	11.1	19	19.7	96
	Proposed – Comparison portion for Alternative 7C	20.1	1	3.5	1	1.6	1	2.7	36
	Alternative 7C	20.3	1	2.1	2	7.0	<1	0.3	28
	Proposed – Comparison portion for Alternative 7D	6.2	1	8.9	1	11.1			11
	Alternative 7D	6.8	1	7.7	1	9.1			13
	Proposed – Comparison portion for Alternative 7E	3.8	2	35.8					5
	Alternative 7E	4.5	3	36.7					9
	Proposed – Comparison portion for Alternative 7F	10.5	9	39.1	1	2.2			23
	Alternative 7F	10.8	8	33.1	1	4.8			23
	Proposed – Comparison portion for Alternative 7G	3.3					<1	3.0	6
	Alternative 7G	3.4					<1	3.1	6
	Proposed – Comparison portion for Alternative 7K	118.2	14	5.2	20	7.5	27	10.4	264
	Alternative 7K	148.1	53	13.9	33	8.6	16	4.2	382
8	Proposed – Total Length	131.5	12	4.8	15	5.9	13	5.4	249
	Proposed – Comparison portion for Alternative 8A	51.9	3	3.3	2	2.5	1	0.9	102
	Alternative 8A	53.6	2	2.3	1	1.3	2	2.4	103
	Proposed – Comparison portion for Alternative 8B	45.3	3	3.7	7	8.4	12	14.0	87
	Alternative 8B	45.8	2	2.5	4	6.4	15	21.3	69
	Proposed – Comparison portion for Alternative 8C	6.5	2	11.7	1	8.0	1	8.9	15
	Alternative 8C	6.4	2	13.0	1	7.3	2	14.5	16
	Proposed – Comparison portion for Alternative 8D	6.9			<1		4	25.0	15
	Alternative 8D	8.1			1	5.1	3	21.4	15
	Proposed – Comparison portion for Alternative 8E	7.0	<1		<1				10
	Alternative 8E	18.3	1	2.7	1	3.4			26
9	Proposed – Total Length	162.2	21	5.8	17	4.8	14	4.0	360
	Proposed – Comparison portion for Alternative 9A	7.8	1	3.4	<1		1	3.9	15
	Alternative 9A	7.7	1	9.2	<1		1	8.7	14
	Proposed – Comparison portion for Alternative 9B	49.1	10	7.8	3	2.5	8	6.2	122
	Alternative 9B	52.3	3	3.9	3	3.9	7	8.5	83
	Proposed – Comparison portion for Alternative 9C	14.4			1	4.1	<1	0.0	27
	Alternative 9C	14.4	<1		1	2.3	<1	1.9	26
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2	3	3.0	7	6.9	4	3.4	106
	Alternative 9D	60.1			3	4.0	3	3.3	84
	Alternative 9F	63.3			5	4.9	4	3.8	93
	Alternative 9G	57.8			4	4.2	3	3.4	87
	Alternative 9H	61.0			5	5.0	4	3.9	96
	Proposed – Comparison portion for Alternative 9E (revised)	61.4	3	2.6	9	7.8	4	3.1	116
	Alternative 9E (revised)	70.6	4	3.0	14	10.4	13	9.9	135
10	Proposed – Total Length	34.4	1	1.3	1	1.0	2	3.2	74

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10
Acreages have been rounded to the nearest whole acre; therefore, numbers are inexact and columns/rows may not sum exactly
Blank cells indicate zero acres or null value
Acreages for TMDL and 303(d) listed streams overlap with perennial, intermittent, and ephemeral disturbance acres and are not included in the total disturbed acres column

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 1W(a) Proposed - Total Length	Proposed Route	0.4 - 1.0, 1.8 - 2.7	Oregon Trail	Crossed	0
		0.5 - 1.2	California Trail	Crossed	0
		1.9 - 2.5	Mormon Pioneer Trail	Crossed	0
		1.9 - 2.5	National Historic Trails	Crossed	0
		1.9 - 2.5	Pony Express Trail	Crossed	0
		2.1	Gravel Pit	NW	154.3
		2.5	Residence	E	400.3
		2.5	Residence	E	698.9
		2.6	Residence	E	885.8
		13.5	Structure	NW	789.4
		15.6	Residence	N	209.9
		18.1	Outbuilding	W	906.7
		18.6	Cabin	W	688
		28.6 - 31.1	Medicine Bow NF	Crossed	0
		29.0 - 39.6	Bates Hole MA	Crossed	0
		34.6 - 57.6	Shirley Basin	Crossed	0
		68.5	Outbuilding	SE	778.3
		68.7	Barn	SE	669.9
		68.7	Barn	SE	819.8
		68.7	Barn	SE	991.4
		68.7	Residence	SE	265.2
		68.7	Residence	SE	394.5
		71.4	Ellis Ranch Airport	SW	884.9
Alternative 1W(a)-B	Feasible Alternative	3.7	Residence	N	651.5
		3.7	Residence	N	885.1
		3.7	Residence	N	985.2
		3.8	Building/Industrial	S	327.4
		3.8	Residence	N	924.7
		7.4 - 8.0	Bozeman Trail	Crossed	0
		8.2 - 9.6	Oregon Trail	Crossed	0
		8.4 - 9.1	California Trail	Crossed	0
		8.7	Residence	E	147.7
		8.7	Residence	W	466.5
		9.1	Building/Industrial	W	584
		9.1	Residence	W	435.7
		9.1 - 9.7	Mormon Pioneer Trail	Crossed	0
		9.1 - 9.7	National Historic Trails	Crossed	0
Segment 1W(c) Proposed - Total Length	Proposed Route	0.0 - 1.2	Oregon Trail	Crossed	0
		0.6 - 1.4	Pony Express Trail	Crossed	0
		1.1	Outbuilding	S	77.5
		1.2	Tower	N	460.6
		1.3	Residence	N	451
		1.5	Residence	S	389.2
		1.6	Residence	N	750.7
		1.7	Residence	N	70.9
		1.7	Residence	N	247.2
		1.7	Residence	N	329.3
		1.7	Residence	N	497.2
		1.7	Residence	N	636.8
		1.7	Residence	N	675.3
		1.8	Residence	N	85.1
		1.8	Residence	N	362.3
		1.8	Residence	N	492
		1.8	Residence	S	250.1
		1.8	Residence	S	524.7
		1.9	Residence	N	324.8
		1.9	Residence	S	329
		1.9	Residence	S	580.7
		1.9	Residence	S	734.5
		1.9	Residence	S	870.9
		2	Residence	N	425.5
		2.1	Residence	NW	781.3

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 1W(c) Proposed - Total Length (cont.)	Proposed Route (cont.)	2.1	Residence	SE	355.9
		2.3	Residence	SE	234.5
		7.2	Structure	S	751.4
		10	Barn	S	493.8
		14.2	Canal	S	545.5
		14.5	Residence	S	995.4
		19.3	Park	W	396.8
		27.2 - 29.6	Medicine Bow NF	Crossed	0
		27.8 - 38.3	Bates Hole MA	Crossed	0
		33.3 - 35.0, 35.7 - 42.6	Shirley Basin	Crossed	0
		41.8	Reservoir	E	914.3
		44.4	Substation	E	33.8
		45.4	Structure	W	309.6
		64.9	Structure	W	541.4
		67.3	Foxley Landing Strip	W	235.1
Segment 2 Proposed - Total Length	Proposed Route	1.8	Wind Farm	N	858.2
		5.5	Mine	S	55.7
		5.9	Structure	S	125.9
		32.3	Barn	N	891.7
		32.3	Outbuilding	N	658.1
		32.3	Residence	N	700.3
		32.4	Barn	N	579.1
		32.4	Outbuilding	N	701.6
		32.4	Outbuilding	N	751.8
		32.4	Outbuilding	N	764.1
		37.4 - 37.7	North Platte SRMA	Crossed	0
		37.8	Sand Pit	S	871.1
		54.2 - 54.8, 57.3 - 58.1	Historic Trails	Crossed	0
		57.4 - 57.7	Hogback Lake Proposed SRMA	Crossed	0
		57.4 - 57.7	OHV SRMA	Crossed	0
		57.4 - 57.7	Rawlins OHV Area	Crossed	0
		63.2 - 63.6, 64.3 - 69.7	Red Rim-Daley Wildlife HMA	Crossed	0
		81.7	Oil/Gas Well	N	485.1
		84.3	Structure	SE	616.4
		84.7	Structure	NW	911.7
		85.6	Structure	N	597.4
		86.1	Structure	N	762.6
		86.6	Structure	N	614.4
		87.4	Structure	S	697
		87.9	Structure	S	625.7
		90.9	Structure	N	714.2
		91.8	Structure	S	436.1
Alternative 2A	Feasible Alternative	9.5	Gravel Pit	S	986.3
		9.7	Barn	N	531.3
		10.3	Fort Fred Steele State Historic Site	N	318.2
Alternative 2B	Feasible Alternative	5.6	Gravel Pit	N	260.8
		6.4	Mine	S	655.6
		6.6	Residence	N	258.6
		6.6	Residence	N	498.4
		6.6	Residence	N	690
		6.6	Residence	S	566.1
		6.7	Residence	S	780.2
		6.7	Residence	S	934.8
Segment 3 Proposed - Total Length	Proposed Route	0	Structure	S	435.3
		1	Structure	NE	360.6
		1.3	Structure	NE	551.1
		1.5	Structure	S	445.8
		1.6	Structure	N	469.7
		2.2	Structure	S	766.9
		2.6	Structure	N	863.8

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 3 Proposed - Total Length (cont.)	Proposed Route (cont.)	2.8	Structure	S	241.8
		3.2 - 9.1	Upper Muddy Creek Watershed	Crossed	0
		4.2	Structure	S	408.1
		5.2	Oil/Gas Well	N	44.5
		5.7	Structure	N	304
		32.1	Oil Field	S	244.1
		37.0 - 45.94	Point of Rocks MOA	Crossed	0
Segment 3A Proposed - Total Length	Proposed Route	0.0 - 5.13	Point of Rocks MOA	Crossed	0
Segment 4 Proposed - Total Length[1/]	Proposed Route	0.0 - 11.7	Point of Rocks MOA	Crossed	0
		51.4 - 52.6	Seedskadee NWR	Crossed	0
		52.2	Building/Industrial	N	739.3
		52.6	Seedskadee National Wildlife Refuge	N	799.9
		56.9 - 57.5	California Trail	Crossed	0
		56.9 - 57.5	National Historic Trails	Crossed	0
		56.9 - 57.5	Oregon Trail	Crossed	0
		61.9 - 62.5	Pony Express Trail	Crossed	0
		63.3	White-tailed Prairie Dog Complex	S	491.9
		65.0 - 66.5, 67.0 - 70.1	White-tailed Prairie Dog Complex	Crossed	0
		80.2	Oil/Gas Well	N	912.3
		91.3 - 91.5, 91.7 - 92.0	White-tailed Prairie Dog Complex	Crossed	0
		95.6	Structure	N	76.6
		96.1 - 117.7, 117.8 - 118.1, 118.2 - 119.1, 120.8 - 122.8	Commissary Ridge Raptor Migration	Crossed	0
		100.7 - 106.5	Historic Trail - Medium Quality (500ft Buffer)	Crossed	0
		101.8 - 102.4	NHT Physical Trace	Crossed	0
		102.0 - 102.7	California Trail	Crossed	0
		105.1	Reservoir	S	601.6
		105.3	Reservoir	N	94.6
		105.4 - 106.5, 107.5 - 107.8, 108.0 - 110.4, 111.9 - 112.2, 113.9 - 114.5	Dempsey Ridge SRMA	Crossed	0
		107.2 - 108.3	Historic Trail - High Quality (0.25mi Buffer)	Crossed	0
		111.0 - 111.7	Dempsey SRMA	Crossed	0
		111.9 - 117.0	Historic Trail - High Quality (0.25mi Buffer)	Crossed	0
		112.2 - 113.5	Dempsey SRMA	Crossed	0
		112.4	Dempsey SRMA	NE	760.7
		112.5	Special Status Plant - 250ft buffer	W	0
		112.5	Special Status Plant Population	SW	230.8
		112.7 - 113.4, 114.9 - 115.6	NHT Physical Trace	Crossed	0
		112.9 - 113.5	California Trail	Crossed	0
		114.7 - 115.6	California Trail	Crossed	0
		115.3 - 117.6, 117.7 - 119.2	Rock Creek/Tunp SMA	Crossed	0
		121.2 - 124.0	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		122.3 - 123.3	California Trail	Crossed	0
		122.8	Cokeville Meadows National Wildlife Refuge	S	832.9
		122.8 - 124.4	Cokeville Meadows National Wildlife Refuge	Crossed	0
		122.9	Shed	N	17.7
		123	Cokeville Meadows National Wildlife Refuge	S	296.1
		123	Residence	S	805.8
		123.4	Cokeville Meadows National Wildlife Refuge	S	611.1
		123.5	Cokeville Meadows National Wildlife Refuge	S	674.6
		123.8	Residence	NE	718.3
		124.9	Building/Industrial	SW	290.9
		133.9 - 134.0	Canal	Crossed	0
		138.1 - 138.7	National Historic Trails	Crossed	0
		138.1 - 138.7	Oregon Trail	Crossed	0
		139.4	Reservoir	N	876.3
		145.9	Shed	N	876.9
		146.8	Residence	S	554.1
		146.9	Residence	N	543.4
		146.9	Residence	S	822.4
		147.0 - 147.7	California Trail	Crossed	0

