Exhibit Q
Threatened and Endangered Plant and Animal Species

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

Todd Adams, Project Leader
(208) 388-2740
tadams@idahopower.com

Zach Funkhouser, Permitting
(208) 388-5375
zfunkhouser@idahopower.com

Preliminary Application for Site Certificate

February 2013

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

Note: Not all acronyms and abbreviations listed will appear in this Exhibit.

°C	degrees Celsius
4WD	4-wheel-drive
A	ampere
A/ph	amperes/phase
AC	alternating current
ACDP	Air Contaminant Discharge Permit
ACEC	Area of Critical Environmental Concern
ACSR	aluminum conductor steel reinforced
AIMP	Agricultural Impact Mitigation Plan
AMS	Analysis of the Management Situation
aMW	average megawatt
ANSI	American National Standards Institute
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
ARPA	Archaeological Resource Protection Act
ASC	Application for Site Certificate
ASP	Archaeological Survey Plan
ASCE	American Society of Civil Engineers
AST	aboveground storage tank
ASTM	American Society of Testing and Materials
ATC	available transmission capacity
ATV	all-terrain vehicle
AUM	animal unit month
B2H	Boardman to Hemingway Transmission Line Project
BCCP	Baker County Comprehensive Plan
BCZSO	Baker County Zoning and Subdivision Ordinance
BLM	Bureau of Land Management
BMP	best management practice
BPA	Bonneville Power Administration
BOR	Bureau of Reclamation
C and D	construction and demolition
CAA	Clean Air Act
CadnaA	Computer-Aided Noise Abatement
CAFE	Corona and Field Effects
CAP	Community Advisory Process
CBM	capacity benefit margin
CFR	Code of Federal Regulations
CH	critical habitat
CIP	critical infrastructure protection
CL	centerline
cm	centimeter
cmil	circular mil
COA	Conservation Opportunity Area
CO_2e	carbon dioxide equivalent

COM Plan	Construction, Operations, and Maintenance Plan
CPCN	Certificate of Public Convenience and Necessity
cps	cycle per second
CRP	Conservation Reserve Program
CRT	cathode-ray tube
CRUP	Cultural Resource Use Permit
CSZ	Cascadia Subduction Zone
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CWA	*Clean Water Act of 1972*
CWR	Critical Winter Range
dB	decibel
dBA	A-weighted decibel
DC	direct current
DoD	Department of Defense
DOE	U.S. Department of Energy
DOGAMI	Oregon Department of Geology and Mineral Industries
DPS	Distinct Population Segment
DSL	Oregon Department of State Lands
EA	environmental assessment
EDRR	Early Detection and Rapid Response
EIS	Environmental Impact Statement (DEIS for Draft and FEIS for Final)
EFSC or Council	Energy Facility Siting Council
EFU	Exclusive Farm Use
EHS	extra high strength
EMF	electric and magnetic fields
EPA	Environmental Protection Agency
EPC	Engineer, Procure, Construct
EPM	environmental protection measure
EPRI	Electric Power Research Institute
ERO	Electric Reliability Organization
ERU	Exclusive Range Use
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESU	Evolutionarily Significant Unit
EU	European Union
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FFT	find, fix, track, and report
FLPMA	Federal Land Policy and Management Act
Forest Plan	Land and Resource Management Plan
FPA	Forest Practices Act
FSA	Farm Services Agency
FWS	U.S. Fish and Wildlife Service
G	gauss

GeoBOB	Geographic Biotic Observation
GF	Grazing Farm Zone
GHG	greenhouse gas
GHz	gigahertz
GIL	gas insulated transmission line
GIS	geographic information system
GPS	Global Positioning System
GRMW	Grande Ronde Model Watershed
GRP	Grassland Reserve Program
HAC	Historic Archaeological Cultural
HCNRA	Hells Canyon National Recreation Area
HPFF	high pressure fluid-filled
HPMP	Historic Properties Management Plan
HUC	Hydrologic Unit Code
Hz	hertz
I-84	Interstate 84
ICC	International Code Council
ICES	International Committee on Electromagnetic Safety
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
ILS	intensive-level survey
IM	Instructional Memorandum
INHP	Idaho Natural Heritage Program
INRMP	Integrated Natural Resources Management Plan
IPC	Idaho Power Company
IPUC	Idaho Public Utilities Commission
IRP	integrated resource plan
IRPAC	IRP Advisory Council
ISDA	Idaho State Department of Agriculture
JPA	Joint Permit Application
KCM	thousand circular mils
kHz	kilohertz
km	kilometer
KOP	Key Observation Point
kV	kilovolt
kV/m	kilovolt per meter
kWh	kilowatt-hour
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
lb	pound
LCDC	Land Conservation and Development Commission
LDMA	Lost Dutchman's Mining Association
LiDAR	light detection and ranging
LIT	Local Implementation Team

LMP	land management plan
LOLE	Loss of Load Expectation
LRMP	land and resource management plan
LUBA	Land Use Board of Appeals
LWD	large woody debris
m	meter
mA	milliampere
MA	Management Area
MAIFI	Momentary Average Interruption Frequency Index
MCC	Malheur County Code
MCCP	Morrow County Comprehensive Plan
MCE	Maximum Credible Earthquake
MCZO	Morrow County Zoning Ordinance
mG	milligauss
MHz	megahertz
mm	millimeter
MMI	Modified Mercalli Intensity
MP	milepost
MPE	maximum probable earthquake
MRI	magnetic resonance imaging
MVAR	megavolt ampere reactive
Mw	mean magnitude
MW	megawatt
µV/m	microvolt per meter
N_2O	nitrous oxide
NAIP	National Agriculture Imagery Program
NED	National Elevation Dataset
NEMS	National Energy Modeling System
NEPA	*National Environmental Policy Act of 1969*
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NF	National Forest
NFPA	National Fire Protection Association
NFS	National Forest System
NGDC	National Geophysical Data Center
NHD	National Hydrography Dataset
NHOTIC	National Historic Oregon Trail Interpretive Center
NHT	National Historic Trail
NIEHS	National Institute of Environmental Health Sciences
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries Division
NOI	Notice of Intent to File an Application for Site Certificate
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NSR	noise sensitive receptor
NTTG	Northern Tier Transmission Group
NWGAP	Northwest Regional Gap Analysis Landcover Data
NWI	National Wetlands Inventory
NWPP	Northwest Power Pool
NWR	National Wildlife Refuge
NWSRS	National Wild and Scenic Rivers System
NWSTF	Naval Weapons Systems Training Facility
O_3	ozone
O&M	operation and maintenance
OAIN	Oregon Agricultural Information Network
OAR	Oregon Administrative Rules
OATT	Open Access Transmission Tariff
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHGW	overhead ground wire
OHV	off-highway vehicle
OPGW	optical ground wire
OPRD	Oregon Parks and Recreation Department
OPS	U.S. Department of Transportation, Office of Pipeline Safety
OPUC	Public Utility Commission of Oregon
OR	Oregon (State) Highway
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
ORWAP	Oregon Rapid Wetland Assessment Protocol
OS	Open Space
OSDAM	Oregon Streamflow Duration Assessment Methodology
OSHA	Occupational Safety and Health Administration
OSSC	Oregon Structural Specialty Code
OSWB	Oregon State Weed Board
OWC	Oregon Wetland Cover
P	Preservation
PA	Programmatic Agreement
pASC	Preliminary Application for Site Certificate
PAT	Project Advisory Team
PCE	Primary Constituent Element
PEM	palustrine emergent
PFO	palustrine forested
PGA	peak ground acceleration
PGE	Portland General Electric
PGH	Preliminary General Habitats
Pike	Pike Energy Solutions

PNSN	Pacific Northwest Seismic Network
POD	Plan of Development
POMU	Permit to Operate, Maintain and Use a State Highway Approach
PPH	Preliminary Priority Habitats
Project	Boardman to Hemingway Transmission Line Project
PSD	Prevention of Significant Deterioration
PSS	palustrine scrub-shrub
R	Retention
R-F	removal-fill
RCM	Reliability Centered Maintenance
RCRA	Resource Conservation and Recovery Act
ReGAP	Regional Gap Analysis Project
RFP	request for proposal
RLS	reconnaissance-level survey
RMP	resource management plan
ROD	Record of Decision
ROE	right of entry
RNA	research natural area
ROW	right-of-way
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SC	Sensitive Critical
SEORMP	Southeastern Oregon Resource Management Plan
SF6	sulfur hexafluoride
Shaw	Shaw Environmental and Infrastructure, Inc.
SHPO	State Historic Preservation Office
SLIDO	Statewide Landslide Inventory Database for Oregon
SMS	Scenery Management System
SMU	Species Management Unit
SPCC	Spill Prevention, Containment, and Countermeasures
SRMA	Special Recreation Management Area
SRSAM	Salmon Resources and Sensitive Area Mapping
SSURGO	Soil Survey Geographic Database
STATSGO	State Soil Geographic Database
SUP	special-use permit
SV	Sensitive Vulnerable
SWPPP	Stormwater Pollution Prevention Plan
T/A/Y	tons/acre/year
TDG	Total Dissolved Gas
TES	threatened, endangered, and sensitive (species)
TG	Timber Grazing
TMIP	Transmission Maintenance and Inspection Plan
TNC	The Nature Conservancy
tpy	tons per year
TSD	treatment, storage, and disposal
TV	television
TVES	Terrestrial Visual Encounter Surveys

TVMP	Transmission Vegetation Management Program
UBAR	Umatilla Basin Aquifer Restoration
UBWC	Umatilla Basin Water Commission
UCDC	Umatilla County Development Code
UCZPSO	Union County Zoning, Partition and Subdivision Ordinance
UDP	Unanticipated Discovery Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Department of Agriculture, Forest Service
USGS	U.S. Geological Survey
UWIN	Utah Wildlife in Need
V/C	volume to capacity
V	volt
VAHP	Visual Assessment of Historic Properties
VMS	Visual Management System
VQO	Visual Quality Objective
VRM	Visual Resource Management
WAGS	Washington ground squirrel
WCU	Wilderness Characteristic Unit
WECC	Western Electricity Coordinating Council
WHO	World Health Organization
WMA	Wildlife Management Area
WOS	waters of the state
WOUS	waters of the United States
WPCF	Water Pollution Control Facility
WR	winter range
WRCC	Western Regional Climate Center
WRD	(Oregon) Water Resources Division
WRP	Wetland Reserve Program
WWE	West-wide Energy
XLPE	cross-linked polyethylene

Exhibit Q
Threatened and Endangered Plant and Animal Species

1.0 INTRODUCTION

Exhibit Q provides an analysis of threatened and endangered plant and animal species for the Boardman to Hemingway Transmission Line Project (Project). Exhibit Q demonstrates that Idaho Power Company (IPC) will comply with the approval standard for state listed threatened and endangered plant and animal species in accordance with Oregon Administrative Rule (OAR) 345-022-0070 based on information provided pursuant to OAR 345-021-0010(1)(q), paragraphs (A) through (G).

The term "special status species" will be used at times in Exhibit Q to collectively refer to federally- and state-listed threatened and endangered species identified as potentially affected by the Project. Impacts to State Sensitive Species as well as non-listed fish and wildlife species and their habitats are addressed in Exhibit P.

2.0 APPLICABLE RULES AND STATUTES

In accordance with the Energy Facility Siting Council (EFSC or Council) Threatened and Endangered Species Standard, OAR 345-022-0070:

> *To issue a site certificate, the Council, after consultation with appropriate state agencies, must find that:*
>
> *(1) For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction and operation of the proposed facility, taking into account mitigation:*
>
> > *(a) Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3); or*
> >
> > *(b) If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and*
>
> *(2) For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction and operation of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.*

2.1 Requirements of Exhibit Q – OAR 345-021-0010(1)(q)

To demonstrate compliance with the Threatened and Endangered Species Standard, and in accordance with OAR 345-021-0010(1)(q), Exhibit Q must include the following:

> *(A) Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2), ORS 564.105(2) or 16 USC § 1533 that may be affected by the proposed facility.*
>
> *(B) For each species identified under (A), a description of the nature, extent, locations and timing of its occurrence in the analysis area and how the facility might adversely affect it.*

(C) For each species identified under (A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact.

(D) For each plant species identified under (A), a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3).

(E) For each plant species identified under paragraph (A), if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

(F) For each animal species identified under (A), a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

(G) The applicant's proposed monitoring program, if any, for impacts to threatened and endangered species.

2.2 Project Order Requirements

The Project Order states that all requirements of OAR 345-021-0010(1)(q) apply to Exhibit Q. Additionally, the Project Order includes the following requirements:

OAR Chapter 635, Division 100 (Wildlife Diversity Plan) and ODFW's website contain the State list of threatened and endangered wildlife species. The applicant should include in its application for a site certificate a list of both state-listed and federally-listed threatened and endangered wildlife species and State Sensitive Species that have potential to occur in the analysis area. The applicant should identify these species based on a review of literature, consultation with knowledgeable individuals, and reference to the list of species published by the Biodiversity Information Center.

As discussed in Section V(p) above, the applicant has proposed a "phased survey" approach for data collection during the site certificate review process, and the Department understands that the applicant's data at the time of application submittal might be incomplete. Nevertheless, Exhibit Q should include as much information as possible about the results of the field surveys conducted to date for threatened and endangered species and state sensitive species on state, private, and federal lands. The schedule for future surveys, and the estimated date that results will be available, should also be incorporated into Exhibit Q.

As for other biological resources, the information should include the survey methodology, exact survey areas, and the results of all surveys. Surveys must be performed by qualified survey personnel during the season or seasons appropriate to the detection of the species in question.

Exhibit Q should include analysis of how the evidence provided supports a finding by the Council that the proposed facility meets the Council's threatened and endangered species standard. Provide proposed site certificate conditions for the Council's consideration related to requirements for the applicant to complete all unfinished surveys

within the project's site boundary prior to construction. The proposed site certificate conditions should also address submittal requirements for reporting future survey results, and the applicant's proposed approach to document approval of final results by agencies or the Council prior to commencing construction activities.

As documented in Table Q-5 (Submittal Requirements Matrix), IPC has drafted Exhibit Q to respond to each paragraph of OAR 345-021-0010(1)(q) described above, as well as the additional requirements set forth in the Project Order.

3.0 ANALYSIS

3.1 Analysis Area

Pursuant to the Project Order, the analysis area for Exhibit Q is the area within the Site Boundary and 0.5 mile from the Site Boundary. The Site Boundary is defined in OAR 345-001-0010(55) as "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all corridors and micrositing corridors proposed by the applicant." The Site Boundary for the Project includes the following related and supporting facilities in Oregon:

- Proposed Corridor: 277.2 miles of 500-kilovolt (kV) transmission line corridor, 5.0 miles of double circuit 138/69-kV transmission line corridor, and 0.3 miles of 138-kV transmission line corridor.
- Alternate Corridor Segments: Seven alternate corridor segments consisting of approximately 134.1 miles that could replace certain segments of the Proposed Corridor. IPC has proposed these alternate corridor segments in order to allow flexibility for IPC and EFSC, as well as federal agencies, to reconcile competing resource constraints in several key locations.
- One proposed substation expansion of 3 acres; two alternate substation sites (one 3-acre substation expansion and one new 20-acre substation). IPC ultimately needs to construct and operate only one substation expansion or substation in the Boardman area.
- Eight communication station sites of less than one acre each in size; four alternate communication station sites along alternate corridor segments.
- Temporary and permanent access roads.
- Temporary multi-use areas, pulling and tensioning sites, and fly yards.

The features of the Project are fully described in Exhibit B and the Site Boundary for each Project feature is described in Exhibit C, Table C-21. The location of the Project (Site Boundary) is outlined in Exhibit C

3.2 Methods

After consultation with applicable federal and state agencies, IPC determined that field surveys and data collection for the Project would be conducted via a phased study approach, which utilized three phases (see Exhibit P, Attachment P-3).[1] During Phase 1 (i.e., the initial desktop review), IPC compiled existing biological information from multiple data sources regarding the occurrence of special status species within the Site Boundary. In Phase 2, IPC's consultants undertook comprehensive field survey efforts in portions of the Site Boundary for which IPC was granted access. Phase 3 has not yet occurred, but will consist of all preconstruction surveys that may be necessary to identify special status species locations for avoidance and mitigation compliance with temporal or spatial restrictions, micro-siting route changes, or to complete surveys and provide analysis on previously unsurveyed areas.

3.2.1 Initial Desktop Review

Existing data were initially utilized to determine the preliminary list of federally- or state-listed species that could potentially occur within the analysis area. Databases and literature from the Oregon Biodiversity Information Center[2] (ORBIC 2008, 2010, 2012), StreamNet (StreamNet 2010), Oregon Department of Fish and Wildlife (ODFW 2008), Oregon Department of Agriculture (ODA 2008), U.S. Department of Agriculture, Forest Service (USFS 2008), Bureau of Land Management (BLM 2008), the Geographic Biotic Observation (GeoBOB) database (BLM 2012a), watershed basin plans, ODFW native fish status report (ODFW 2005), Federal Register notifications, Bonneville Power Administration and Northwest Power and Conservation Council reports, and the National Oceanic and Atmospheric Administration Fisheries Division (NOAA Fisheries 2009) were reviewed for information on the location of federally- or state-listed species. Fish were assumed present in all perennial streams, while fish were assumed present in intermittent streams if the Oregon Streamflow Duration Assessment Method (OSDAM) data indicated that the stream contained macro-invertebrates (see the discussion of OSDAM data and the wetland surveys in Exhibits P and J), or if agency biologists indicated that an intermittent stream contained fish when water is present. Specific federally- or state-listed fish species were considered present in the analysis area if agency biologists indicated that these species may be present, or if literature or databases contained occurrences or descriptions of these fish within the steams or their reaches crossed by the analysis area (as opposed to the assumption of general fish presence made for all perennial streams and specific intermittent streams). For all other wildlife species, they were considered potentially present if they had an occurrence within 0.5 mile of the Site Boundary, or if their range and suitable habitat overlapped this area. For plant species, they were considered potentially present if they had an occurrence within 5 miles of the Site Boundary, or if their range and suitable habitat overlapped this area; a larger study area was used for plants due to the high level of uncertainty in existing databases regarding plant locations. However, as a lack of documented occurrence in an area does not constitute a true lack of occurrence by a species, local agency experts were consulted, and field surveys were conducted to better identify the list of species that could potentially occur within the analysis area (see discussion in Section 3.2.2).

[1] Note that the original dates of the phased survey effort proposed in the Biological Survey Work Plan (i.e., Attachment P-3) do not always directly correspond to the dates in which these surveys were actually conducted; several of the surveys outlined in the Biological Survey Work Plan were conducted earlier (i.e., in an earlier year) than proposed in Attachment P-3. See Table P-1 for a list of dates in which surveys were completed.

[2] ORBIC requested that occurrence locations for these rare species be kept confidential; upon request, they may be available from Oregon Department of Energy with approval from ORBIC.

3.2.2 Field Surveys

On August 22, 2008, a meeting was held in Baker City, Oregon, with land managers and biologists from the ODFW, Idaho Department of Fish and Game (IDFG), USFS, U.S. Fish and Wildlife Service (FWS), NOAA Fisheries, and the BLM. The purpose of this meeting was to establish an interagency/intergovernmental working group that would determine the list of species that could potentially occur near the Project, as well as identify the surveys and protocols that would be required to identify wildlife/fish species, rare plant species, wetlands, vegetation, and general habitats in the analysis area. Subsequent meetings with ODFW biologists were held in Baker City on September 30, 2008, and in Pendleton, Oregon, on October 17, 2008. A meeting with the IDFG was held in Boise, Idaho, on February 9, 2009. A draft of the Biological Survey Work Plan, which contained the proposed biological surveys and their protocols, was submitted to agency specialists on February 10, 2009. On February 17, 2009, a meeting with the Oregon Department of Energy (ODOE), ODFW, USFS, FWS, NOAA Fisheries, and BLM was conducted to discuss the surveys and protocols proposed in the draft Biological Work Plan. Shortly after, IPC initiated the Community Advisory Process (CAP) to develop a broader range of possible routes for the Project. Following completion of the CAP, a second interagency meeting involving representatives of the ODFW, BLM, USFS, ODOE, NOAA Fisheries, and FWS was held on October 26, 2010, to obtain additional input on species and habitats along IPC's Proposed Corridor and alternate corridor segments. Input from agency specialists was used to identify the federally- or state-listed species that could occur within the analysis area, those that would require field surveys, and the species targeted during concurrent field surveys. The Revised Final Biological Survey Work Plan (dated April 2011) contains a list of all agency required biological surveys, as well as a detailed description of the final protocols used (see Exhibit P, Attachment P-3).

IPC attempted to gain access rights to all areas that would require surveys. On federally- and state-managed lands, this was accomplished through coordination with the respective agencies. On privately owned lands, individual permission from each landowner is required prior to accessing the land. In some cases, private landowners did not allow IPC access rights to their lands; therefore, IPC has not completed surveys for the areas to which access rights to private lands were not granted by the landowner. Table Q-1 lists the various biological surveys that were conducted (relative to Exhibit Q), the survey protocols that were used, the dates of these surveys, the approximate acreage of area requiring surveys, the total acreage that has been surveyed to date, and the strategy that would be followed in order to complete a 100 percent survey coverage of the necessary area. These areas are shown in Figures Q-1 through Q-3.

1 **Table Q-1.** Biological Surveys Related to Exhibit Q

Survey Name	Protocol Used	Total Area Requiring Surveys (acre)	Surveys Completed to Date (acre / date)	Compliance Strategy
Washington Ground Squirrel	Status and Habitat Use of the Washington Ground Squirrel (*Spermophilus washingtoni*) on State of Oregon Lands (Morgan and Nugent 1999); see Attachment P-8	16,761; see Figure Q-1	10,270 / May 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.
Special Status Plant Survey	The BLM's "Intuitive Controlled Survey" method was used to identify special status plants and their habitat (BLM 2012b).	31,696; see Figure Q-2	14,961 / July 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.
Terrestrial Visual Encounter Survey (TVES)	USFS Multiple Species Inventory and Monitoring Technical Guide (Manley et al. 2006) ; see Attachment P-8	31,638; see Figure Q-3	25,869 / July 2012	IPC will survey all previously unsurveyed parcels (i.e., areas where access to private lands has not been granted) after it obtains right-of-entry and prior to construction on those parcels. IPC will use the same protocols used during its earlier surveys, and will provide the results of the surveys to ODOE prior to construction.