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 4 Proposed - Total Length (cont.)	Proposed Route (cont.)	147.0 - 147.7	National Historic Trails	Crossed	0
		147.0 - 147.7	Oregon Trail	Crossed	0
		147.3	Residence	N	733
		147.6	Residence	S	406.7
		147.6	Structure	S	701.1
		147.7	Residence	N	989.8
		147.9	Outbuilding	NE	607.8
		147.9	Outbuilding	NE	993
		148	Outbuilding	NE	797.9
		149.9	Structure	SW	567.4
		151.5	Outbuilding	NE	638.5
		151.6	Barn	NE	579.6
		151.7	Barn	NE	587.7
		151.7	Outbuilding	NE	612.4
		151.7	Outbuilding	NE	646.8
		151.7	Outbuilding	NE	672.7
		151.7	Outbuilding	NE	693.2
		152.1	Substation	SW	710.6
		154.5	Shed	SW	731.2
		156.3	Spring	SW	332.7
		156.9	Gravel Pit	SW	457.1
		161.1 - 170.3	Caribou NF	Crossed	0
		167.1	Spring	N	54.2
		171.5	Residence	N	697.8
		171.6	Residence	N	730
		173.8	Barn	N	865.6
		173.8	Outbuilding	N	790.6
		173.9	Outbuilding	N	953.3
		173.9	Residence	N	980.7
		174.4	Outbuilding	S	893.1
		174.5 - 173.9	California Trail	Crossed	0
		177.1	Mine	SE	925.3
		177.5	Structure	SE	501.3
		190.8	Shed	N	622.6
		194.7	Silo	S	649.8
		195.6	Downey (Hyde Memorial) Airport	NE	453
		196.4	Outbuilding	N	753.5
		196.4	Outbuilding	N	799.7
		196.4	Residence	N	987.3
Alternative 4B	Feasible Alternative	0.0 - 0.9	Seedskadee NWR	Crossed	0
		8.4 - 13.5	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		9.2 - 9.8	California Trail	Crossed	0
		9.2 - 9.8	National Historic Trails	Crossed	0
		9.2 - 9.8	Oregon Trail	Crossed	0
		9.5 - 9.7, 12.0 - 12.3	NHT Physical Trace	Crossed	0
		12.0 - 12.7	Pony Express Trail	Crossed	0
		16	Oil/Gas Well	S	19.3
		37.5	Spring	N	497.1
		43.5	Mine	S	696.8
		43.5	Structure	S	861.1
		47.9	Mine	N	908.3
		47.9 - 73.0	Commissary Ridge Raptor Migration	Crossed	0
		52.3	Dam	W	993.4
		53	Residence	NE	952.1
		54.5	Special Status Plant - 250ft buffer	SW	507.5
		54.5	Special Status Plant Population	SW	757.5
		60.3	Spring	SE	830.7
		62.5 - 63.1, 63.6 - 64.9, 65.1 - 67.7, 69.9 - 70.1	Bear River SMA	Crossed	0
		63.0 - 63.7	Bear River SMA	Crossed	0
		64.1 - 65.0	California Trail	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 4B (cont.)	Feasible Alternative (cont.)	65	Special Status Plant Population	N	993.3
		65	Special Status Plant - 250ft buffer	N	743.3
		65.1 - 65.4	Special Status Plant - 250ft buffer	Crossed	0
		65.3	Special Status Plant Population	N	64
		68.1 - 68.7	Bear River SMA	Crossed	0
		72.2 - 72.4	Cokeville Meadows National Wildlife Refuge	Crossed	0
		72.2 - 76.9	Cokeville Meadows National Wildlife Refuge	Crossed	0
		72.3 - 73.3	Cokeville Meadows National Wildlife Refuge	Crossed	0
		72.6 - 75.7	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		72.8	Cokeville Meadows National Wildlife Refuge	W	729.4
		73.1	Pivot	E	251.2
		73.2 - 74.2	Cokeville Meadows National Wildlife Refuge	Crossed	0
		73.9 - 74.8	California Trail	Crossed	0
		74	Pivot	E	182.9
		74.1 - 74.6	Cokeville Meadows National Wildlife Refuge	Crossed	0
		74.2	Cokeville Meadows National Wildlife Refuge	W	94.7
		74.2	Dam	W	338.1
		74.2 - 74.3	NHT Physical Trace	Crossed	0
		74.2 - 76.8	Cokeville Meadows National Wildlife Refuge	Crossed	0
		74.5 - 75.1	Cokeville Meadows National Wildlife Refuge	Crossed	0
		75.0 - 75.7	Cokeville Meadows National Wildlife Refuge	Crossed	0
		75.6 - 76.0	Cokeville Meadows National Wildlife Refuge	Crossed	0
		75.9 - 76.5	Cokeville Meadows National Wildlife Refuge	Crossed	0
		76.4 - 76.7	Cokeville Meadows National Wildlife Refuge	Crossed	0
		76.6 - 76.9	Cokeville Meadows National Wildlife Refuge	Crossed	0
		83.6	Cokeville Meadows National Wildlife Refuge	W	282.6
Alternative 4C	Feasible Alternative	0.0 - 0.9	Seedskadee NWR	Crossed	0
		8.4 - 13.5	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		9.2 - 9.8	California Trail	Crossed	0
		9.2 - 9.8	National Historic Trails	Crossed	0
		9.2 - 9.8	Oregon Trail	Crossed	0
		9.5 - 9.7, 12.0 - 12.3	NHT Physical Trace	Crossed	0
		12.0 - 12.7	Pony Express Trail	Crossed	0
		16	Oil/Gas Well	S	19.3
		37.5	Spring	N	497.1
		43.5	Mine	S	696.8
		43.5	Structure	S	861.1
		47.9	Mine	N	908.3
		47.9 - 71.8, 72.4 - 75.5, 78.0 - 78.5	Commissary Ridge Raptor Migration	Crossed	0
		52.3	Dam	W	993.4
		53	Residence	NE	952.1
		54.5	Special Status Plant - 250ft buffer	SW	507.5
		54.5	Special Status Plant Population	SW	757.5
		60.3	Spring	SE	830.7
		62.5 - 63.1, 63.6 - 64.9, 65.1 - 67.2	Bear River SMA	Crossed	0
		63.0 - 63.7	Bear River SMA	Crossed	0
		64.1 - 65.0	California Trail	Crossed	0
		65	Special Status Plant - 250ft buffer	N	743.3
		65	Special Status Plant Population	N	993.3
		65.1 - 65.4	Special Status Plant - 250ft buffer	Crossed	0
		65.3	Special Status Plant Population	N	64
		67.9	Bear River SMA	N	129.6
		69.6 - 71.8, 72.4 - 74.4, 80.6 - 80.9	Rock Creek/Tunp SMA	Crossed	0
		69.7	Tower	S	503.1
		71.2	Cokeville Meadows National Wildlife Refuge	W	895.5
		71.6	Cokeville Meadows National Wildlife Refuge	W	482.8
		71.7	Cokeville Meadows National Wildlife Refuge	W	871.2
		71.9	Cokeville Meadows National Wildlife Refuge	W	537
		73.9	Cokeville Meadows National Wildlife Refuge	W	557.7
		74.5	Cokeville Meadows National Wildlife Refuge	W	679

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 4C (cont.)	Feasible Alternative (cont.)	74.6	Cokeville Meadows National Wildlife Refuge	W	558.8
		74.7 - 75.0	Rock Creek/Tunp Draft Preferred Alt	Crossed	0
		74.8	Cokeville Meadows National Wildlife Refuge	W	557.5
		75.2	Cokeville Meadows National Wildlife Refuge	W	565.3
		75.5	Cokeville Meadows National Wildlife Refuge	W	560.8
		75.9	Cokeville Meadows National Wildlife Refuge	W	571.6
		76.1 - 78.8	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		76.5	Cokeville Meadows National Wildlife Refuge	W	581.4
		76.6 - 77.1	Cokeville Meadows National Wildlife Refuge	Crossed	0
		76.7	Shed	W	188.4
		76.9	Barn	W	831.1
		76.9	Cokeville Meadows National Wildlife Refuge	W	605.7
		76.9	Cokeville Meadows National Wildlife Refuge	W	606.5
		77.0 - 83.4	California Trail	Crossed	0
		77.3	Cokeville Meadows National Wildlife Refuge	W	617.9
		77.3	Substation	W	744.4
		77.6	Cokeville Meadows National Wildlife Refuge	W	618.9
		77.8	Barn	W	461.1
		77.8	NHT Physical Trace	W	577.8
		78	Shed	W	810.9
		78.1	Cokeville Meadows National Wildlife Refuge	W	549.4
		78.3	Gravel Pit	W	257.6
		78.4	Cokeville Meadows National Wildlife Refuge	W	576.9
		79.3	Cokeville Meadows National Wildlife Refuge	W	542.8
		79.5	Barn	E	8.2
		79.5	Cokeville Meadows National Wildlife Refuge	W	509.4
		79.8 - 82.4	Historic Trail - High Quality (0.25mi Buffer)	Crossed	0
		80.8	Canal	W	294.7
		80.8 - 80.9	NHT Physical Trace	Crossed	0
		81.2	Residence	W	325.3
		81.2 - 81.3	NHT Physical Trace	Crossed	0
		81.3	Cokeville Meadows National Wildlife Refuge	W	474.6
		82.1	Cokeville Meadows National Wildlife Refuge	W	437.2
		82.1	Special Status Plant - 250ft buffer	W	569.7
		82.1	Special Status Plant Population	W	819.7
		82.4	Cokeville Meadows National Wildlife Refuge	W	402.1
		82.4	Commercial Building	W	43.6
		82.7	Commercial Building	W	665.8
		82.9 - 83.7	Cokeville Meadows National Wildlife Refuge	Crossed	0
		82.9 - 85.2	Cokeville Meadows National Wildlife Refuge	Crossed	0
		82.9 - 85.4	Cokeville Meadows National Wildlife Refuge	Crossed	0
		83.6 - 83.8	Cokeville Meadows National Wildlife Refuge	Crossed	0
		83.7 - 84.2	Cokeville Meadows National Wildlife Refuge	Crossed	0
		84.1	Cokeville Meadows National Wildlife Refuge	NE	349.6
		84.1 - 85.4	Cokeville Meadows National Wildlife Refuge	Crossed	0
		85.8	Cokeville Municipal Airport	NE	405.5
Alternative 4D	Feasible Alternative	0.0 - 0.9	Seedskadee NWR	Crossed	0
		8.4 - 13.5	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		9.2 - 9.8	California Trail	Crossed	0
		9.2 - 9.8	National Historic Trails	Crossed	0
		9.2 - 9.8	Oregon Trail	Crossed	0
		9.5 - 9.7, 12.0 - 12.3	NHT Physical Trace	Crossed	0
		12.0 - 12.7	Pony Express Trail	Crossed	0
		16	Oil/Gas Well	S	19.3
		37.5	Spring	N	497.1
		43.5	Mine	S	696.8
		43.5	Structure	S	861.1
		47.9	Mine	N	908.3
		47.9 - 73.6	Commissary Ridge Raptor Migration	Crossed	0
		52.3	Dam	W	993.4