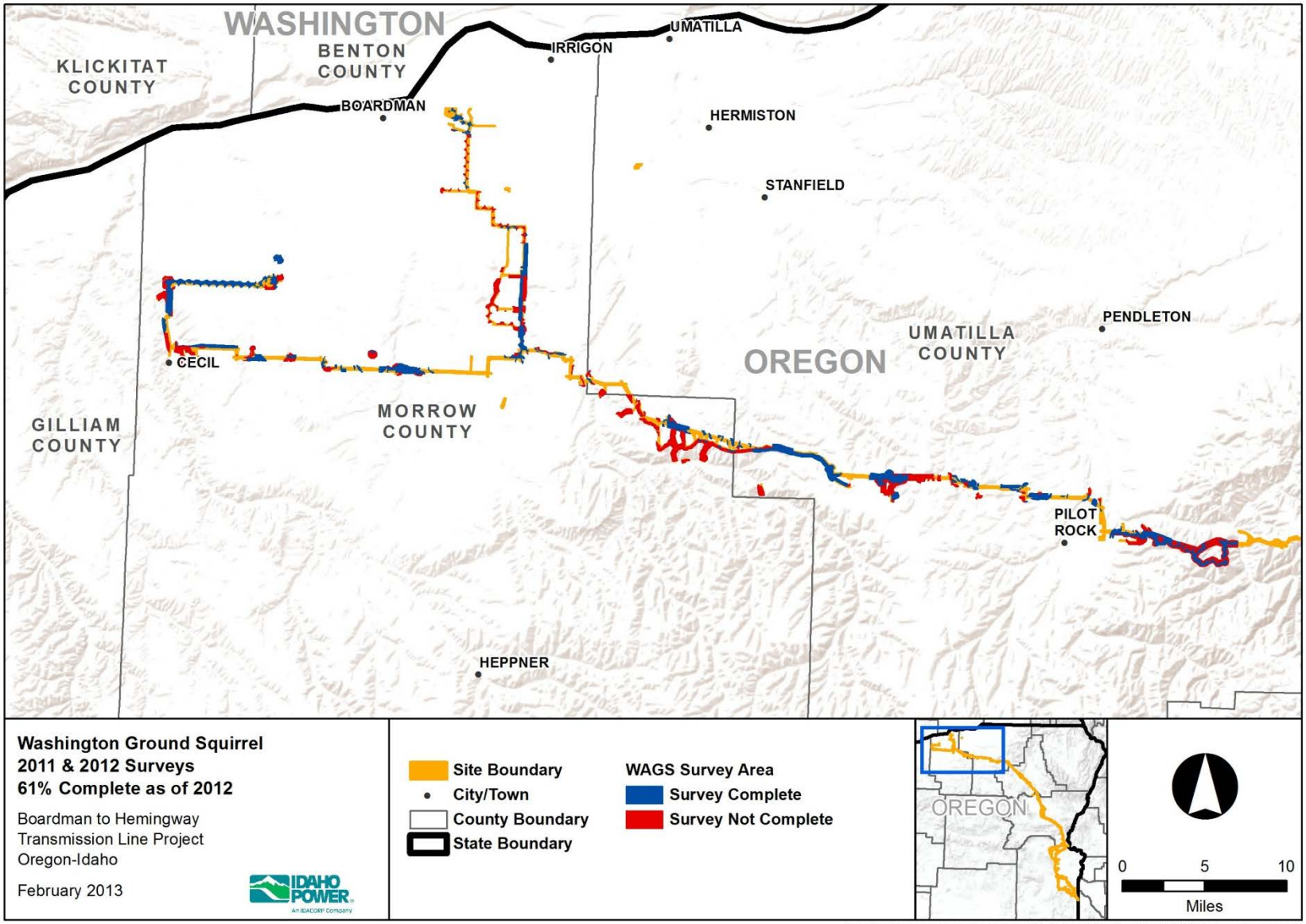

Figure Q-1. Washington Ground Squirrel 2011 and 2012 Surveys

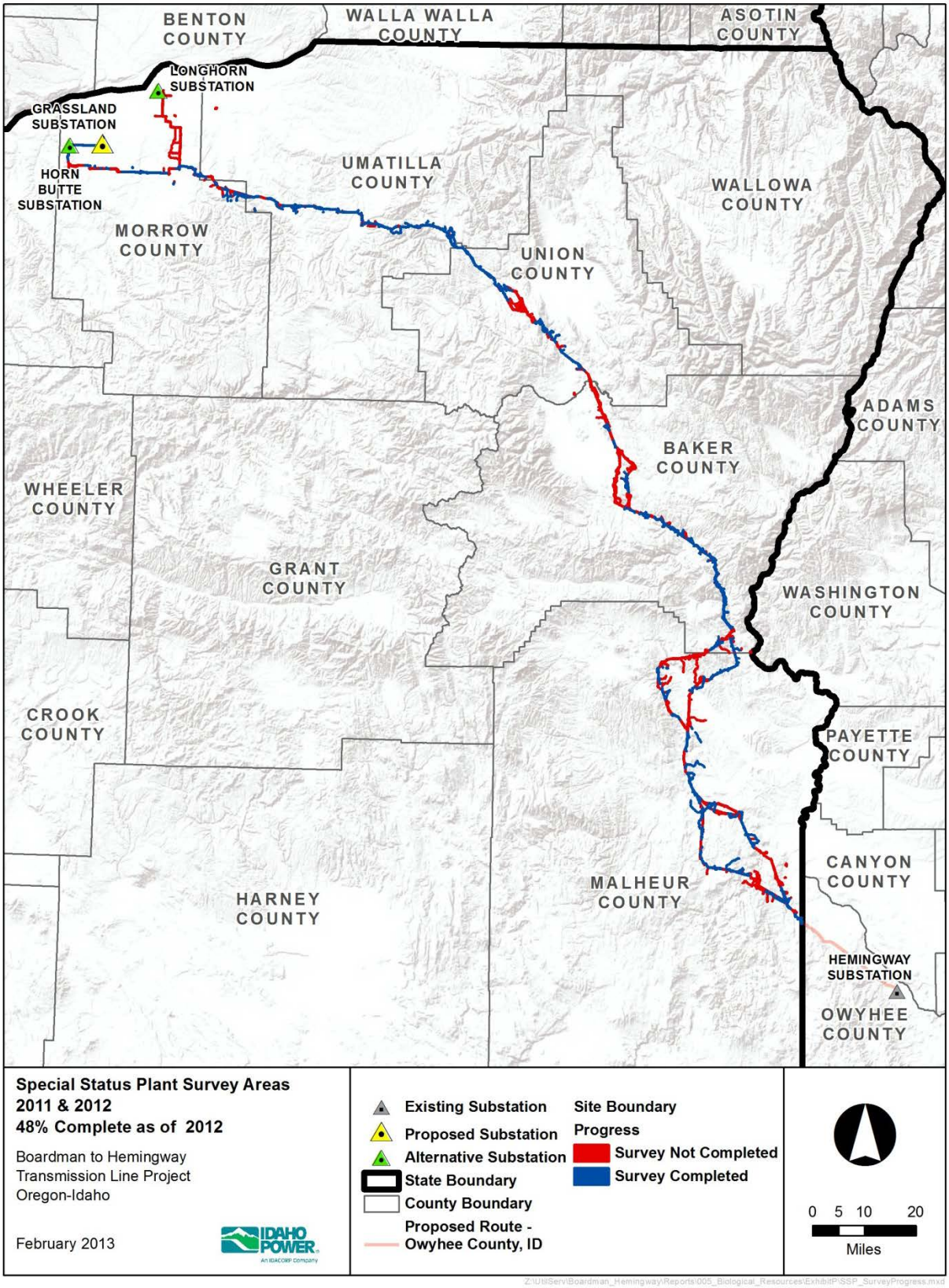

Figure Q-2. Special Status Plant 2011 and 2012 Surveys

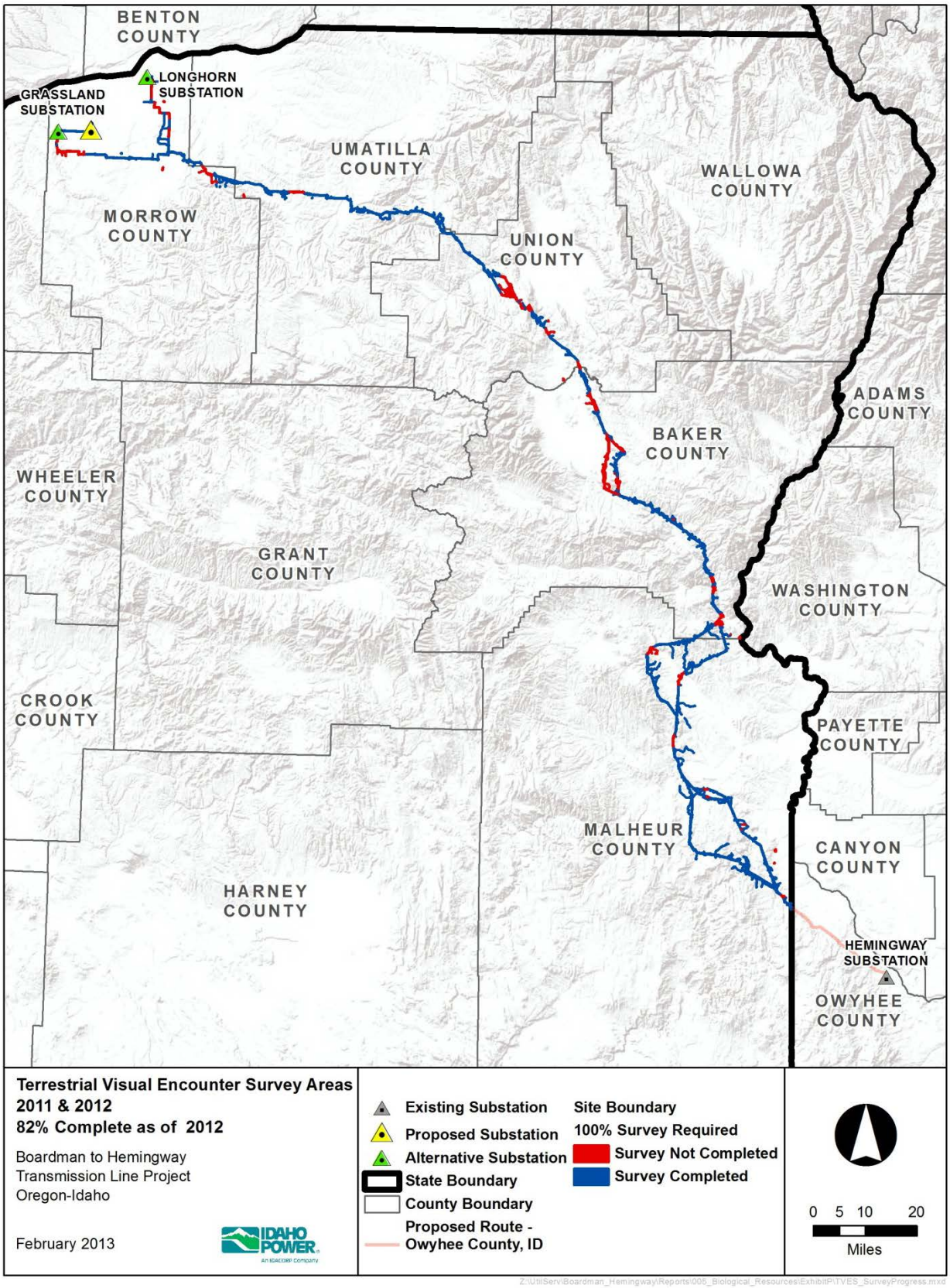

Figure Q-3. Terrestrial Visual Encounter Survey Areas 2011 and 2012

The following subsections provide a summary of the surveys that were conducted for federally- or state-listed wildlife and fish species or their habitats, the areas that were surveyed under these protocols, as well as those areas that still require surveys (i.e., areas or land parcels where access to private lands was not granted). Descriptions of the general surveys that are not directly related to federally- or state-listed wildlife and fish species can be found in Exhibit P (e.g., sage-grouse [*Centrocercus urophasianus*] surveys or wetland surveys). Complete field survey coverage of the species-specific survey areas will be required as a condition of the Site Certificate for the Project.