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 4D (cont.)	Feasible Alternative (cont.)	53	Residence	NE	952.1
		56.3	Mine	SE	219
		63.1 - 63.7, 64.2 - 65.5, 65.7 - 68.4, 70.5 - 70.7	Bear River SMA	Crossed	0
		63.6 - 64.3	Bear River SMA	Crossed	0
		64.7 - 65.6	California Trail	Crossed	0
		65.6	Special Status Plant - 250ft buffer	N	743.3
		65.6	Special Status Plant Population	N	993.3
		65.7 - 66.0	Special Status Plant - 250ft buffer	Crossed	0
		65.9	Special Status Plant Population	N	64
		68.7 - 69.3	Bear River SMA	Crossed	0
		72.0 - 77.5	Cokeville Meadows National Wildlife Refuge	Crossed	0
		72.8 - 73.0	Cokeville Meadows National Wildlife Refuge	Crossed	0
		72.9 - 73.9	Cokeville Meadows National Wildlife Refuge	Crossed	0
		73.2 - 76.3	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		73.5	Cokeville Meadows National Wildlife Refuge	W	729.4
		73.7	Pivot	E	251.2
		73.8 - 74.8	Cokeville Meadows National Wildlife Refuge	Crossed	0
		74.5 - 75.4	California Trail	Crossed	0
		74.6	Pivot	E	182.9
		74.7 - 75.2	Cokeville Meadows National Wildlife Refuge	Crossed	0
		74.8	Cokeville Meadows National Wildlife Refuge	W	94.7
		74.8	Dam	W	338.1
		74.8 - 74.9	NHT Physical Trace	Crossed	0
		74.8 - 77.4	Cokeville Meadows National Wildlife Refuge	Crossed	0
		75.1 - 75.7	Cokeville Meadows National Wildlife Refuge	Crossed	0
		75.6 - 76.3	Cokeville Meadows National Wildlife Refuge	Crossed	0
		76.2 - 76.6	Cokeville Meadows National Wildlife Refuge	Crossed	0
		76.5 - 77.1	Cokeville Meadows National Wildlife Refuge	Crossed	0
		77.0 - 77.4	Cokeville Meadows National Wildlife Refuge	Crossed	0
		77.3 - 77.5	Cokeville Meadows National Wildlife Refuge	Crossed	0
		84.2	Cokeville Meadows National Wildlife Refuge	W	282.6
Alternative 4E	Feasible Alternative	0.0 - 0.9	Seedskadee NWR	Crossed	0
		8.4 - 13.5	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		9.2 - 9.8	California Trail	Crossed	0
		9.2 - 9.8	National Historic Trails	Crossed	0
		9.2 - 9.8	Oregon Trail	Crossed	0
		9.5 - 9.7, 12.0 - 12.3	NHT Physical Trace	Crossed	0
		12.0 - 12.7	Pony Express Trail	Crossed	0
		16	Oil/Gas Well	S	19.3
		37.5	Spring	N	497.1
		43.5	Mine	S	696.8
		43.5	Structure	S	861.1
		47.9	Mine	N	908.3
		47.9 - 72.4, 73.0 - 76.1, 78.6 - 79.1	Commissary Ridge Raptor Migration	Crossed	0
		52.3	Dam	W	993.4
		53	Residence	NE	952.1
		56.3	Mine	SE	219
		63.1 - 63.7, 64.2 - 65.5, 65.7 - 67.8	Bear River SMA	Crossed	0
		63.6 - 64.3	Bear River SMA	Crossed	0
		64.7 - 65.6	California Trail	Crossed	0
		65.6	Special Status Plant - 250ft buffer	N	743.3
		65.6	Special Status Plant Population	N	993.3
		65.7 - 66.0	Special Status Plant - 250ft buffer	Crossed	0
		65.9	Special Status Plant Population	N	64
		68.5	Bear River SMA	N	129.6
		70.2 - 72.4, 73.0 - 75.0, 81.2 - 81.5	Rock Creek/Tunp SMA	Crossed	0
		70.3	Tower	S	503.1
		71.8	Cokeville Meadows National Wildlife Refuge	W	895.5
		72.2	Cokeville Meadows National Wildlife Refuge	W	482.8
		72.3	Cokeville Meadows National Wildlife Refuge	W	871.2

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 4E (cont.)	Feasible Alternative (cont.)	72.5	Cokeville Meadows National Wildlife Refuge	W	537
		74.5	Cokeville Meadows National Wildlife Refuge	W	557.7
		75.1	Cokeville Meadows National Wildlife Refuge	W	679
		75.2	Cokeville Meadows National Wildlife Refuge	W	558.8
		75.3 - 75.7	Rock Creek/Tunp Draft Preferred Alt	Crossed	0
		75.4	Cokeville Meadows National Wildlife Refuge	W	557.5
		75.8	Cokeville Meadows National Wildlife Refuge	W	565.3
		76.1	Cokeville Meadows National Wildlife Refuge	W	560.8
		76.5	Cokeville Meadows National Wildlife Refuge	W	571.6
		76.7 - 79.4	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		77.1	Cokeville Meadows National Wildlife Refuge	W	581.4
		77.2 - 77.7	Cokeville Meadows National Wildlife Refuge	Crossed	0
		77.3	Shed	W	188.4
		77.5	Barn	W	831.1
		77.5	Cokeville Meadows National Wildlife Refuge	W	605.7
		77.5	Cokeville Meadows National Wildlife Refuge	W	606.5
		77.6 - 84.0	California Trail	Crossed	0
		77.9	Cokeville Meadows National Wildlife Refuge	W	617.9
		77.9	Substation	W	744.4
		78.2	Cokeville Meadows National Wildlife Refuge	W	618.9
		78.4	Barn	W	461.1
		78.4	NHT Physical Trace	W	577.8
		78.6	Shed	W	810.9
		78.7	Cokeville Meadows National Wildlife Refuge	W	549.4
		78.9	Gravel Pit	W	257.6
		79	Cokeville Meadows National Wildlife Refuge	W	576.9
		79.9	Cokeville Meadows National Wildlife Refuge	W	542.8
		80.1	Barn	E	8.2
		80.4 - 83.0	Historic Trail - High Quality (0.25mi Buffer)	Crossed	0
		81.4	Canal	W	294.7
		81.4 - 81.5	NHT Physical Trace	Crossed	0
		81.5	Cokeville Meadows National Wildlife Refuge	W	509.4
		81.8	Residence	W	325.3
		81.8 - 81.9	NHT Physical Trace	Crossed	0
		81.9	Cokeville Meadows National Wildlife Refuge	W	474.6
		82.1	Cokeville Meadows National Wildlife Refuge	W	437.2
		82.7	Special Status Plant - 250ft buffer	W	569.7
		82.7	Special Status Plant Population	W	819.7
		83	Cokeville Meadows National Wildlife Refuge	W	402.1
		83	Commercial Building	W	43.6
		83.4	Commercial Building	W	665.8
		83.5 - 84.3	Cokeville Meadows National Wildlife Refuge	Crossed	0
		83.5 - 85.8	Cokeville Meadows National Wildlife Refuge	Crossed	0
		83.5 - 86.0	Cokeville Meadows National Wildlife Refuge	Crossed	0
		84.2 - 84.4	Cokeville Meadows National Wildlife Refuge	Crossed	0
		84.3 - 84.8	Cokeville Meadows National Wildlife Refuge	Crossed	0
		84.7	Cokeville Meadows National Wildlife Refuge	NE	349.6
		84.7 - 86.0	Cokeville Meadows National Wildlife Refuge	Crossed	0
		86.4	Cokeville Municipal Airport	NE	405.5
Alternative 4F	Feasible Alternative	0.0 - 0.9	Seedskadee NWR	Crossed	0
		0.6	Building/Industrial	N	739.3
		1	Seedskadee National Wildlife Refuge	N	799.9
		5.4 - 6.0	California Trail	Crossed	0
		5.4 - 6.0	National Historic Trails	Crossed	0
		5.4 - 6.0	Oregon Trail	Crossed	0
		10.3 - 10.9	Pony Express Trail	Crossed	0
		11.7	White-tailed Prairie Dog Complex	S	491.9
		13.4 - 14.9, 15.4 - 18.5	White-tailed Prairie Dog Complex	Crossed	0
		28.6	Oil/Gas Well	N	912.3
		39.7 - 40.0, 40.1 - 40.4	White-tailed Prairie Dog Complex	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 4F (cont.)	Feasible Alternative (cont.)	44	Structure	N	76.6
		44.5 - 70.2, 73.0 - 74.5	Commissary Ridge Raptor Migration	Crossed	0
		49.1 - 52.0	Historic Trail - Medium Quality (500ft Buffer)	Crossed	0
		50.2 - 50.8	NHT Physical Trace	Crossed	0
		50.4 - 51.2	California Trail	Crossed	0
		56.4 - 58.5, 58.6 - 59.7, 60.0 - 62.1, 62.2 - 62.7, 63.3 - 63.5	Dempsey Ridge SRMA	Crossed	0
		60.5 - 63.0	Historic Trail - High Quality (0.25mi Buffer)	Crossed	0
		60.7 - 62.1	Historic Trail - Low Quality (100ft Buffer)	Crossed	0
		61.2 - 61.8	California Trail	Crossed	0
		61.3 - 61.9	NHT Physical Trace	Crossed	0
		63	Dempsey SRMA	SW	123.6
		64.0 - 66.6, 67.1 - 67.3, 67.5 - 68.9	Dempsey SRMA	Crossed	0
		69	Pine Creek Ski Area	N	503.9
		70.7	Pivot	N	669.3
		71.6	Residence	N	302.1
		71.6	Silo	N	88.3
		71.8	Pivot	N	314.3
		72.2	Canal	S	550.1
		72.9	Barn	S	660.5
		73	Pivot	N	390.6
		74.8	Raymond Mountain WSA	N	618.3
		75.9 - 76.6	California Trail	Crossed	0
		76.4	Pivot	S	168.7
		76.4	Residence	S	751.2
		76.6	Residence	N	572.9
		84.7 - 84.8	Canal	Crossed	0
Segment 5 Proposed - Total Length	Proposed Route	3.1	Residence	SW	761.5
		3.5	Residence	NE	194.7
		3.6	Residence	NE	631.2
		3.7	Residence	NE	802.1
		5.4	Residence	NE	958.7
		8.4	Caribou NF	SW	68.7
		8.4	Residence	SW	731.4
		8.8	Residence	SW	493.5
		9	Residence	SW	248.4
		9.4	Residence	SW	857
		12.2	Tower	S	363.8
		12.2	Tower	S	518.3
		12.3	Tower	N	88.7
		12.3	Tower	N	185
		12.3	Tower	S	511.9
		12.4	Tower	N	520.8
		13.2 - 14.1	California Trail	Crossed	0
		25.2	Residence	N	871.3
		25.3	School	N	557.3
		52.4	Residence	S	573.5
		52.5	Commercial Building	N	956.7
		52.7	Residence	N	614.9
		52.7	Residence	NW	478.8
		52.9	Barn	NW	380.5
		52.9	Barn	NW	388.1
		53	Barn	NW	413.9
		53	Residence	NW	837.9
		53	Residence	NW	915.3
		53.1	Residence	NW	420.3
		53.1	Residence	NW	794.5
		53.1	Residence	NW	999.4
		53.3	Residence	N	867.8
		53.4	Residence	N	822.6
		53.4	Residence	N	886.6

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 5 Proposed - Total Length (cont.)	Proposed Route (cont.)	53.6 - 54.2	National Historic Trails	Crossed	0
		53.6 - 54.2	Oregon Trail	Crossed	0
		55	Mine	N	42
		55.66	Substation	S	482.6
Alternative 5A	Feasible Alternative	9.1	Residence	N	520.7
		11.8	Cemetery	N	593
		22.3	Residence	W	983.1
		27	Residence	E	140.3
		29.5	Residence	W	658
Alternative 5B	Feasible Alternative	18.5	Residence	S	674.1
		31.7	Residence	W	990.2
		33.6	Residence	E	174.4
		34.6	Pivot	W	743.8
		37.7	Residence	E	140.3
		40.2	Residence	W	658
Alternative 5D	Feasible Alternative	1.2	Residence	N	185.6
		10.5	Residence	NE	509
		12.9	Residence	E	698.3
		12.9	Residence	E	735.2
		12.9	Residence	NE	667.1
		13.1	Residence	NE	511.6
		13.2	Residence	NE	918.3
		13.6	Residence	E	220.8
		14.1	Residence	W	393.6
		14.5	Residence	S	738.5
		14.6	Residence	S	736.7
		14.6	Residence	S	924.8
		14.9	Residence	S	346.3
		15	Residence	S	300.1
		15.0 - 15.7	National Historic Trails	Crossed	0
		15.0 - 15.7	Oregon Trail	Crossed	0
		15.1	Residence	S	357.6
		15.1	Residence	S	737.3
		15.2	Residence	S	513.6
		15.2	Residence	S	797.5
		15.2	Residence	S	969.2
		15.3	Residence	S	581.9
		15.3	Residence	S	934.7
		15.3	Residence	S	955.9
		15.4	Residence	S	748.9
		15.5	Residence	S	975
		15.9	Borrow Pit	W	431.6
		17.04	Substation	S	482.6
Alternative 5E	Feasible Alternative	0.2	Tower	NE	593
		0.2	Tower	NE	725.1
		0.4	Tower	NE	113.9
		0.4	Tower	SW	85
		0.6	Tower	S	142.8
		0.7	Tower	S	322.2
		0.8	Tower	S	151.4
		0.9	Tower	S	328.2
		1	Tower	S	147.8
		1.1	Tower	S	328.1
		1.3	Tower	S	145.1
		1.3	Tower	S	317.2
		1.5	Tower	S	143.3
		1.6	Tower	S	315.3
		1.8	Tower	S	146.5
		1.8	Tower	S	324.1
		2	Barn	N	927.1

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 5E (cont.)	Feasible Alternative (cont.)	2	Outbuilding	N	976.4
		2	Outbuilding	N	995.3
		2	Residence	N	858.7
		2	Tower	S	152
		2.1	Tower	S	336.6
		2.2	Tower	S	150.5
		2.3	Tower	S	324
		2.4	Tower	S	146
		2.6	Commercial Building	S	474.7
		2.6	Tower	S	148.1
		2.6	Tower	S	326.6
		2.8	Tower	S	316.7
		2.9	Residence	S	829.7
		2.9	Tower	S	145.2
		3.0 - 3.8	National Historic Trails	Crossed	0
		3.0 - 3.8	Oregon Trail	Crossed	0
		3.1	Tower	S	152.2
		3.1	Tower	S	321.7
		3.5	Tower	S	139.5
		3.5	Tower	S	323.2
		3.8	Tower	S	147.1
		3.9	Tower	S	148
		3.9	Tower	S	324.1
		4.2	Tower	S	39.5
		4.8	Mine	S	851.8
		5.2	Substation	S	482.6
Segment 7 Proposed - Total Length	Proposed Route	0.5	Residence	NE	404.6
		2.9	Residence	NE	768.1
		5	Residence	NE	368.8
		7.9 - 8.6	Caribou NF	Crossed	0
		8.1	Residence	NE	766.6
		10	Elkhorn Mtn.	S	145.1
		13.1 - 13.7	California Trail	Crossed	0
		24.8	Residence	S	145.1
		43.1	Barn	N	960.9
		55.4	Pivot	S	204.5
		55.7	Irrigated Ag	S	188.7
		56	Pivot	S	177.4
		58.1 - 58.2	Pivot	Crossed	0
		58.9	Pivot	SW	989.9
		59.1 - 59.2	Pivot	Crossed	0
		59.2 - 60.0	National Historic Trails	Crossed	0
		59.2 - 60.0	Oregon Trail	Crossed	0
		59.7	Pivot	NE	645
		60.1	Oregon-California Trail Junction	S	421.1
		61.1 - 61.2	Pivot	Crossed	0
		61.2 - 61.3	Pivot	Crossed	0
		61.4 - 61.5	Irrigated Ag	Crossed	0
		61.7 - 61.8	Pivot	Crossed	0
		61.8	Pivot	S	60.9
		61.9 - 62.0	Irrigated Ag	Crossed	0
		71.5	Tower	NW	297.7
		71.5	Tower	NW	919.6
		71.7	Structure	NW	170.5
		72.6 - 73.4	National Historic Trails	Crossed	0
		72.6 - 73.4	Oregon Trail	Crossed	0
		75.4 - 75.5	Irrigated Ag	Crossed	0
		75.5	Pivot	NW	600.2
		75.5 - 75.6	Pivot	Crossed	0
		76.0 - 76.1	Pivot	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 7 Proposed - Total Length (cont.)	Proposed Route (cont.)	82.6	Residence	W	736.6
		82.7	Residence	W	427.3
		82.8	Residence	NW	825.2
		82.9	Residence	NW	760.2
		83.7	Outbuilding	SE	417.3
		83.7	Residence	NW	171.7
		83.7	Residence	SE	794.4
		86.5 - 87.1, 87.4 - 88.2	Ag Landing Strip	Crossed	0
		87.0 - 87.5	Ag Landing Strip	Crossed	0
		87.4	Airport	NW	630.7
		87.4	Landing Strip	NW	630.7
		92.7	Residence	S	981.6
		94.6	Residence	S	379.3
		94.7	Residence	N	231.2
		96.7	Residence	N	199.9
		97.2	Residence	N	196.9
		98.1	Residence	S	340.9
		98.9	Outbuilding	S	794.2
		100.2	Residence	N	209.1
		100.3	Residence	N	281.2
		103	CAFO	S	540
		108.3 - 118.16	South Hills	Crossed	0
		109.4	Outbuilding	S	272.7
		112.5	CAFO	N	137.3
		112.6 - 114.5, 114.7 - 116.5	Dry Creek Sky Ranches (proposed)	Crossed	0
		114.3	Cemetery	N	758.3
		114.4 - 114.8	Dry Creek Sky Ranches (proposed)	Crossed	0
		114.6	Airport	S	905.1
		114.6	Landing Strip (proposed)	S	905.1
		114.7	Residence	N	899.8
Alternative 7A	Feasible Alternative	0.0 - 1.4	Caribou NF	Crossed	0
		1.7 - 2.5	California Trail	Crossed	0
		23.9	Residence	S	920.6
		25.7	Residence	S	618.1
		25.8	Residence	N	883.7
Alternative 7B	Feasible Alternative	0.0 - 1.4	Caribou NF	Crossed	0
		1.7 - 2.5	California Trail	Crossed	0
		5.2	Residence	SE	259.3
		19.8	Residence	N	857.4
		20.7	Residence	S	605.8
Alternative 7C	Feasible Alternative	7.2	Pivot	S	474.1
		7.4	Pivot	N	446.1
		8.0 - 8.1	Pivot	Crossed	0
		8.1	Pivot	N	356.2
		8.6	Pivot	N	341.4
		9	CAFO	N	98.9
		9.1	Pivot	S	162.6
		9.2 - 9.3	Pivot	Crossed	0
		9.2 - 10.4	California Trail	Crossed	0
		9.4	Pivot	SW	81.1
		9.6	Residence	NE	446.7
		9.6	Residence	NE	640.9
		9.7 - 9.8	Pivot	Crossed	0
		9.8	Pivot	NE	300.6
		15.9 - 17.0	National Historic Trails	Crossed	0
		15.9 - 17.0	Oregon Trail	Crossed	0
Alternative 7D	Feasible Alternative	1.1 - 2.7	National Historic Trails	Crossed	0
		1.1 - 2.7	Oregon Trail	Crossed	0
		3.0 - 3.1	Pivot	Crossed	0
		3.5	Pivot	W	295.4