3.2.2.1 Washington Ground Squirrel Surveys

The protocols used during the Washington ground squirrel (*Urocitellus* [*Spermophilus*] *washingtoni*) surveys were based on the survey methods described in Morgan and Nugent (1999). The exact details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (see Exhibit P, Attachment P-3), as well as the Washington Ground Squirrel Surveys technical report (see Exhibit P, Attachment P-8). The following is a brief summary of the timing and scope of these surveys.

Washington ground squirrel surveys followed the methodology developed in Morgan and Nugent (1999). The survey area for Washington ground squirrel includes the Site Boundary and an area within 785 feet of the Site Boundary within areas of suitable Washington ground squirrel habitat. During surveys, a crew of two to eight biologists walked meandering line transects, each spaced 165 feet (50 meters) apart, to provide survey coverage of the habitat within the survey area. The surveys were conducted between approximately 7:30 a.m. and 3:00 p.m. Surveys were not conducted when wind conditions were above 15 miles per hour. Professional judgment was used when wind speeds were greater than 6 miles per hour or when visibility was poor, as both of these conditions could limit the observer's ability to detect alarm calls or observe sign. Surveys commenced at least one hour after sunrise to allow for temperatures to increase sufficiently to support ground squirrel activity. The survey area was surveyed twice, once in April and once in May of 2011, to correspond with the highest Washington ground squirrel activity period (i.e., when juveniles have emerged and alarm calls are most frequent).

Colonies were designated active when Washington ground squirrel activity was confirmed through visual detection of a squirrel, audio confirmations (hearing alarm or social calls), and/or fresh Washington ground squirrel scat near burrows. Scat samples were collected at active burrows for confirmation of squirrel presence. A burrow was identified as potential if it was a hole that was freshly dug (no vegetation or cobwebs), structurally sound, and the appropriate size for this species, but no other Washington ground squirrel sign (scat, visual, audio) was observed. Each site was resurveyed approximately 2 weeks after the first survey; spacing the surveys apart by roughly 2 weeks ensured that ground squirrel activity would be captured despite any local differences in activity level throughout the season. During the second survey, all potential burrows identified during the first survey were revisited and any confirmed activity was documented. During the second survey, 165-foot-wide transects were walked perpendicularly to the first survey transects in order to maximize coverage of the habitat. In areas where no or few potential burrows were found during the first survey, surveyors had the option of walking offset transects parallel to, but between, the original transects (i.e., offset by roughly 82 feet). Any potential burrows identified during the first survey were approached at a 90 degree angle during the second survey to minimize the chance of missing a visual or audio detection due to landscape features or prevailing wind directions.

3.2.2.2 Special Status Plant Surveys

The protocols used during the special status plant surveys, as well as the exact details and justifications of these protocols, are detailed in the Revised Final Biological Survey Work Plan (see Exhibit P, Attachment P-3), as well as the Special Status Plant Surveys technical report (see Exhibit P, Attachment P-8). The following is a brief summary of the timing and scope of these surveys.

The survey area for special status plant surveys is the Site Boundary. Botanists familiar with the federally- or state-listed species potentially present within the survey area performed surveys using systematic pedestrian transects. The suitable habitat polygons for federally- or state-listed plants were identified through geographic information system (GIS) analysis of National Agriculture Imagery Program (NAIP), Northwest Regional Gap Analysis Landcover Data (NWGAP), and ORBIC occurrence data. These suitable habitat polygons were the areas targeted for surveys; they were located in the field by botanists using a survey grade (one meter accuracy) Global Positioning System (GPS) unit. Spacing between the individual botanists was adjusted based on habitat, in order to achieve 100 percent visual coverage.

When a federally- or state-listed species was located, a GPS position was recorded (point locations were recorded for individual occurrences or communities occupying an area less than 10 meters in diameter, while polygons were recorded for larger communities). Photographs were taken and the data were recorded on the Oregon Rare Plant Occurrence form. Field crews used GPS technology for data collection activities. Trimble GeoXT survey grade receivers loaded with Environmental Systems Research Institute (or ESRI) ArcPAD 10 software were used by crews conducting field surveys.

Because phenology and local climate vary along the Project's length, surveys were conducted in three periods. Survey Period 1 occurred from April 24 to May 2, 2011, between mileposts (MPs) 265 and 285 (these MPs fall within the Snake River Plain ecoregion). Survey Period 2 occurred from May 31 to June 8, 2011, between MPs 21 and 150 (these MPs fall within a stretch that encompasses portions of both the Columbia Plateau and Blue Mountain ecoregions). Survey Period 3 occurred from July 5 to July 14, 2011, between MPs 298 and 150 (these MPs fall within a portion of the Project that passes through the Snake River Plain and a small portion of the Northern Basin and Range before transition to the Blue Mountain ecoregion).

3.2.2.3 Terrestrial Visual Encounter Survey (TVES)

The protocols used during the Terrestrial Visual Encounter Surveys (TVES) were adapted from the USFS Multiple Species Inventory and Monitoring Technical Guide (Manley et al. 2006). The exact details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Exhibit P, Attachment P-3), as well as the Terrestrial Visual Encounter Surveys Technical Report (Exhibit P, Attachment P-8). The following is a brief summary of the timing and scope of these surveys.

The TVES is a walking survey that identifies species presence through evidence of use. TVES include visual and auditory confirmation of a species, and evidence of sign such as burrows, nests, feathers, fecal material, and tracks. The focus of the TVES was on special status species (e.g., federal Endangered Species Act– [ESA-] listed species, state-listed species, and State Sensitive species) as well as their habitat; however, all species encountered during TVES were identified to the extent practical. In addition, these special status species were surveyed concurrently with other Project related protocol surveys using the TVES method (Manley et al. 2006). In addition to functioning as a general wildlife survey, TVES also recorded ecological

systems, noxious weed populations, unique habitats, potential wetlands, and areas where proposed roads may cross streams or drainages.

The survey area for the TVES is the Site Boundary. To conduct the TVES, three observers systematically surveyed the Site Boundary for wildlife and their sign, and documented vegetation communities by traversing the Site Boundary along evenly spaced meandering transects. One observer walked the centerline while the other two observers walked at a distance of 150 feet to 175 feet from either side of the centerline. This methodology allowed the observers to cover the entire corridor in one pass. Three observers were used to reduce observer fatigue, improve consistency in identifications by comparing observations, and provide a second opinion for difficult identifications.

3.2.2.4 Preconstruction Surveys

IPC will implement preconstruction surveys to determine if any additional areas have become occupied by special status species since the initial Phase 2 surveys. The species targeted for surveys during preconstruction surveys include those listed in Table 1 of the Revised Final Biological Survey Work Plan (Exhibit P, Attachment P-3). Preconstruction surveys would include surveys for all state and federal listed terrestrial species; however, listed fish species would be assumed in all waters where their presence has been identified previously. The results of these preconstruction surveys would be used to microsite Project components outside of occupied areas to the extent feasible. Preconstruction surveys would also be required in certain areas if the Project's Site Boundary changes after Phase 2 surveys have been conducted (e.g., the surveys discussed in Exhibit P, Sections 3.3.1.4 and in Exhibit Q, Sections 3.2.2.1 to 3.2.2.3), and when IPC obtains access to previously unsurveyed parcels.

The ODFW has provided guidance on Washington ground squirrel preconstruction surveys, and has indicated that surveys for this species are valid for 3 years. Therefore, preconstruction surveys will be required for the Washington ground squirrel because construction will occur after 2013.

3.3 Information Required by OAR 345-021-0010(1)(q)

3.3.1 Species Occurrence and Potential Adverse Effects

OAR 345-021-0010(1)(q)(A)

Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2), ORS 564.105(2) or 16 USC § 1533 that may be affected by the proposed facility.

Table Q-2 lists the federally- or state-listed species that are expected to occur within the analysis area, based on the initial review of existing data, consultations with the interagency/intergovernmental working group, and the results of field studies conducted to date (see Section 3.2).

Table Q-2. Federal or State Listed Threatened and Endangered Species Potentially Present within the Analysis Area

Common Name *Scientific Name*	Federal Status	State Status	Documented Use of Analysis Area[1]
WILDLIFE			
Gray Wolf *Canis lupus*	E (west of Highway 395)	E	Two records in existing databases for the Baker County area. Not found during surveys.

Table Q-2. Federal or State Listed Threatened and Endangered Species Potentially Present within the Analysis Area (continued)

Common Name ***Scientific Name***	**Federal Status**	**State Status**	**Documented Use of Analysis Area[1]**
Washington Ground Squirrel *Spermophilus washingtoni*	C	E	Multiple records in existing databases, mostly along the Boardman Bombing Range; 12 active colonies identified in the analyses area during surveys.
FISH			
Bull Trout *Salvelinus confluentus*	T, CH	SC	ORBIC record in the Grande Ronde River and its tributaries. Current literature states that they do occur in the streams or drainages within the analysis area.
Middle Columbia River Steelhead *Oncorhynchus mykiss*	T, CH	SC	ORBIC record in Birch Creek and its tributary, Stewart Creek, and in Meacham Creek. Current literature states that they do occur in the streams or drainages within the analysis area.
Snake River Basin Steelhead *Oncorhynchus mykiss*	T, CH	SV	ORBIC record in Ladd Creek, Rock Creek and its tributaries, Dry Creek and its tributaries, and Whiskey Creek; all of which are tributaries to the Grande Ronde River. Current literature states that they do occur in the streams or drainages within the analysis area.
Snake River Chinook (Spring/Summer Run) *Oncorhynchus tshwatscha*	T, CH	T	ORBIC record in the Grande Ronde River. Current literature states that they do occur in the streams or drainages within the analysis area.
PLANTS			
Cronquist's Stickseed *Hackelia cronquistii*	-	T	Multiple records in existing databases. Identified at 11 locations in Malheur County during surveys.
Cusick's Lupine *Lupinus lepidus* var. *cusickii*	-	E	No existing database records or survey observations.
Golden Buckwheat *Eriogonum chrysops*	-	T	No existing database records or survey observations.
Howell's Spectacular Thelypody *Thelypodium howellii* ssp. *spectabilis*	T	E	Multiple records in existing databases. Not found during surveys.
Laurence's Milk-Vetch *Astragalus collinus* var. *laurentii*	-	T	Multiple records in existing databases for the area between the Boardman Bombing Range and Pilot Rock. Was found in this vicinity during 2011 sensitive plant surveys.
Malheur Valley Fiddleneck *Amsinckia carinata*	-	T	No existing database records or survey observations.
Mulford's Milk-Vetch *Astragalus mulfordiae*	-	E	Multiple records in existing databases. Not found during surveys.
Oregon Semaphore Grass *Pleuropogon oregonus*	-	T	Multiple records in existing databases. Not found during surveys.