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 7D (cont.)	Feasible Alternative (cont.)	4	Irrigated Ag	E	778.3
		4.0 - 4.1	Pivot	Crossed	0
		4.1	Pivot	E	458.6
		4.5 - 4.6	Pivot	Crossed	0
Alternative 7E	Feasible Alternative	1.6	Spring	SE	884
		3.9	Residence	S	131.7
		4	Outbuilding	N	142
		4	Residence	N	766.9
		4	Residence	S	410.9
Alternative 7F	Feasible Alternative	3.2	Spring	SE	884
		9.4	Ag Landing Strip	N	555.2
Alternative 7G	Feasible Alternative	0	Cemetery	NE	979.2
		0.0 - 0.1, 0.3 - 2.2	Dry Creek Sky Ranches (proposed)	Crossed	0
		0.0 - 0.4	Dry Creek Sky Ranches (proposed)	Crossed	0
		0.0 - 3.36	South Hills	Crossed	0
		0.3	Residence	N	272.7
Alternative 7K	Feasible Alternative	0.5	Residence	NE	404.6
		2.9	Residence	NE	768.1
		5	Residence	NE	368.8
		7.9 - 8.6, 11.7 - 13.1	Caribou NF	Crossed	0
		8.1	Residence	NE	766.6
		10	Elkhorn Mtn.	S	145.1
		13.4 - 14.2	California Trail	Crossed	0
		16.9	Residence	SE	259.3
		32.5 -43.3, 58.3 - 72.3, 75.3 - 75.7, 85.9 - 97.4	Raft River - Curlew Valley	Crossed	0
		43.1	Curlew National Grasslands	S	142.5
		45.9 - 53.0	Sawtooth NF	Crossed	0
		47.9 - 48.5	California Trail	Crossed	0
		57.8	Silo	N	750.6
		57.8	Warehouse	N	554
		58.3 - 72.3, 75.3 - 75.7, 85.9 - 97.4	Raft River - Curlew Valley IBA	Crossed	0
		63	Sawtooth NF	S	363.3
		82.4 - 83.2	California Trail	Crossed	0
		100.4	Spring	N	518.9
		103.2 - 104.0	California Trail	Crossed	0
		115.3 - 130.5, 131.7 - 148.11	South Hills	Crossed	0
		134.6 - 140.4	Sawtooth NF	Crossed	0
Segment 8 Proposed - Total Length	Proposed Route	2.2	Pivot	S	211.7
		3.3	Pivot	S	319
		3.7	Residence	S	617.9
		14.8	Residence	S	943.6
		14.9	Residence	N	977.4
		16.2	Residence	N	781.1
		16.8	Residence	S	192.9
		16.9	Residence	N	619.7
		17	Residence	N	203.4
		17.2	Residence	S	342.6
		17.3	Residence	S	479.3
		17.4	CAFO	S	845.7
		17.5	Residence	S	773.1
		19.3	Pivot	S	194.7
		19.9	Pivot	S	103.1
		21.9	Gravel Pit	SW	388.7
		22.1	Residence	NE	552.1
		22.4	Residence	NE	715.4
		26.6	Irrigation Ditch	SW	490.4
		28.3	Residence	S	289.7
		28.7	Pivot	NE	226.7
		44.4	Canal	S	965.2
		45.2 - 57.2	MUA-3 Lower Bennett	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 8 Proposed - Total Length (cont.)	Proposed Route (cont.)	45.9	Spring	S	591.2
		46.8 - 47.4	Oregon Trail Rutted Segments	Crossed	0
		50.1 - 50.5	Oregon Trail Rutted Segments	Crossed	0
		52.7	Residence	SW	163.8
		55.6 - 56.4	National Historic Trails	Crossed	0
		55.6 - 56.4	Oregon Trail	Crossed	0
		55.8 - 56.4	Oregon Trail Rutted Segments	Crossed	0
		65.6 - 67.7, 98.7 - 126.6	Snake River Birds of Prey NCA	Crossed	0
		65.7 - 67.7, 98.7 - 126.6	Snake River Birds of Prey	Crossed	0
		70.9	Canal	SW	958.4
		83.8 - 84.1, 85.8 - 89.8	LEPA MA 8	Crossed	0
		94.0 - 98.8	LEPA MA 8B	Crossed	0
		98.9 - 108.2	Orchard Training Area	Crossed	0
		105.6	National Guard	N	491.6
		116.9 - 120.3	National Register Historic District	Crossed	0
		117.8 - 120.0	Snake River Canyon SRMA	Crossed	0
		118.4 - 123.9	Birds of Prey Avoidance Area	Crossed	0
		120.5	Basin	SE	866.4
		121.7 - 122.5	National Historic Trails	Crossed	0
		121.7 - 122.5	Oregon Trail	Crossed	0
		121.8 - 122.1	Oregon Trail SRMA	Crossed	0
		122.6 - 123.9	Private Landing Strip	Crossed	0
		123.3	Private Landing Strip	S	456
		123.7 - 126.6	Owyhee Front SRMA	Crossed	0
		123.8 - 130.9	Black Mountain HMA	Crossed	0
		124	Residence	N	508.9
		124	Residence	N	565
		124.1	Residence	N	209.2
		124.1	Residence	N	922.1
		129.3	CAFO	NE	886.5
		129.4	Structure	NE	394.5
		129.4	Structure	NE	734.8
		129.4	Structure	NE	912.8
		129.4	Structure	NE	986.4
		130.8	Residence	E	928.3
		130.9	Residence	SW	628.1
		130.9	Residence	W	767.2
		131	Residence	E	296.5
		131	Residence	E	943.7
		131.1	Residence	E	477.4
		131.1	Residence	E	765
		131.2	Residence	SW	615
		131.5	Tower	W	574.2
		131.5	Tower	W	783.2
		131.5	Tower	W	980.7
Alternative 8A	Feasible Alternative	1.5	Pivot	N	204
		4.3	Residence	N	335.3
		4.6	CAFO	S	165.3
		4.6	Residence	S	573.6
		4.7	Animal Pen	N	152.8
		19.5	Residence	S	902.4
		20	Residence	S	366.3
		21.2	Pivot	S	140.5
		23.3	Residence	N	256
		23.6	Residence	NW	172.1
		23.6	Residence	NW	314.3
		23.6	Residence	NW	417.9
		23.6	Residence	NW	569.8
		23.7	Residence	N	359.4
		23.7	Residence	N	464.4

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 8A (cont.)	Feasible Alternative (cont.)	23.7	Residence	N	466.3
		23.7	Residence	S	44.6
		23.7	Residence	S	755.6
		23.8	Residence	N	331.6
		23.8	Residence	N	627
		23.8	Residence	N	667.5
		23.8	Residence	S	926.7
		23.9	Residence	N	906.1
		23.9	Residence	S	453
		23.9	Residence	S	474.7
		23.9	Residence	S	623.3
		23.9	Residence	S	694.3
		23.9	Residence	S	711.3
		23.9	Residence	S	799.3
		23.9	Residence	S	830.1
		23.9	Residence	S	992.1
		24	Residence	S	291.2
		24	Residence	S	689.6
		24	Residence	S	899.2
		24.1	Structure	S	407.7
		24.2	Residence	N	341
		24.2	Residence	N	402.5
		24.2	Residence	S	261.9
		24.3	Fish Farm	N	797.4
		24.4 - 25.7	MUA-8 Hagerman Fossil Beds	Crossed	0
		25.6 - 46.5	MUA-7 Saylor Creek East	Crossed	0
		27.2	Canal	N	336.8
		30.7	Residence	NE	328.6
		31.2	Wind Farm	SW	238.5
		33.0 - 33.8	National Historic Trails	Crossed	0
		33.0 - 33.8	Oregon Trail	Crossed	0
		33.5 - 34.0, 37.0 - 37.9	Oregon Trail SRMA	Crossed	0
		37.3 - 38.1	National Historic Trails	Crossed	0
		37.3 - 38.1	Oregon Trail	Crossed	0
		43.6	Tower	NE	563.5
		44.9 - 45.4	Oregon Trail SRMA	Crossed	0
		45.9	Residence	E	631.7
		46	Residence	W	933.3
		46.1	Residence	E	652.8
		46.2	Residence	E	376.1
		46.2	Residence	NE	30.3
		46.2	Residence	NE	159
		46.2	Residence	SW	315.8
		46.3	Residence	NE	358.9
		46.3	Residence	NE	446.7
		46.4	Residence	NE	708.1
		46.4	Residence	NE	816
		46.4	Residence	SW	322.3
		46.4 - 46.9	MUA-4 Snake River Riparian	Crossed	0
		46.8 - 53.61	MUA-3 Lower Bennett	Crossed	0
		50.7 - 51.0	LEPA MA 10	Crossed	0
		51.9 - 52.3	Oregon Trail Rutted Segments	Crossed	0
Alternative 8B	Feasible Alternative	0.0 - 3.5	LEPA MA 8	Crossed	0
		8.1	Animal Pen	S	677.1
		10.1 - 11.5, 13.0 - 13.7	LEPA MA 8B	Crossed	0
		19.3	Residence	N	267.1
		19.3	Residence	N	306.3
		19.3	Residence	N	317.1
		19.3	Residence	N	508.1
		19.3	Residence	S	500.1

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 8B (cont.)	Feasible Alternative (cont.)	19.4	Residence	N	348.9
		19.4	Residence	N	362.1
		19.4	Residence	N	403.9
		19.4	Residence	N	439.4
		19.4	Residence	N	441.4
		19.4	Residence	N	444
		19.4	Residence	N	463.5
		19.4	Residence	N	473
		19.4	Residence	N	523.2
		19.4	Residence	N	527.9
		20.3	Residence	N	814.3
		20.6	Residence	N	876.1
		20.8	Residence	N	293.2
		20.8	Residence	S	957
		21.4	Residence	N	30.6
		24	Residence	S	734.9
		24.5	Residence	N	340.3
		26.2 - 27.1	Snake River Birds of Prey NCA	Crossed	0
		26.5	Commercial Building	N	177.8
		27.0 - 27.6, 28.7 - 31.6	LEPA MA 6	Crossed	0
		29.4	Gravel Pit	S	589.7
		33.3	Residence	E	396.6
		33.3	Residence	W	840.1
		33.9	Residence	NW	162.1
		33.9	Residence	W	721
		34	Residence	W	729
		34.1	Residence	W	572.8
		34.3	Residence	W	68.8
		34.3	Residence	W	420.3
		34.8	Silo	W	58.3
		35	Gravel Pit	E	193.5
		35.2	Snake River Birds of Prey	S	4.4
		37	Residence	N	277.3
		37.1	Animal Pen	S	35.9
		37.2	Residence	N	201.1
		37.2	Residence	S	7.9
		37.3	Residence	S	300.2
		37.4	Residence	N	138.9
		37.4	Residence	S	81.6
		37.7	Residence	N	336.7
		37.8	Warehouse	S	110
		37.9	Residence	N	133.1
		37.9	Residence	N	174.9
		38.5	Residence	S	127.7
		39	Residence	S	19.2
		39.4	Residence	N	177.7
		39.7	Residence	N	171.7
		40.4	Residence	SE	169.3
		42.1	Residence	SE	606.9
		42.2	Residence	SE	462.4
		42.7 - 42.9	Deer Flat National Wildlife Refuge	Crossed	0
		42.8	Deer Flat National Wildlife Refuge	SE	683.6
		43.8	CAFO	W	923
		43.8	Outbuilding	E	23.1
		43.8	Outbuilding	E	515.2
		43.9	CAFO	E	669.8
		43.9	Outbuilding	E	75.6
		43.9	Outbuilding	E	93.1
		43.9	Outbuilding	E	180.1
		43.9	Outbuilding	W	35.4

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 8B (cont.)	Feasible Alternative (cont.)	43.9	Residence	E	18.7
		43.9	Residence	W	36.8
		43.9	Residence	W	198.2
		44	Residence	E	728.2
		44.2	Residence	SE	247.3
		44.3	Residence	N	86.5
		44.6	Residence	N	69.7
		44.9	Black Mountain HMA	S	152
		44.9	Canal	S	787.4
		45.1	Residence	S	936
		45.3	Residence	N	97.3
		45.3	Residence	N	489.3
		45.3	Residence	N	922.2
		45.3	Residence	S	558.7
		45.5	Residence	N	574.5
		45.5	Residence	N	757.5
		43.5 - 44.1	National Historic Trails	Crossed	0
		43.5 - 44.1	Oregon Trail	Crossed	0
Alternative 8C	Feasible Alternative	0.0 - 0.1, 0.2 - 2.0	LEPA MA 8	Crossed	0
		5.1	Residence	N	440.4
Alternative 8D	Feasible Alternative	0.0 - 0.4	Orchard Training Area	Crossed	0
		0.0 - 8.08	Snake River Birds of Prey	Crossed	0
		0.0 - 8.08	Snake River Birds of Prey NCA	Crossed	0
		0.2	Tower	NE	852.8
		0.4	Tower	SW	15.5
		1.4	Outbuilding	S	278.2
		1.5	Residence	S	171.5
		2	Private Landing Strip	N	75.9
		4.4	Building/Industrial	N	542.4
		5.9	Animal Pen	N	477.8
		5.9	Outbuilding	N	249.7
		5.9	Outbuilding	N	695.2
		6	Barn	N	931
		6	Outbuilding	N	712.5
		7.5	Tower	E	614.6
		7.7	Tower	W	247.6
Alternative 8E	Feasible Alternative	0.0 - 18.29	Snake River Birds of Prey	Crossed	0
		0.0 - 18.29	Snake River Birds of Prey NCA	Crossed	0
		0.2	Tower	W	226.2
		0.3	Tower	W	216.3
		0.5	Tower	W	215.2
		0.6	Tower	W	209.4
		0.7	Tower	W	213.3
		0.8	Tower	W	203.9
		0.9	Tower	W	206.8
		1.1	Tower	W	206.3
		1.2	Tower	W	204.8
		1.3	Tower	W	203.9
		1.4	Tower	W	200.5
		1.6	Tower	W	199.9
		1.7	Tower	W	199.6
		1.8	Tower	W	195.2
		1.9	Tower	W	194
		2	Tower	W	190.7
		2.2	Tower	W	190.2
		2.3	Tower	W	187.4
		2.4	Tower	W	183.5
		2.5	Tower	W	186.2
		2.7	Tower	W	180.7
		2.8	Tower	W	176.8