Table Q-2. Federal or State Listed Threatened and Endangered Species Potentially Present within the Analysis Area (continued)

Common Name ***Scientific Name***	Federal Status	State Status	Documented Use of Analysis Area[1]
Packard's Mentzelia *Mentzelia packardiae*	-	T	No existing database records or survey observations. Furthermore, suitable habitat for this species (ashy soil) does not occur within the portion of the Project that crosses this species habitat; therefore, this species is highly unlikely to occur within the analysis area.
Red-Fruited Lomatium *Lomatium erythrocarpum*	-	E	No existing database records or survey observations.
Salt Heliotrope *Heliotropium curassavicum*	-	E	Multiple records in existing databases. Not found during surveys.
Smooth Mentzelia *Mentzelia mollis*	-	E	Multiple records in existing databases. Not found in Oregon during surveys.
Snake River Goldenweed *Pyrrocoma radiata*	-	E	Multiple records in existing databases. Identified at 11 locations in Baker County during surveys.
Sterile Milk-Vetch (a.k.a. Cusick's Milk-vetch) *Astragalus cusickii* var. *sterilis*	-	T	Multiple records in existing databases. Not found during surveys.

T = Threatened; E = Endangered; C = Candidate for listing; CH = Critical Habitat designated under the federal Endangered Species Act;
SC = State Sensitive Critical; SV = State Sensitive Vulnerable
[1] Based on results of Project-specific surveys, as well as the databases discussed in Section 3.2.1 (e.g., 2012 ORBIC or GeoBOB data)

OAR 345-021-0010(1)(q)(B)

For each species identified under (A), a description of the nature, extent, locations and timing of its occurrence in the analysis area and how the facility might adversely affect it.

Both temporary and permanent impacts to federally- or state-listed species and their habitats could occur from the construction, operations, and retirement of the Project.

Temporary impacts during construction include direct impacts, such as ground disturbance to areas that would be restored to preconstruction conditions following completion of the Project; these include areas along temporary access roads, multi-use areas, fly yards, pulling and tensioning sites, and construction areas around tower pads. Temporary impacts from construction would also include indirect impacts, such as general disturbance of wildlife resulting from noise, dust, and/or the presence of workers and construction equipment in and near wildlife habitats. Temporary impacts during operations would result from the periodic disturbance associated with inspection and maintenance of the line; while temporary impacts associated with retirement of the Project would be similar to those described for construction. These impacts would result in a temporary loss of habitat quality or utility, which would last for the duration of the disturbance, as well as the length of the recovery period for ground disturbances. The recovery period for agricultural areas that were directly disturbed could be as short as 1 to 3 years; grasslands and herbaceous wetlands would generally recover within 3 to 7 years; shrublands may require 30 to 100 years to recover (with the longer recovery periods associated with disturbances in mature sage-brush habitats located in arid regions or for

specific sage-brush species; e.g., *Artemisia tridentata* ssp. *wyomingensis*); and forested and woodland areas could take anywhere from 50 to many hundreds of years to reach preconstruction conditions (depending on the condition of the area prior to construction). Arid sites with naturally sparse vegetation, as well as those with saline or alkaline soils, shallow soils, compacted soils, or areas that have a high erosion potential, may be difficult to restore and could require special techniques or repeated revegetation efforts by IPC; for additional information, refer to the draft Reclamation and Revegetation Plan in Exhibit P, Attachment P-4.

Permanent impacts would be associated with areas that are disturbed during construction (by both direct and indirect impacts), but which are not restored to preconstruction conditions. Permanent indirect impacts would include an increased risk for the spread or establishment of invasive plant species (which can degrade habitats and exclude native species from areas), and increased access to areas previously inaccessible to the public due to the construction of Project-related roads (which can further degrade habitats as a result of increased human presence). Permanent direct impacts would be primarily associated with ground disturbances that are not restored to preconstruction conditions (e.g., areas under tower bases and the footprint of substations). Permanent impacts would occur along new access roads, new or expanded substations, and tower bases, as well as within the permanent right-of-way (ROW) along portions of the Project that cross forested/woodland habitats and vegetative maintenance zones. These impacts would either result in a loss of habitat utility (e.g., in areas occupied by tower bases) or a conversion of one habitat type to another (e.g., conversion of forested habitats to shrub and grass habitats under the transmission line). The draft Vegetation Management Plan (Exhibit P, Attachment P-5) contains a detailed description of the types of impacts that would occur within the portion of the ROW located in forested and woodland habitats. Exhibit B describes the Project in detail, as well as the associated construction and operational activities that could result in soil disturbance and habitat impacts.

The following subsections discuss the life histories, habitat requirements, current threats, and likelihood of occurrence within the analysis area for each special status species. It also presents a summary of potential species-specific impacts for each federally- or state-listed special status species identified in Table Q-2. Sections 3.3.3, 3.3.4, and 3.3.5 discuss the potential for Project related impacts to affect the continued existence of each species or its critical habitat (if applicable).

3.3.1.1 Wildlife

Gray Wolf

Background

The gray wolf was federally listed as endangered in 1974. However, as of May 2011, gray wolves in Oregon have been removed from the federal threatened and endangered species list; except for wolves located west of Highway 395, where they are still federally listed as endangered (76 Federal Register 25590). They are also state-listed as endangered in Oregon (ORBIC 2010).

Habitat

Wolves are considered habitat generalists, and do not require a specific habitat type for survival. Habitat for wolves is largely based on the density of prey species found within a given area as well as the absence of human activity. Therefore, they could be present along any portion of the Project regardless of habitat type.

Threats

The main threat to this species in Oregon would be direct mortality resulting from poaching.

Occurrence

Wolves were considered extirpated from Oregon, but they have recently been sighted in the Imnaha, Wenaha, and Walla Walla Wildlife Management Units in northeastern Oregon (located approximately 20 to 35 miles north of the Project) and these wolf sightings are believed to represent resident packs (ODFW 2011a). These wolves emigrated naturally from Idaho. Furthermore, ORBIC has a museum record (from 1972) of a gray wolf from Baker County, near its border with Union County.

Potential Adverse Effects

Because the gray wolf is considered a habitat generalist, habitat loss resulting from the Project's construction would not have a measurable effect on this species. Wolves have large home ranges and habitually travel long distances, so they could occasionally utilize the analysis area. Direct impacts to wolves are unlikely; however, visual and noise disturbance during construction (i.e., indirect impacts) would likely cause wolves to avoid the area, thus resulting in a slight shift in movement patterns or behaviors if they were present in the area during construction activities.

Washington Ground Squirrel

Background

The FWS has received a petition to list the Washington ground squirrel under the federal ESA. However, in November 1994, the FWS determined that listing the Washington ground squirrel was warranted but precluded by higher priority species, thereby designating the Washington ground squirrel as a candidate species. The Washington ground squirrel is currently state-listed in Oregon as endangered.

Habitat

Washington ground squirrels are associated with sagebrush-steppe and native bunchgrass habitats, generally located below 800 feet in elevation (Eder 2002). They use areas with high sagebrush canopy cover. The presence of deep, weak, undisturbed soil (i.e., Warden soil) in which they dig their burrows seems to be an essential habitat component (FWS 2004).

Threats

The biggest factor causing the decline of this species is habitat loss (NatureServe 2011). In its 2010 review, the FWS concluded that due to widespread risks, the magnitude of threats to this species is high (75 Federal Register 69239). Although the Washington ground squirrel faces both imminent and non-imminent threats, FWS stated that the threats are non-imminent at the scale of the entire range of this species. This was based on the enactment of the Candidate Conservation Agreement and that impacts from future agricultural and wind developments will be minimized due to the Oregon State ESA and Columbia Basin Ecoregion wind energy guidelines (75 Federal Register 69239). The FWS has assigned a listing priority number of 5 to the Washington ground squirrel (on a scale of 1 to 12, with 1 indicating the highest listing priority; 75 Federal Register 69239).

Occurrence

There are multiple records for Washington ground squirrels along the portion of the analysis area located in Morrow County (Morgan and Nugent 1999; Marr 2004; NWC and WEST 2005; PPM Energy 2006; NWC 2008; ORBIC 2008, 2010, 2012). Furthermore, Project surveys have

identified 12 active colonies along the portion of the analysis area located in Morrow County, with colony sizes ranging from 0.05 acre to 41 acres.

Potential Adverse Effects

As discussed in Exhibit P, Washington ground squirrel colonies as well as a 785-foot buffer around the colony (restricted to suitable habitat) were classified as Category 1 habitats under the ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0025). IPC will attempt to avoid impacts to Category 1 habitat for the Washington ground squirrel. Construction activities near Washington ground squirrel Category 1 habitats would be restricted to times outside of this species' activity period (March through June), thereby minimizing impacts to any habitat or individuals located outside of the 785-foot buffer.

Potential indirect impacts may include increases in predation pressures on squirrels (resulting from the consolidation of raptors and ravens along the new transmission line due increased avian perching opportunities. It is possible that the transmission line and its structures could become an attractant to raptor and ravens for nesting and perching habitats (Gilmer and Wiehe 1977; Knight and Kawashima 1993; Steenhof et al. 1993; Connelly et al. 2004; Manzer and Hannon 2005; Coates and Delehanty 2010). The numbers of ravens and raptors that use existing transmission lines for perching habitat can become quite substantial. For example, a study conducted along a 500-kV transmission line that spanned from south-central Idaho to south-central Oregon found approximately 2,100 ravens at a single roost that spanned approximately 4 miles of the line and 15 towers (Engel et al. 1992). Although the presence of this 500-kV transmission line likely resulted in an increase in the number of ravens within the roosts, Engel et al. (1992) concluded that each of the major roosts found during the study were situated in an area where ravens had roosted communally before the line was constructed. If the Project's transmission line and structures becomes an attractant to raptor and raven, and their numbers increase along the Project, this factor coupled with the reduced shrub cover in areas recovering from construction disturbances (i.e., a reduction in hiding cover for small animals), could result in increased predation rates on prey species. The extent that these impacts could occur depends on the hunting range of predatory avian species. For example, non-breeding pairs of ravens have been documented to travel an average of 4.3 miles (6.9 kilometers) and up to 40.5 miles (65.2 kilometers) in Idaho from roost sites to food sources and 16.8 miles (27 kilometers) in Michigan (ranging from 0.5 to 91.3 miles [0.8 to 147.0 kilometers]), with breeding pairs often traveling up to 0.8 mile (1.3 kilometer) while searching food (i.e., they were flying to a landfill), and 0.35 mile (0.56 kilometer) while hunting (Engel and Young 1992; Boarman and Heinrich 1999). Golden eagle hunting ranges vary by season and location, but are typically very large (e.g., they can be around 161.6 square miles [260 square kilometers]; DeGraaf and Yamasaki 2000). These impacts would be greatest in areas where existing perching opportunities are not present (i.e., in open habitats where the Project is not located adjacent to existing lines); however, the entire length of the route located near Washington ground squirrel colonies is co-located with existing power-lines. Therefore, for the portion of the Project located near Washington ground squirrel colonies, the Project is not expected to provide new perching opportunities to areas that do not already contain these opportunities.

3.3.1.2 Fish

Various terms are used by regulatory agencies to define groups of fish species, including those that are considered sensitive. NOAA Fisheries uses the term Distinct Population Segments (DPSs) for specific steelhead interbreeding groups, and Evolutionarily Significant Units (ESUs) for similar groups of salmon. The FWS also uses the term DPS for similar groups of fish under their jurisdiction (e.g., bull trout). The State of Oregon uses the term Species Management Units

(SMUs) for fish of interest that are interbreeding members of the same species present in the same geographic region.

Bull Trout

Background

The bull trout DPS was listed as threatened under the federal ESA in June 1998 within the Columbia River basin (63 Federal Register 31647), and throughout the United States in November 1999 (64 Federal Register 58910). Three Oregon state-listed critical sensitive SMUs are present in basins crossed by the Project, including the Umatilla, Grande Ronde, and Malheur SMUs (ORBIC 2010, 2012). However, the only SMU that could potentially be affected by the Project (based on waterbodies crossed) is the Grande Ronde SMU.

Critical habitat for the bull trout has been designated under the federal ESA. Critical habitat for bull trout includes stream channels up to the ordinary high water line or bank-full elevation where this species occurs. The Primary Constituent Elements (PCEs) of this critical habitat are: 1) springs, seeps, groundwater sources, and connectivity to supply suitable water quality; 2) migratory habitat with minimal obstructions; 3) abundant food base; 4) complex streams, rivers, lakes, and marine shoreline; 5) water temperatures ranging from 36 to 59°F (2 to 15°C) including refuge habitat when temperatures are in the upper range; 6) sufficient quality substrate for successful spawning, egg incubation, and rearing (e.g., less than 12 percent fines); 7) natural hydrograph; 8) sufficient water quality for normal activities; and 9) few or no non-native predators. The mainstem of the Grande Ronde River is the only designated critical habitat for the bull trout crossed by the Project.

Habitat

Bull trout have a varied life history exhibiting both resident and migratory life-history strategies; migratory bull trout spawn in streams and juveniles mature in larger rivers, lakes, or saltwater. In inland forms, many areas include populations that undergo large regional seasonal migrations such as: 1) movements between early rearing areas, 2) movements from juvenile to adult rearing areas, and 3) movement to and from spawning areas. Connectivity between stream areas is therefore considered a major factor in species and local population area preservation. Four general factors are considered critical for proper conditions for bull trout habitat: clean water, cold water, a complex stream habitat environment, and stable connections between watersheds. Among salmonids in the Northwest, bull trout require some of the coldest and cleanest water systems to survive, and are often considered an indicator of environmental quality in watersheds (Wydoski and Whitney 2003).

Threats

No overall threat analysis has been developed for bull trout by the FWS; however, general categories of threat were noted in the 5-year status review (FWS 2008), including dams, forest practices, livestock grazing, agriculture, transportation systems, mining, residential and urban development, fisheries management, and natural actions such as fires and floods.

Occurrence

Bull trout are native to the Pacific Northwest and western Canada. They historically occurred in major river drainages from the McCloud River in northern California, and the Jarbidge River in Nevada north to the headwaters of the Yukon River in Northwest Territories and east into Oregon, Montana, and Alberta.

Bull trout in the analysis area are found in the Umatilla, Grande Ronde, Malheur, and Powder river systems. Known distribution in the Umatilla River is located downstream of any proposed

crossings, including the Umatilla River mainstem and Meacham Creek, which the Project crosses along its headwaters. In the Malheur and Powder river systems, the stream crossings by the Project are located downstream of bull trout habitat. However, bull trout are present along the portion of the analysis area that crosses the Grande Ronde River's mainstem. This area is considered migratory habitat for bull trout in this system, but not a spawning or rearing environment (StreamNet 2011).

The Grande Ronde region (i.e., the only region that is crossed by the Project and may contain bull trout; see discussion above) is considered primarily a migration route for bull trout (StreamNet 2011). The major spawning areas in the Grande Ronde system are Minam, Lostine, and Wenaha rivers and Lookingglass Creek (Nowak 2004). Bull trout have both resident (Little Minam) and fluvial (migratory between small and large stream) populations, which are common in this system. There is some movement in and out of the Grande Ronde river system by these bull trout. Upstream spawning migration occurs from mid-April through June and again in October through November (ODFW 2011b). Movement in the mainstem Grande Ronde in summer, however, is limited by temperature (Nowak 2004). Bull trout spawn in September and October in this system (ODFW 2011b). Egg incubation through fry emergence in tributaries may extend through April (ODFW 2011b). After juveniles have reared in the tributaries, they may move back downstream, primarily in spring or fall.

Potential Adverse Effects

Impacts to federally- or state-listed fish species, such as the bull trout, could occur at locations where the Project either crosses areas that contain these species or at crossings directly upstream of occupied areas (approximately 200 feet upstream[3]), as well as occupied areas that are not directly crossed but which are located adjacent to general soil disturbance and vegetative clearing. The amount of soil disturbance adjacent to waterbodies, as well as the number of waterbody crossings, the types of waterbodies crossed (e.g., intermittent or seasonally dry ephemeral, versus perennial streams), and the methods used to cross these waterbodies (i.e., transmission line spanning waterbodies versus access roads directly crossing them), would affect the type and magnitude of impacts that could occur to federally- or state-listed fish species or their habitats. Potential Project-related impacts to fish species/habitats include alterations to suspended sediments, sedimentation, temperature, large woody debris (LWD) input, as well as impacts related to the toxic effect of spills and use of chemicals adjacent to or within waterbodies. As currently proposed, the transmission line would span fish-bearing streams; however, no new road crossings are proposed for any fish-bearing streams, as all proposed road crossing of fish-bearing streams would utilize existing access roads. Therefore, impacts to fish passage, as well as impacts related to fish salvage, are not likely to occur. The potential impacts of this Project on waterbodies and fish species are discussed in more detail within the following subsections. Table Q-3 lists the stream crossings (i.e., areas spanned by the transmission line) that contain federally- or state-listed fish species, as well as the amount of soil disturbance adjacent to the waterbody, and the amount of forested riparian vegetation that would be removed at each crossing.

[3] Research by Ritter (1984) suggests that noticeable increases in suspended sediment (e.g., over 20 milligrams per liter [mg/L]) would not likely occur within 100 feet downstream for small perennial streams and possibly about 200 feet for large perennial streams crossed by roads or transmission lines where actions actually disturb the stream bank or bottom (see further discussion in the "Turbidity and Sedimentation" section).

Table Q-3. Stream Crossings (i.e., areas spanned by the transmission line) that Contain Federal or State Listed Fish Species

Facility	County	Subbasin Name	Subbasin HUC	MP	Stream Name	Stream Type	Terrestrial Habitat			Known Habitat Use[3]	Fish Species Documented at or 1,000 feet Downstream of the Crossing[2]		
							Riparian Vegetation Type[1]	Total Soil Impact within 500 feet of Stream (acre)	Impact to Forested Riparian		Chinook Salmon	Steelhead	Bull Trout
Glass Hill Alternate Corridor Segment	Union County, OR	Upper Grande Ronde	17060104	5.3	Graves Creek	Perennial	Forested	None	None	Spawning		x	
				6.6	Rock Creek	Perennial	Shrub	None	None	Spawning		x	
Proposed Corridor	Umatilla County, OR	Umatilla	17070103	72.9	Birch Creek	Perennial	Forested	0.7	0.7	Spawning		x	
				75.9	Little McKay Creek	Intermittent	Shrub	0.1	None	Historical		x	
				84	McKay Creek	Perennial	Forested	2.5	2.5	Historical		x	
	Union County, OR	Upper Grande Ronde	17060104	102.7	Dry Creek	Perennial	Forested	None	None	Spawning		x	
				107.7	Grande Ronde River	Perennial	Forested	None	None	Spawning/Rearing	X	x	X
				109.9	Graves Creek	Intermittent	Forested	None	None	Spawning		x	
				110.1	Rock Creek	Perennial	Shrub	None	None	Spawning		X	
				110.8	Sheep Creek	Perennial	Forested	None	None	Spawning		X	
				117.1	Tributary to Rock Creek	Intermittent	Forested	None	None	Spawning		X	
				122.4	Ladd Creek	Perennial	Forested	None	None	Historical		X	

[1] Riparian areas are defined as one site-potential tree height in forested areas, and the 100-year floodplain in non-forested areas.
[2] Chinook salmon, steelhead, and bull trout are all listed as threatened under the federal Endangered Species Act.
HUC = Hydrologic Unit Code; MP = milepost

Riparian Vegetation Removal

Removal of riparian vegetation can have several potential adverse effects to aquatic systems, including an increase in erosion, reduced filtration of run-off, destabilization of stream banks, reduction of stream shade, reduced input of important terrestrial food source (i.e., allochthonous input), and a decrease in the availability of LWD. Riparian vegetation loss would initially occur during construction; however, ongoing vegetation maintenance in forested habitats would result in a permanent loss of trees within the Site Boundary of the transmission line. As this Project crosses through mostly low lying shrubland vegetation, and forested/woodland habitats are mostly located in the Blue Mountains region, removal of trees in riparian areas is expected to be low. Furthermore, in areas spanned by the transmission line, trees would not be removed as long as the height of the tree (once mature) would not come within 50 feet of the wires (see Attachment P-5, draft Vegetation Management Plan, in Exhibit P). Construction of new access roads across forested riparian areas would, however, result in removal of trees within the extent of the road bed. These roads would typically consist of a 14- to 16-foot-wide cleared areas on flat ground, but may be up to 30 feet wide in some sloping areas to accommodate cut or fill; however, no new road crossings are proposed for any fish bearing streams (as all proposed crossing of fish bearing streams would utilize existing access roads).