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 8E (cont.)	Feasible Alternative (cont.)	2.9	Tower	W	175.8
		3	Tower	W	174.6
		3.2	Tower	W	170.2
		3.3	Tower	W	166.2
		3.4	Tower	W	166.1
		3.6	Tower	W	163.8
		3.7	Tower	W	163
		3.8	Tower	W	161.2
		3.9	Tower	W	159.3
		4.1	Tower	W	158.4
		4.2	Tower	W	153.8
		4.4	Tower	W	157.4
		4.5	Tower	W	154.2
		4.7	Tower	W	155
		4.8	Tower	W	153.8
		4.9	Tower	W	151
		5	Tower	W	153.2
		5.2	Tower	W	170.7
		5.3	Tower	W	147.1
		5.5	Tower	W	167.6
		5.6	Tower	W	169.6
		5.7	Tower	W	173.9
		5.8	Tower	W	179.1
		5.9	Tower	W	183.9
		6.1	Tower	W	178.5
		6.2	Tower	W	184.4
		6.3	Tower	W	185.3
		6.3 - 7.3, 8.7 - 10.7, 11.3 - 11.9	National Register Historic District	Crossed	0
		6.5	Tower	W	190.5
		6.6	Tower	W	190.9
		6.7	Tower	W	188.2
		6.9	Tower	W	187.6
		6.9	Tower	W	677.2
		7	Tower	W	146.4
		7	Tower	W	189.6
		7.1	Tower	W	180.4
		7.2	Tower	W	183.7
		7.3	Tower	W	184.4
		7.5	Tower	W	171.6
		9.4 - 10.7	Snake River Canyon SRMA	Crossed	0
		10.1 - 18.29	Birds of Prey Avoidance Area	Crossed	0
Segment 9 Proposed - Total Length	Proposed Route	0.0 - 8.3	South Hills	Crossed	0
		2.2	Residence	S	145.1
		3.9	Gravel Pit	N	644
		6.4	Animal Pen	S	715.6
		6.5	Residence	N	422.9
		8.9	Dam	S	734.4
		12.7	Structure	S	60.5
		12.7	Structure	S	426
		30.4	Lower Salmon Falls Creek	SW	802.5
		32.6	Structure	NE	967.2
		33.3 - 33.6	Salmon Falls Creek Canyon	Crossed	0
		33.3 - 36.1	MUA-14 Salmon Falls Creek ACEC	Crossed	0
		36.0 - 38.1	MUA-13 East Devil	Crossed	0
		38.0 - 47.2	MUA-12 West Devil	Crossed	0
		47.1 - 81.2	MUA-7 Saylor Creek East	Crossed	0
		60.3 - 73.3	Saylor Creek HMA	Crossed	0
		78.6	Water Tank	N	189.1
		81.1 - 88.3, 97.0 - 99.3	MUA-6 Saylor Creek West	Crossed	0
		88.1 - 97.0, 142.5 - 146.3, 151.4 - 152.1, 152.2 - 152.7	Snake River Birds of Prey	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Segment 9 Proposed - Total Length (cont.)	Proposed Route (cont.)	88.1 - 97.0, 142.5 - 146.3, 151.4 - 152.1, 152.2 - 152.7	Snake River Birds of Prey NCA	Crossed	0
		97.9	Residence	NW	275.1
		99.3	Canal	S	232
		99.4	Canal	N	623.7
		99.4	Residence	N	719.1
		99.6	Cemetery	S	342.9
		99.7	Cemetery	S	368.4
		101	Pivot	NE	590
		110	Residence	N	90.7
		110.5	Residence	N	307.1
		116.3	Gravel Pit	SW	42.2
		119.2	Animal Pen	S	139
		119.3	Residence	N	250
		119.8	Residence	S	177.8
		131.9	Residence	N	449
		132.6	Residence	SW	122.6
		133.3	Well	S	323.3
		134.9	Residence	NE	68.6
		142.5 - 146.3	Owyhee Front SRMA	Crossed	0
		150.2 - 151.6	Murphy Airport	Crossed	0
		151.4 - 152.1, 152.2 - 152.7	Owyhee Front SRMA	Crossed	0
		151.6 - 161.2	Black Mountain HMA	Crossed	0
		161	Claypit	E	109
		161.3	Residence	E	551.1
		161.3	Residence	E	566.9
		161.4	Residence	E	775.2
		161.6	Outbuilding	E	600
		161.6	Outbuilding	E	607.6
		161.6	Outbuilding	E	648.2
		161.6	Residence	E	599.1
		161.6	Residence	E	804.4
		161.7	Outbuilding	E	829.6
		161.7	Residence	E	773.7
		161.8	Residence	SE	132.7
		161.8	Tower	SE	732.6
		161.9	Outbuilding	SE	885.6
		161.9	Residence	SE	788
		161.9	Tower	NW	20.2
		161.9	Tower	NW	153.8
		161.9	Tower	NW	182.6
		161.9	Tower	NW	211.4
		161.9	Tower	NW	315
		161.9	Tower	SE	7.1
		161.9	Tower	SE	39.2
		162.1	Outbuilding	NW	901.9
		162.1	Tower	NW	60.3
		162.1	Tower	SE	264.7
		162.2	Tower	SE	18.9
Alternative 9A	Feasible Alternative	0.0 - 2.1	South Hills	Crossed	0
		1.6	Residence	N	360.4
		2.9	Residence	N	984.2
		6.1	Gravel Pit	S	357.1
Alternative 9B	Feasible Alternative	0.4	Residence	SW	8.9
		5	MUA-14 Salmon Falls Creek ACEC	W	581.4
		5.3	Residence	E	893.1
		6	Salmon Falls Creek Canyon	W	275.4
		6.4	Residence	E	695.3
		7.6	CAFO	E	125.4
		8.2	Residence	W	560.1
		8.4	Residence	W	468.6

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 9B (cont.)	Feasible Alternative (cont.)	8.9 - 23.0, 25.3 - 51.5	MUA-7 Saylor Creek East	Crossed	0
		11.2	Pivot	E	291.2
		11.5	Pivot	W	117.6
		12.1	Pivot	W	279.2
		13.2	Pivot	W	394.1
		16.5	Canal	E	912.1
		22.9 - 25.4	MUA-9 Hagerman ORV (Owsley Bridge)	Crossed	0
		27.5	Animal Pen	NE	456.3
		37.4 - 43.6	Saylor Creek HMA	Crossed	0
		40.2	Gravel Pit	S	523.5
		45.2	Residence	S	611.7
		45.8	Pivot	N	132.5
		46.9 - 48.0, 48.3 - 49.3	Grindstone Ag Landing Strip	Crossed	0
		47	Warehouse	SW	938
		47.5	Residence	NE	905.2
		47.9 - 48.4	Grindstone Ag Landing Strip	Crossed	0
		48.1 - 48.2	Airport	Crossed	0
		48.1 - 48.2	Landing Strip	Crossed	0
		51.4 - 52.35	MUA-6 Saylor Creek West	Crossed	0
Alternative 9C	Feasible Alternative	0.4	Residence	SW	8.9
		5	MUA-14 Salmon Falls Creek ACEC	W	581.4
		5.3	Residence	E	893.1
		6	Salmon Falls Creek Canyon	W	275.4
		6.4	Residence	E	695.3
		7.6	CAFO	E	125.4
		8.2	Residence	E	299.5
		8.3	Residence	E	802.7
		8.7 - 14.4	MUA-7 Saylor Creek East	Crossed	0
		9.4	CAFO	N	147.3
		14.4	MUA-12 West Devil	S	253.8
Alternative 9D	Feasible Alternative	0.0 - 6.7, 9.4 - 15.4, 15.5 - 17.2, 18.3 - 60.1	Snake River Birds of Prey	Crossed	0
		0.0 - 6.7, 9.4 - 15.4, 15.5 - 17.2, 18.3 - 60.1	Snake River Birds of Prey NCA	Crossed	0
		6.9 - 9.5	MUA-6 Saylor Creek West	Crossed	0
		8.2 - 9.9	Oregon Trail	Crossed	0
		8.2 - 9.9	National Historic Trails	Crossed	0
		9.4 - 15.7, 16.4 - 17.2	C.J. Strike SRMA	Crossed	0
		9.6 - 12.5, 15.5 - 15.7, 15.9 - 16.6, 16.7 - 17.7, 17.8 - 18.2	CJ Strike WMA/Reservoir	Crossed	0
		9.8 - 12.1	C.J. Strike Reservoir SRMA	Crossed	0
		12.0 - 12.3	C.J. Strike Reservoir SRMA	Crossed	0
		12.3 - 13.4	National Historic Trails	Crossed	0
		12.3 - 13.4	Oregon Trail	Crossed	0
		12.5 - 13.1, 15.0 - 15.4, 15.5 - 15.6	Oregon Trail SRMA	Crossed	0
		14.1 - 15.7	National Historic Trails	Crossed	0
		14.1 - 15.7	Oregon Trail	Crossed	0
		15.9 - 16.5, 16.7 - 17.2	C.J. Strike Reservoir SRMA	Crossed	0
		17.2 - 17.9	National Historic Trails	Crossed	0
		17.2 - 17.9	Oregon Trail	Crossed	0
		17.3	Structure	NE	953
		17.6	Park	NE	901.5
		17.8 - 18.0	National Historic Trails	Crossed	0
		17.8 - 18.0	Oregon Trail	Crossed	0
		18.4	C.J. Strike Reservoir SRMA	E	211.9
		19.5	Structure	E	270.7
		36.1 - 40.8	Orchard Training Area	Crossed	0
		39.8	National Guard	NE	442.9
		46.7 - 48.7, 49.3 - 49.9	National Register Historic District	Crossed	0
		47.3 - 48.7	Snake River Canyon SRMA	Crossed	0
		48.1 - 58.9	Birds of Prey Avoidance Area	Crossed	0
		57.1 - 57.8	National Historic Trails	Crossed	0
		57.1 - 57.8	Oregon Trail	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 9D (cont.)	Feasible Alternative (cont.)	57.2 - 57.5	Oregon Trail SRMA	Crossed	0
		58.8 - 60.1	Owyhee Front SRMA	Crossed	0
		58.8 - 60.14	Black Mountain HMA	Crossed	0
Alternative 9F	Feasible Alternative	0.0 - 1.4, 21.5 - 63.3	Snake River Birds of Prey	Crossed	0
		0.0 - 1.5, 21.5 - 63.3	Snake River Birds of Prey NCA	Crossed	0
		1.4 - 3.7	MUA-6 Saylor Creek West	Crossed	0
		2.4	Residence	NW	275.1
		3.7	Canal	S	232
		3.8	Canal	N	623.7
		3.8	Residence	N	719.1
		4	Cemetery	S	342.9
		4.1	Cemetery	S	368.4
		5.5	Pivot	NE	590
		14.4	Residence	N	90.7
		14.9	Residence	N	307.1
		19.5	Commercial Building	NW	432.3
		19.5	Tower	NW	381.9
		19.5	Tower	NW	386.5
		19.5	Tower	NW	471
		19.5	Tower	NW	633.3
		19.5	Tower	NW	904.5
		19.6	Tower	NW	50.7
		19.6	Tower	NW	147.6
		19.7	Outbuilding	SE	366.5
		19.7	Tower	SE	367.3
		19.7	Tower	SE	671.9
		20.1 - 20.9, 21.0 - 21.4	CJ Strike WMA/Reservoir	Crossed	0
		20.5	Residence	N	832.4
		20.5 - 21.2	National Historic Trails	Crossed	0
		20.5 - 21.2	Oregon Trail	Crossed	0
		20.6	Outbuilding	S	869.4
		20.7	Residence	S	905.3
		21.6	C.J. Strike Reservoir SRMA	E	211.9
		22.6	Structure	E	270.7
		39.3 - 43.9	Orchard Training Area	Crossed	0
		43	National Guard	NE	442.9
		49.8 - 51.9, 52.5 - 53.1	National Register Historic District	Crossed	0
		50.5 - 51.9	Snake River Canyon SRMA	Crossed	0
		51.2 - 62.1	Birds of Prey Avoidance Area	Crossed	0
		60.4 - 60.7	Oregon Trail SRMA	Crossed	0
		61.9 - 63.3	Owyhee Front SRMA	Crossed	0
		62.0 - 63.33	Black Mountain HMA	Crossed	0
		60.3 - 61.0	National Historic Trails	Crossed	0
		60.3 - 61.0	Oregon Trail	Crossed	0
Alternative 9G	Feasible Alternative	0.0 - 6.7, 9.4 - 15.4, 15.5 - 17.2, 18.3 - 50.9, 51.2 - 57.7	Snake River Birds of Prey	Crossed	0
		0.0 - 6.7, 9.4 - 15.4, 15.5 - 17.2, 18.3 - 50.9, 51.2 - 57.7	Snake River Birds of Prey NCA	Crossed	0
		6.9 - 9.5	MUA-6 Saylor Creek West	Crossed	0
		8.2 - 9.9	National Historic Trails	Crossed	0
		8.2 - 9.9	Oregon Trail	Crossed	0
		9.4 - 15.7, 16.4 - 17.2	C.J. Strike SRMA	Crossed	0
		9.6 - 12.5, 15.5 - 15.7, 15.9 - 16.6, 16.7 - 17.7, 17.8 - 18.2	CJ Strike WMA/Reservoir	Crossed	0
		9.8 - 12.1	C.J. Strike Reservoir SRMA	Crossed	0
		12.0 - 12.3	C.J. Strike Reservoir SRMA	Crossed	0
		12.3 - 13.4	National Historic Trails	Crossed	0
		12.3 - 13.4	Oregon Trail	Crossed	0
		12.5 - 13.1, 15.0 - 15.4, 15.5 - 15.6	Oregon Trail SRMA	Crossed	0
		14.1 - 15.7	National Historic Trails	Crossed	0
		14.1 - 15.7	Oregon Trail	Crossed	0
		15.9 - 16.5, 16.7 - 17.2	C.J. Strike Reservoir SRMA	Crossed	0
		17.2 - 17.9	National Historic Trails	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 9G (cont.)	Feasible Alternative (cont.)	17.2 - 17.9	Oregon Trail	Crossed	0
		17.3	Structure	NE	953
		17.6	Park	NE	901.5
		17.8 - 18.0	National Historic Trails	Crossed	0
		17.8 - 18.0	Oregon Trail	Crossed	0
		18.4	C.J. Strike Reservoir SRMA	E	211.9
		19.5	Structure	E	270.7
		36.1 - 40.8	Orchard Training Area	Crossed	0
		39.8	National Guard	NE	442.9
		44.7 - 47.0, 47.2 - 48.3	National Register Historic District	Crossed	0
		45.3 - 48.0	Snake River Canyon SRMA	Crossed	0
		45.6 - 50.9, 51.2 - 56.6	Birds of Prey Avoidance Area	Crossed	0
		48.6	Oregon Trail SRMA	SW	968.6
		55.2 - 55.8	National Historic Trails	Crossed	0
		55.2 - 55.8	Oregon Trail	Crossed	0
		55.6 - 55.8	Oregon Trail SRMA	Crossed	0
		56.1	Murphy Airport	S	587.7
		56.4 - 57.7	Owyhee Front SRMA	Crossed	0
		56.6 - 57.77	Black Mountain HMA	Crossed	0
		56.7	Commercial Building	N	361.9
		56.7	Commercial Building	N	389.9
Alternative 9H	Feasible Alternative	0.0 - 1.4, 21.5 - 54.1, 54.4 - 60.9	Snake River Birds of Prey	Crossed	0
		0.0 - 1.4, 21.5 - 54.1, 54.4 - 60.9	Snake River Birds of Prey NCA	Crossed	0
		1.4 - 3.7	MUA-6 Saylor Creek West	Crossed	0
		2.4	Residence	NW	275.1
		3.7	Canal	S	232
		3.8	Canal	N	623.7
		3.8	Residence	N	719.1
		4	Cemetery	S	342.9
		4.1	Cemetery	S	368.4
		5.5	Pivot	NE	590
		14.4	Residence	N	90.7
		14.9	Residence	N	307.1
		19.5	Commercial Building	NW	432.3
		19.5	Tower	NW	381.9
		19.5	Tower	NW	386.5
		19.5	Tower	NW	471
		19.5	Tower	NW	633.3
		19.5	Tower	NW	904.5
		19.6	Tower	NW	50.7
		19.6	Tower	NW	147.6
		19.7	Outbuilding	SE	366.5
		19.7	Tower	SE	367.3
		19.7	Tower	SE	671.9
		20.5 - 21.2	National Historic Trails	Crossed	0
		20.5 - 21.2	Oregon Trail	Crossed	0
		20.1 - 20.9, 21.0 - 21.4	CJ Strike WMA/Reservoir	Crossed	0
		20.5	Residence	N	832.4
		20.6	Outbuilding	S	869.4
		20.7	Residence	S	905.3
		21.6	C.J. Strike Reservoir SRMA	E	211.9
		22.6	Structure	E	270.7
		39.3 - 13.9	Orchard Training Area	Crossed	0
		43	National Guard	NE	442.9
		47.8 - 50.2, 50.4 - 51.5	National Register Historic District	Crossed	0
		48.5 - 51.2	Snake River Canyon SRMA	Crossed	0
		48.8 - 54.1, 54.4 - 59.8	Birds of Prey Avoidance Area	Crossed	0
		51.7	Oregon Trail SRMA	SW	968.6
		58.4 - 59.0	National Historic Trails	Crossed	0
		58.4 - 59.0	Oregon Trail	Crossed	0