Stream temperature can be affected by removal of streamside vegetation. Cool stream temperatures are required for proper completion of life cycle functions of salmon and trout in Northwest streams. Warm water temperatures can limit rearing, spawning, egg incubations, and migration of salmon and trout (ODEQ 1995; McCullough 1999; McCullough et al. 2001; Sauter et al. 2001; Ecology 2002; EPA 2003). For example, the maximum temperature in the short-term (i.e., less than a week) that may cause direct mortality of salmon and trout range from about 71.6 to 78.8°F (22 to 26°C) depending on the species (EPA 2003; Ecology 2002; ODEQ 1995). Regarding bull trout specifically, under laboratory conditions, bull trout mortality has been documented in less than 24 hours when bull trout are exposed to temperatures of 26°C or more (Selong et al. 2001). Fatal temperature limits for Chinook have been recorded at 25ºC (acclimation temperature 20 and 24°C) by Brett (1952), and 24.9°C (acclimation temperature 21.1°C) by Orsi (1971). Hicks (2000) recommended that daily maximum temperatures remain below 19° to 20°C to prevent directly lethal conditions to steelhead. Furthermore, rearing habitat quality may be reduced when temperature exceeds 12 to 20°C for extended periods, depending on species and food availability (EPA 2003), and bull trout do not typically utilize habitats where the water temperatures exceed 15°C.

Temperature changes from loss of riparian vegetation are likely to be varied among streams. Generally, the larger the relative area exposed to solar radiation, the greater the magnitude of temperature change. Total temperature change across a cleared area, however, would be greater in smaller streams than in larger ones, due largely to shallower depth and lower volume of water in smaller streams. However, as most of the riparian areas in the analysis area currently consist of shrubs and grasses, and much of this vegetation would not be permanently cleared by the Project, retained streamside vegetation is likely suitable to maintain adequate shade and would prevent temperature increases. DeWalle (2010) examined models of the effect of buffer height, width, and vegetation density on maintaining adequate shade on streams. He concluded that for a moderate to high density of canopy thickness, a ratio of buffer height to stream width of five would maintain adequate stream shade. This suggests that streams in the range of about 3 to 7 feet wide, with a vegetation buffer of 15 and 35 feet high or wide, may be adequately buffered to maintain temperature if the density of vegetation is high, indicating even a moderate retention of vegetation could help moderate stream water temperatures crossed by the Project. As a result, Project actions would not likely result in a substantial temperature increase that could result in a biological effect at most locations that contain fish resources.

Turbidity and Sedimentation

The clearing of vegetation, installation of culverts, as well as the presence and use of access roads can increase the input of sedimentation into adjacent waterbodies. Salmon and trout species have been shown to be very sensitive to elevated levels of suspended sediment, turbidity, and fine accumulation to stream bottoms (Spence et al. 1996; Meehan 1991; Anderson et al. 1996; Lloyd et al. 1987; Newcomb and Jensen 1996; Servizi and Martens 1992; Bisson and Bilby 1982; Sigler et al. 1984; Hicks et al. 1991). Increased turbidity and sedimentation can impact fish behavior and physiological processes (e.g., blood chemistry, gill trauma, immune system resistance), and can result in reduced growth, health, and an increase in the risk of mortality. Sediment entering the water column can be redeposited on downstream substrates, which could bury aquatic macroinvertebrates (an important food source for salmon and trout). Additionally, downstream sedimentation could impact spawning habitat, spawning activities, eggs, larvae, and juvenile fish survival, as well as benthic community diversity and health. Because the impacts of increased sedimentation and turbidity are typically limited to the period of work / soil disturbance, the duration of these impacts is expected to be relatively short. However, specific site characteristics including flow, substrate composition, relative disturbance, and other factors could extend the duration of construction related sedimentation. Construction of access roads across waterbodies and culvert installation, as well as any other in-water work, is typically a major contributor to waterbody sedimentation; however, no new access roads across fish-bearing streams are proposed for the Project. Use of existing access roads, soil disturbance adjacent to waterbodies, as well as clearing of vegetation in areas where the line would span waterbodies would, however, contribute to the risk of erosion and sedimentation.

Ritter (1984) developed a model estimating downstream distance and concentration of suspended sediment from construction of a pipeline from wet bottom trenching (i.e., a very significant form of stream bottom disturbance). This form of bottom disturbance is likely much greater than what would occur from normal stream crossing related to transmission line construction activities (including road and culvert construction). Transmission line disturbance is likely more similar to the “dry” crossing pipeline construction type, in which bottom disturbance is isolated from flowing water (e.g., empirical suspended sediment data by Reid et al. [2002] found that dry, open-cut pipeline installation produced about one-seventh the amount of sediment produced by wet cut pipeline methods). Adjusting the Ritter (1984) wet bottom trenching model for the lower suspended sediment concentration (in proportion to estimates for dry crossing method) suggests that noticeable increases in suspended sediment (e.g., over 20 milligrams per liter [mg/L]) would not likely occur within 100 feet downstream for small perennial streams and possibly about 200 feet for large perennial streams crossed by roads or transmission lines where actions actually disturb the stream bank or bottom. This estimate is likely still higher than what is likely to occur from most stream crossings that would occur as a result of the Project. It should be noted that turbidity levels (as measured in nephelometric turbidity units [NTUs]) are strongly correlated with suspended sediment levels (Lloyd et al. 1987; Rosetta 2005) and would follow similar patterns of change in magnitude.

Based on the above literature on construction effects at stream crossings, downstream sediment travel in streams is likely to be generally low. It is expected that effects would generally be limited to a few hundred feet below disturbances. Furthermore, IPC has developed measures to limit the risk of erosion and sedimentation; these measures are contained in the draft Reclamation and Revegetation Plan (Exhibit P, Attachment P-4), the draft Vegetation Management Plan (Exhibit P, Attachment P-5), and the Spill Prevention, Control, and Countermeasure Plan (see Exhibit P, Attachment P-6, draft Species Conservation Plan, as well as Exhibit J).

Fish Passage

Unrestricted access to habitat is important for both resident and anadromous salmonids. Upstream-migrating fish require access to suitable spawning gravel and juvenile fish must be able to disperse upstream and downstream to take advantage of available rearing habitat. If culverts are poorly designed, constructed, or maintained, they can affect the population of entire stream drainages. Currently, no culverts are proposed for fish-bearing streams and no new access roads across fish-bearing streams are proposed for this Project; however, if culvert installation is required, IPC would install all culverts in accordance with ODFW fish passage rules and approvals. In addition, culverts (if required) would be installed in accordance with BLM and USFS requirements on federally-managed lands (see Section 3.3.2). As a result of these requirements, recommendations, and project designs, the Project is unlikely to adversely affect fish passage.

Spills of Toxic Materials

Another potential impact to fish habitat during construction is the risk of hazardous materials entering surface water supplies. For example, petroleum products entering streams can have direct toxic effects to fish and indirect effects by impacting aquatic macroinvertebrates (i.e., a major food source for fish). With the use of heavy and light equipment within construction sites, there is the potential for spills of fuel and oils from storage containers, equipment working in or near streams, and fuel transfers. In addition, the construction of the tower footings would require the pouring of concrete. If wet concrete or concrete cleaning water enters streams, it could have an adverse effect on fish (e.g., stress or injury) and other aquatic organisms resulting from elevation of pH levels. Herbicides used near waterbodies (used to control invasive plant species) can leach into waterbodies, or run off into waterbodies during rain events. These herbicides can have adverse effects on fish species, resulting in reduced fitness or mortality.

To reduce the risk of oils, wet concrete, or wash water entering streams, IPC would follow the avoidance and minimization measures outlined in Spill Prevention, Containment, and Countermeasures (SPCC) Plan (see Exhibit P, Attachment P-6, draft Species Conservation Plan, as well as Exhibit J, which contains some of the preliminary measures that would be followed), which will developed by the project Engineering Procurement, and Construction contractor and submitted to ODOE prior to commencing construction of the Project. Both Attachment P-6 and Exhibit J contain measures that would prevent hazardous substances from entering fish-bearing streams. Use of herbicides would be restricted to applicable agency/landowner approved methods and herbicide types (see Exhibit P, Attachment P-4, draft Reclamation and Revegetation Plan; and Attachment P-6, draft Species Conservation Plan), which would include restrictions on where herbicides could be used (e.g., restriction on use near waterbodies).

Fish Salvage

Fish salvage (i.e., removal or exclusion of fish from an area) is often necessary during installation of culverts in perennial streams. Potential adverse effects of fish salvage include fish injury, stress, and direct mortality. Injury and stress could result in the individual fish becoming more susceptible to infection or predation, thereby resulting in mortality. However, as no culvert installation is currently proposed for fish-bearing streams, no fish salvage is expected to occur for this Project.

Middle Columbia River Steelhead

Background

The Middle Columbia River steelhead DPS is listed as threatened under the federal ESA.

Critical habitat for Middle Columbia River steelhead includes stream channels in the designated streams with lateral extent up to the ordinary high water line or bankfull elevation; lakes to the perimeter of the waterbody or ordinary high water (whichever is greater); and estuarine and nearshore marine areas contiguous with the shoreline at extreme high water out to a depth no greater than 98 feet relative to mean low water, where these fish occur (70 Federal Register 52630). The PCEs are: 1) freshwater spawning sites (spawning, incubation, and larval development), 2) freshwater rearing sites (with physical and biological properties to support juvenile development), 3) freshwater migration corridors (with physical and biological properties to support juvenile and adult movements), 4) estuarine areas (with physical and biological properties to support smoltification, juvenile and adult growth and survival), 5) nearshore marine areas (with physical and biological properties to support growth and survival), and 6) offshore marine areas (with physical and biological properties to support growth and survival). Critical habitat would be crossed by the Project along Birch Creek. The mainstem Umatilla River and Meacham Creek also have critical habitat, but these are located downstream of the corridor and would not be crossed by the Project.

Habitat

The Middle Columbia River steelhead are summer run fish, with the exception of the Klickitat River which has both summer and winter runs. Most Middle Columbia River juveniles become smolts at age 2, and spend 1 to 2 years in saltwater before returning to freshwater where they may remain up to a year prior to spawning (Busby et al. 1996). Downstream entry into the Middle Columbia River by summer steelhead varies somewhat by system; entry to the John Day River begins about August and extends through May, which may be similar to entry to the Umatilla (which is the closest system timing reported; Busby et al. 1996). Upstream migration within the rivers also varies, with peak movement in the Umatilla from September through mid-June (ODFW 2011b). Adults remain in the river system until spawning occurs the following spring (late February to early June; ODFW 2011b). Incubation and emergence occurs from about mid-February into early July for the Umatilla mainstem (ODFW 2011b). Smolt outmigration occurs in February through June in the Umatilla mainstem (ODFW 2011b).

Threats

Threats to this DPS and causes for its listing include water diversion for agricultural use, hydropower development on the Columbia River, hatchery introgression, predation, and harvest both within their natal rivers and the Columbia River (NMFS 1996). Additional locally adverse conditions include water quality concerns, impassable barriers, habitat quality and complexity, and flow regime modification. Many eastside Umatilla River system waterbodies have been listed as temperature impaired, with water in some tributaries exceeding 70°F during the summer. This species recovery plan (NMFS 2009) noted the following as the current major limiting factors and threats for recovery for the Umatilla River system: 1) degraded tributary habitat from elevated sediment and increased temperature blocking passage, degraded floodplain and channel structure; 2) hatchery effects from out of basin strays; 3) predation/competition/disease both with local (resident fish) and outside (mainstem and estuary) fish; and 4) mainstem Columbia River passage issues including delay and direct mortality.