Table D.17-1. Specific Land Uses Crossed within 1,000 Feet of Proposed Route Alternatives cont.

Route Name	Route Type	Closest Milepost or Milepost Span	Land Use Feature	Direction From Route	Distance From Route (Ft)
Alternative 9H (cont.)	Feasible Alternative (cont.)	58.7 - 59.0	Oregon Trail SRMA	Crossed	0
		59.3	Murphy Airport	S	587.7
		59.7 - 60.9	Owyhee Front SRMA	Crossed	0
		59.7 - 60.96	Black Mountain HMA	Crossed	0
		59.8	Commercial Building	N	389.9
		59.9	Commercial Building	N	361.9
Alternative 9E (revised)	Feasible Alternative	0 - 2.5; 55.8 - 59.6	Snake River Birds of Prey	Crossed	0
		0 - 2.5; 55.8 - 59.6	Snake River Birds of Prey NCA	Crossed	0
		2.3 - 6.2	MUA-6 Saylor Creek West	Crossed	0
		5.6	Dam	N	38.2
		5.9	Dam	S	816.0
		18.6	Tower	NE	835.8
		18.7	Tower	NE	887.4
		18.9	Tower	NE	950.6
		19	Tower	NE	993.0
		55.8 - 59.6	Owyhee Front SRMA	Crossed	0
		65.4 - 70.61	Black Mountain HMA	Crossed	0
Segment 10 Proposed - Total Length	Proposed Route	0.2	Residence	S	722.7
		0.2	Substation	N	454.8
		6.2	Residence	NE	671.4
		13.6	Residence	E	726.1
		13.7	Residence	NE	767.1
		13.9	Residence	NE	804.4
		19.5 - 19.8	CAFO	Crossed	0
		20	Residence	E	73.5
		20	Residence	W	272.7
		20.4	Commercial Building	N	369.4
		20.4	Commercial Building	N	441.7
		20.4	Commercial Building	N	452.5
		20.4	Commercial Building	N	577.9
		20.4	Residence	N	178.7
		20.5	Commercial Building	N	580.5
		20.9	Residence	E	737.9
		21.3	Residence	E	971.1
		23.2	Residence	E	582.4
		26	Residence	SE	687.1
		26.1	Residence	NW	489.2
		30.9 - 31.5	National Historic Trails	Crossed	0
		30.9 - 31.5	Oregon Trail	Crossed	0
		31.2	Residence	W	882.6
		32.9	Pivot	W	245.4
		34	Residence	E	27.3
		34.1	CAFO	E	8.2
		34.1	Residence	E	779.6
		34.1 - 34.36	South Hills	Crossed	0

Note: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

Table D.19-1. Roads, Railroads and Bridges Within 1 Mile of Project Centerline

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Road Types (Miles)				Total Road Miles	Railroad Miles	Bridges	
			County-Maintained Highways or Numbered/Lettered Routes	State Highway	US Highway	Interstate			Number of Bridges in Inventory	Notes
1W	1W(a) Proposed – Total Length	73.8	20.5	19.8	2.0	2.1	44.5	7.1	11	One is posted for load
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5	11.0	2.6	2.0	2.1	17.7	7.1	8	
	Alternative 1W(a)-B	20.9	4.3	2.7	2.2	2.8	12.0	11.6	3	
	1W(c) Proposed – Total Length	73.6	18.0	20.8	2.0	3.5	44.4	7.8	14	
2	Proposed – Total Length	91.9	5.8	4.4	4.5	10.8	25.5	19.6	9	One is posted for load
	Proposed – Comparison portion for Alternative 2A	16.8	0.6		4.5	10.8	15.9	10.2	9	One is posted for load
	Alternative 2A	16.0	1.8			5.6	7.4	15.7		
	Proposed – Comparison portion for Alternative 2B	12.5	0.6		2.6	10.8	14.0	7.5	9	One is posted for load
	Alternative 2B	12.2	1.8		2.1	5.7	9.6	10.0	5	One is posted for load
3	Segment 3 Proposed – Total Length	45.9	10.1	3.6		25.1	38.8	8.2	10	
	Segment 3A Proposed – Total Length	5.1	5.1	2.7			7.8	3.2		
4[2/]	Proposed – Total Length	197.6	44.7	30.5	23.3		98.5	28.1	6	
	Proposed – Comparison portion for Alternatives 4B-4F	85.2	14.4	12.0	6.3		32.8	13.3	2	
	Alternative 4B	100.2	17.3	3.5	16.8		37.5	31.1	9	
	Alternative 4C	101.6	14.8	2.8	31.2		48.8	47.3	10	
	Alternative 4D	100.8	15.9	3.5	11.0		30.4	27.0	5	
	Alternative 4E	102.2	13.4	2.8	25.5		41.7	43.2	6	
	Alternative 4F	87.5	9.6	12.8	5.9		28.3	10.3		
5	Proposed – Total Length	55.7		4.8		6.0	10.8	2.6	3	
	Proposed – Comparison portion for Alternatives 5A,B	22.3							1[1/]	
	Alternative 5A	29.7								
	Alternative 5B	40.4								
	Proposed – Comparison portion for Alternatives 5C	32.9							1[1/]	
	Alternative 5C	26.0								
	Proposed – Comparison portion for Alternatives 5D	19.2		2.4		3.4	5.8	2.6	2	
	Alternative 5D	17.0		4.1		2.4	6.5	2.7	4	
	Proposed – Comparison portion for Alternatives 5E	5.8		2.4		3.4	5.8	2.6	2	
	Alternative 5E	5.3		2.3		3.1	5.4	3.0	2	
6	Proposed – Total Length	0.5			1.5		1.5	2.7		

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Inventoried bridges include those carrying routes smaller than county lettered/numbered routes

[2/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.19-1. Roads, Railroads and Bridges Within 1 Mile of Project Centerline cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Road Types (Miles)				Total Road Miles	Railroad Miles	Bridges	
			County-Maintained Highways or Numbered/Lettered Routes	State Highway	US Highway	Interstate			Number of Bridges in Inventory	Notes
7	Proposed – Total Length	118.2		12.7		8.2	20.9	2.4	14	
	Proposed – Comparison portion for Alternatives 7A,B	35.1		2.1			2.1		2	
	Alternative 7A	37.7		2.5			2.5		1	
	Alternative 7B	46.2		4.1			4.1			
	Proposed – Comparison portion for Alternative 7C	20.1				5.5	5.5		6	
	Alternative 7C	20.3				2.0	2.0		2	
	Proposed – Comparison portion for Alternative 7D	6.2		2.4		2.0	4.5		2	
	Alternative 7D	6.8		3.5		2.4	5.8		2	
	Proposed – Comparison portion for Alternative 7E	3.8		3.4			3.4		1	
	Alternative 7E	4.5		2.5			2.5			
	Proposed – Comparison portion for Alternative 7F	10.5		3.4			3.4		2	
	Alternative 7F	10.8		2.4			2.4			
	Proposed – Comparison portion for Alternative 7G	3.3								
	Alternative 7G	3.4								
	Proposed – Comparison portion for Alternative 7K	118.2		12.7		8.2	20.9	2.4	14	
	Alternative 7K	148.1		7.0		5.8	12.8		6	
8	Proposed – Total Length	131.5		10.2	7.2	4.5	21.9	7.5	4	
	Proposed – Comparison portion for Alternative 8A	51.9		3.6	5.2		8.8	3.1	1	
	Alternative 8A	53.6		6.9	4.3	5.1	16.3	6.9	10	Two are posted for load
	Proposed – Comparison portion for Alternative 8B	45.3		6.6		4.5	11.1	4.4	2	
	Alternative 8B	45.8		7.4		5.7	13.1	14.7	12	
	Proposed – Comparison portion for Alternative 8C	6.5				5.7	5.7		6	
	Alternative 8C	6.4				2.7	2.7		4	
	Proposed – Comparison portion for Alternative 8D	6.9								
	Alternative 8D	8.1								
	Proposed – Comparison portion for Alternative 8E	7.0								
	Alternative 8E	18.3								
9	Proposed – Total Length	162.2	1.8	23.7	2.0		27.5	2.1	3	
	Proposed – Comparison portion for Alternative 9A	7.8			0.2		0.2			
	Alternative 9A	7.7			0.2		0.2			
	Proposed – Comparison portion for Alternative 9B	49.1							1[1/]	
	Alternative 9B	52.3							1[1/]	
	Proposed – Comparison portion for Alternative 9C	14.4							1[1/]	
	Alternative 9C	14.4							1[1/]	
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2		22.6			22.6		1	
	Alternative 9D	60.1		12.3			12.3		2	
	Alternative 9F	63.3		12.3			12.3		2	
	Alternative 9G	57.8		12.5			12.5		3	
	Alternative 9H	61.0		12.4			12.4		3	
	Proposed – Comparison portion for Alternative 9E (revised)	61.4		22.6			22.6		1	
	Alternative 9E (revised)	70.6		11.8			11.8		2	
10	Proposed – Total Length	34.4		7.4	4.1	2.0	13.6	7.0	6	
Total All Proposed Total Length Routes (grey shaded rows)		**990.4**	**105.9**	**140.6**	**46.7**	**62.3**	**355.5**	**98.5**	**80.0**	

Notes: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

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

Blank cells indicate zero miles or null value

[1/] Inventoried bridges include those carrying routes smaller than county lettered/numbered routes

Table D.19-2. Airports and Heliports Within 1 Mile and 3 Miles of the Proposed Route

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Within 1 Mile of Route			Within 3 Miles of Route		
			Facility Type	Facility Name	Facility Use	Facility Type	Facility Name	Facility Use
1W	1W(a) Proposed – Total Length	73.8	Airport	Ellis Ranch	Private	Airport	Ellis Ranch	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Proposed – Comparison portion for Alternative 1W(a)-B	16.5						Public
	Alternative 1W(a)-B	20.9						Public
	1W(c) Proposed – Total Length	73.6				Airport	Ellis Ranch	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
2	Proposed – Total Length	91.9				Airport	Ellis Ranch	Private
						Heliport	Memorial Hospital	Private
	Proposed – Comparison portion for Alternative 2A	16.8						Public
	Alternative 2A	16.0						Public
	Proposed – Comparison portion for Alternative 2B	12.5						Public
	Alternative 2B	12.2						Public
3	Segment 3 Proposed – Total Length	45.9						Public
	Segment 3A Proposed – Total Length	5.1						Public
4[1/]	Proposed – Total Length	197.6				Airport	Cokeville Municipal	Public
						Airport	Downey/Hyde Memorial	Public
						Airport	Kemmerer Municipal	Public
						Heliport	Bear Lake Memorial Hospital Helipad	Private
	Proposed – Comparison portion for Alternatives 4B-4F	85.2				Airport	Cokeville Municipalcipal	Public
						Airport	Kemmerer Municipal	Public
	Alternative 4B	100.2						Public
	Alternative 4C	101.6				Airport	Cokeville Municipalcipal	Public
	Alternative 4D	100.8						Public
	Alternative 4E	102.2				Airport	Cokeville Municipalcipal	Public
	Alternative 4F	87.5				Airport	Kemmerer Municipal	Public
5	Proposed – Total Length	55.7				Airport	Downey/Hyde Memorial	Public
	Proposed – Comparison portion for Alternatives 5A,B	22.3						Public
	Alternative 5A	29.7						Public
	Alternative 5B	40.4						Public
	Proposed – Comparison portion for Alternative 5C	32.9						Public
	Alternative 5C	26.0						Public
	Proposed – Comparison portion for Alternative 5D	19.2						Public
	Alternative 5D	17.0						Public
	Proposed – Comparison portion for Alternative 5E	5.8						Public
	Alternative 5E	5.3						Public
6	Proposed – Total Length	0.5						Public

Note: The BLM's Preferred Route includes Proposed 1W, Proposed 2, Proposed 3, Proposed 4 (including 4G), Proposed 5 (including 5B and 5E), Proposed 6, Proposed 7 (including 7B, 7C, 7D, and 7G), Proposed 8 (including 8B), Proposed 9 (including 9E), and Proposed 10

[1/] Alternative 4G was added in late 2012 and was therefore not added to this table

Table D.19-2. Airports and Heliports Within 1 Mile and 3 Miles of the Proposed Route cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Within 1 Mile of Route			Within 3 Miles of Route		
			Facility Type	Facility Name	Facility Use	Facility Type	Facility Name	Facility Use
7	Proposed – Total Length	118.2				Airport	Downey/Hyde Memorial	Public
						Landing Strip	Mason	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
			Landing Strip	Unknown (Proposed)	Private	Landing Strip	Unknown (Proposed)	Private
	Proposed – Comparison portion for Alternatives 7A,B	35.1						Public
	Alternative 7A	37.7						Public
	Alternative 7B	46.2						Public
	Proposed – Comparison portion for Alternative 7C	20.1						Public
	Alternative 7C	20.3						Public
	Proposed – Comparison portion for Alternative 7D	6.2						Public
	Alternative 7D	6.8						Public
	Proposed – Comparison portion for Alternative 7E	3.8				Landing Strip	Unknown	Private
	Alternative 7E	4.5				Landing Strip	Unknown	Private
	Proposed – Comparison portion for Alternative 7F	10.5	Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Alternative 7F	10.8	Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Proposed – Comparison portion for Alternative 7G	3.3				Landing Strip	Mason	Private
			Landing Strip	Unknown (Proposed)	Private	Landing Strip	Unknown (Proposed)	Private
	Alternative 7G	3.4				Landing Strip	Mason	Private
			Landing Strip	Unknown (Proposed)	Private	Landing Strip	Unknown (Proposed)	Private
	Proposed – Comparison portion for Alternative 7K	118.2				Airport	Downey/Hyde Memorial	Public
						Landing Strip	Mason	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
			Landing Strip	Unknown (Proposed)	Private	Landing Strip	Unknown (Proposed)	Private
	Alternative 7K	148.1				Airport	Downey/Hyde Memorial	Public
						Landing Strip	Unknown (Proposed)	Private
8	Proposed – Total Length	131.5				Airport	Gooding Municipal	Public
						Airport	Red Baron Airpark Ultralight	Private
						Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
						Ultralight	Oasis Strip	Private
	Proposed – Comparison portion for Alternative 8A	51.9				Airport	Gooding Municipal	Public
	Alternative 8A	53.6				Airport	Glenns Ferry Municipal	Public
						Heliport	Health Center	Private
	Proposed – Comparison portion for Alternative 8B	45.3				Airport	Red Baron Airpark Ultralight	Private
						Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
						Ultralight	Oasis Strip	Private
	Alternative 8B	45.8				Airport	Green Acres	Private
						Airport	Larkin	Private
						Airport	Red Baron Airpark Ultralight	Private
						Landing Strip	Black's Airfield	Private
						Ultralight	Oasis Strip	Private
	Proposed – Comparison portion for Alternative 8C	6.5				Airport	Red Baron Airpark Ultralight	Private
						Ultralight	Oasis Strip	Private
	Alternative 8C	6.4				Airport	Red Baron Airpark Ultralight	Private
						Ultralight	Oasis Strip	Private
	Proposed – Comparison portion for Alternative 8D	6.9				Landing Strip	Unknown	Private
	Alternative 8D	8.1	Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Proposed – Comparison portion for Alternative 8E	7.0				Landing Strip	Unknown	Private
	Alternative 8E	18.3				Landing Strip	Unknown	Private

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Table D.19-2. Airports and Heliports Within 1 Mile and 3 Miles of the Proposed Route cont.

Segment Number	Proposed or Alternative Name	Segment Length (Miles)	Within 1 Mile of Route			Within 3 Miles of Route		
			Facility Type	Facility Name	Facility Use	Facility Type	Facility Name	Facility Use
9	Proposed – Total Length	162.2				Airport	EZ Lope Ranch	Private
			Airport	Murphy	Public	Airport	Murphy	Public
						Landing Strip	Unknown	Private
						Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Proposed – Comparison portion for Alternative 9A	7.8						Public
	Alternative 9A	7.7						Public
	Proposed – Comparison portion for Alternative 9B	49.1				Landing Strip	Unknown	Private
	Alternative 9B	52.3	Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Proposed – Comparison portion for Alternative 9C	14.4						Public
	Alternative 9C	14.4						Public
	Proposed – Comparison portion for Alternatives 9D,F,G,H	57.2				Airport	EZ Lope Ranch	Private
			Airport	Murphy	Public	Airport	Murphy	Public
						Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Alternative 9D	60.1				Airport	Murphy	Public
						Landing Strip	Unknown	Private
						Landing Strip	Unknown	Private
	Alternative 9F	63.3				Airport	Murphy	Public
						Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Alternative 9G	57.8	Airport	Murphy	Public	Airport	Murphy	Public
						Landing Strip	Unknown	Private
						Landing Strip	Unknown	Private
						Landing Strip	Unknown	Private
	Alternative 9H	61.0	Airport	Murphy	Public	Airport	Murphy	Public
						Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
						Landing Strip	Unknown	Private
	Proposed – Comparison portion for Alternative 9E (revised)	61.4				Airport	EZ Lope Ranch	Private
			Airport	Murphy	Public	Airport	Murphy	Public
						Landing Strip	Unknown	Private
			Landing Strip	Unknown		Landing Strip	Unknown	Private
			Landing Strip	Unknown	Private	Landing Strip	Unknown	Private
	Alternative 9E (revised)	70.6	Landing Strip	Unknown	Private	Airport	Murphy	Public
						Airport	Owens Ranches, Inc.	Private
						Landing Strip	Unknown	Private
						Landing Strip	Unknown	Private
10	Proposed – Total Length	34.4						

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