Occurrence

Abundance of the DPS has changed markedly over time. Historical run size to the Columbia River was estimated to be about 300,000 fish, but by the late 1980s was estimated at only 39,000 wild fish (Busby et al. 1996). By the time of listing in 1999, the populations remained considerably below historical levels, especially in the major river systems including the Yakima, John Day, and Deschutes (64 Federal Register 14517). However, there have been substantial population increases in recent years (71 Federal Register 834). Based on a 2005 status review, returns to the Umatilla basin have increased relative to the previous analysis (Good et al. 2005).

Steelhead abundance in the Umatilla remains relatively low at about 65 percent of the interim recovery targets, but returns have generally improved since 1999.

The major river systems in which this DPS are found include the Yakima, Umatilla, John Day, Deschutes, Fifteen Mile Creek, Touched, and Klickitat rivers; with the largest producer of DPS (at the time of listing) including the Deschutes, John Day, and Klickitat rivers (Busby et al. 1996). Summer steelhead are present at the proposed crossing of Birch Creek within the Umatilla River system (see Table Q-3).

Potential Adverse Effects

This species does occur within the analysis area; therefore, potential adverse impacts are possible. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for the bull trout.

Snake River Basin Steelhead

Background

The Snake River Basin steelhead DPS is listed as threatened under the federal ESA (71 Federal Register 834).

Critical habitat for Snake River Basin steelhead has the same functional definition as for the Middle Columbia River steelhead (see discussion above) relative to extent of marine, estuarine, and stream channel water levels (70 Federal Register 52630). The PCEs are also the same, and include spawning, freshwater rearing, migration corridor, estuarine, and offshore marine habitat. The transmission line would span this designated critical habitat at five streams (one crossing at each stream), including the Grande Ronde River, and Dry, Graves, Rock, and Sheep creeks. In addition, Graves and Rock creeks are each crossed by access roads associated with the Proposed Corridor (see Table Q-3); however, no road crossings associated with alternate corridor segments cross steelhead's critical habitat.

Habitat

The Snake River Basin steelhead are summer-run fish, with what is known as "A" and "B" runs that are based on time of river entry, with the A run beginning in May and the B run beginning in July (Busby et al. 1996). Juveniles of the Snake River system typically smolt at age 2, with some fish smolting at age 3. A and B runs typically spend 1 and 2 years, respectively, in saltwater before returning to freshwater where they may remain up to a year prior to spawning (Busby et al. 1996). Summer steelhead entry varies somewhat by system (Busby et al. 1996). Upstream migration in the upper Grande Ronde River occurs from mid-February through April (ODFW 2011b). Adults remain in the river system until spawning occurs, which in the Grande Ronde River is April and May (ODFW 2011b). Incubation and emergence occurs from April through June in the Grande Ronde (ODFW 2011b). Smolt outmigration occurs any month of the year in the Grande Ronde (ODFW 2011b) although most outmigration of steelhead smolts in the Snake River System occurs from April through June.

Threats

Threats to this DPS and causes for its listing include logging, water diversion for agricultural use, hydropower development on the Columbia and Snake rivers, hatchery introgression, habitat blockages, mining, as well as sport, commercial, and tribal harvest (NMFS 1996). Adverse conditions related to the Grande Ronde area include water quality concerns, habitat quality and complexity, and flow regime modification. Many eastside Grande Ronde River system waterbodies have been listed as temperature impaired, with water in some tributaries exceeding 70°F during the summer. A recovery plan that includes the Washington State portion of the Grande Ronde River (NMFS 2009) noted the current major threats and limiting factors for

this recovery region, including: 1) degraded stream habitat from elevated sediment, reduced flow and increased temperature, decreased riparian conditions, and lack of channel function and form; 2) mainstem Columbia and Snake river passage issues including migration delay and direct mortality of adult and juveniles, gas super saturation, and predation; 3) potential cross of hatchery fish with native fish in spawning areas; and 4) outside habitat conditions (mainstem, estuary, and ocean) (NMFS 2006).

Occurrence

Historical estimates of total natural run size of the Snake River steelhead DPS are not available, but half of the Columbia Basin steelhead production is believed to occur in the Snake River system (Good et al. 2005). Counts over a dam on the lower Clearwater River were 40,000 to 60,000 in the 1960s, and runs in the Salmon River system were substantial at that time. The Grand Ronde River had escapement of more than 15,000 in the 1960s (Good et al. 2005). A 5-year average escapement over Lower Granite Dam on the Snake River just prior to the 2006 listing was only 9,400 natural steelhead (Busby et al. 1996). In recent years, however, there have been substantial population increases (71 Federal Register 834). Based on a 2005 status review, returns to the Upper Grande Ronde River have generally increased relative to the early 1990s (Good et al. 2005). Interim target abundance for a monitored tributary in the upper Grande Ronde River has been averaging 1,547 fish, which is greater than the 1,400 fish interim recovery target number.

This DPS of steelhead is found in the Washington, Idaho, and Oregon regions of the Snake River basin and is present in major Snake River tributaries downstream of Hells Canyon Dam including the Salmon, Clearwater, Tucannon, Imnaha, Wallowa, and Grande Ronde rivers (Busby et al. 1996). Additionally, six artificial propagation programs are considered part of this DPS (71 Federal Register 834); however, none of these are in the Grande Ronde River Basin. In the Grande Ronde system, the DPS is present at several stream crossings along the Proposed Corridor including the Grande Ronde River and Dry, Graves, Rock, and Sheep creeks. According to StreamNet, all crossings are considered spawning and rearing habitat. Graves and Rock creeks, where steelhead are known to be present, are crossed by some of the Project roads (see Table Q-3). Project activities may affect the DPS in the Grande Ronde system.

Potential Adverse Effects

This species does occur within the analysis area; therefore, potential adverse impacts are possible. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for the bull trout.

Snake River Chinook (Spring/Summer Run)

Background

The Snake River spring/summer-run Chinook salmon ESU is listed as threatened under the federal ESA (70 Federal Register 37160), and is also state-listed as threatened by Oregon.

Critical habitat for Snake River spring/summer-run Chinook salmon has the same functional definition as the Middle Columbia River steelhead (see discussion above) relative to extent of marine, estuarine, and stream channel water levels (70 Federal Register 52630). The PCEs are also the same, including spawning, freshwater rearing, migration corridors, estuarine, and offshore marine habitat. The only designated critical habitat crossed by the Project is the main channel of the Grande Ronde River.

Habitat

The Snake River Basin spring/summer-run Chinook salmon has both race types in the basin. Generally, the spring run begins passing dams on the Columbia River system in early March through early June while the summer run begins in June extending through August (Good et al. 2005). The smolts are considered "stream type," typically spending a year in freshwater before migrating out to the ocean in the spring of their second year. The Grande Ronde River has only spring-run fish. Most adults in the Grande Ronde system return primarily as 4 year olds, spending 2 years in the ocean (Myers et al. 1998). Upstream migration of this ESU within the Snake River system also varies, ranging from late March through July depending on the system. For Grande Ronde River spring-run Chinook salmon, upstream migration occurs from April through mid-July (Myers et al. 1998). Holding may span April through September, and spawning in the Grande Ronde River occurs from mid-August through September (ODFW 2011b). Incubation and emergence occurs from about mid-August through March (ODFW 2011b). Downstream juvenile fish movement may extend from September through mid-May (ODFW 2011b), with migration to the ocean accruing March through May (Nowak 2004).

Threats

Threats to this ESU and causes for its listing include water withdrawal and irrigation, timber harvest, road construction, livestock grazing, mining, major hydroelectric development on the Columbia and Snake rivers, freshwater predation from native and non-native organisms (especially at dams), marine predation, and several natural factors like ocean conditions (e.g., decadal cycle) and global factors like climate change (NMFS 1998). Adverse conditions related to the Grande Ronde area include water quality concerns, habitat quality and complexity, and flow regime modification. A recovery plan that includes only the Washington State portion of the Grande Ronde River for all listed fish in the region (NMFS 2009) noted the following current major threats and limiting factors for recovery of the lower Snake River system: 1) degraded stream habitat from elevated sediment, reduced flow and increased temperature, decreased riparian conditions, and lack of channel function and form; 2) mainstem Columbia and Snake river passage issues including migration delay and direct mortality of adults and juveniles, gas super-saturation, and predation; 3) potential cross of hatchery fish with native fish in spawning areas; 4) and outside habitat conditions (mainstem, estuary, and ocean) (NMFS 2009).

Occurrence

Abundance has decreased from historical levels; however, as noted in the 2005 status review, there had been recent increasing trends in the later 1990s period, and a large increase in 2001 (Good et al. 2005). The historical run size to the Snake River basin is not known, but is thought to be about 40 percent of the total spring/summer run of the Columbia River system production, which may have been about 1.5 million fish per year (Good et al. 2005). The average 5-year return (1997–2001) over Lower Granite Dam has been 3,700 spring- and 6,000 summer-run fish, respectively (Good et al. 2005). The Grande Ronde River had one of the higher short-term increases in production rate over this ESU's range, although total escapement to the upper basin remains low.

The only location where this ESU would be present in the analysis area is in the mainstem Grande Ronde River. None of the local tributaries are considered habitat for this species (StreamNet 2011). The mainstem Grande Ronde is a migration and rearing corridor and not a spawning area for Chinook salmon (SteamNet 2011).

Potential Adverse Effects

This species does occur within the analysis area; therefore, potential adverse impacts are possible. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for the bull trout.

3.3.1.3 Plants

Cronquist's Stickseed

Background, Habitat, and Threats

Cronquist's stickseed is state-listed as threatened in Oregon. This perennial species is in the borage family and resembles the common garden forget-me-not (*Myosotis sylvatica*). It can grow between 6 inches and 2 feet tall. This plant has hairy branched stems and relatively large evergreen basal leaves up to 8 inches long; stem leaves are smaller than basal leaves (ORNHIC 2010a). Flowers are white tinted with blue, and are present in May; seeds mature in June. This plant occurs in Malheur and Baker counties where it grows in shrub-steppe habitat on sandy, north-facing slopes (ORNHIC 2010a). Habitat loss and degradation via grazing and urban/rural developments have adversely affected this species. Herbicide use, as well as altered fire regimes resulting from invasions by fire-prone exotic weeds, also likely contribute to the current threats to this species (ODA 2011).

Occurrence

There are multiple occurrences of Cronquist's stickseed along the portion of the analysis area located in Malheur County (based on existing databases); and 11 occurrences of this species were detected in Malheur County during surveys of the analysis area. Some of the known occurrences (based on existing databases) are located within the currently proposed disturbance footprint[4] of the Project (see Table Q-4).

Table Q-4. Populations of Federal or State Listed Plant Species Located within the Project's Currently Proposed Disturbance Footprint (based on existing databases and survey data)

Facility	Disturbance Type	Cronquist's Stickseed	Laurence's Milk-Vetch	Mulford's Milk-Vetch	Snake River Goldenweed
Proposed Corridor and Substation	Existing Access Road Needing Improvement	2[1]	4[2]	-	5[3]
	Existing Access Road Needing Improvement and Other Disturbance Types	-	-	-	7[2]
	New Access Road	2[1]	-	-	1[3]
	Tower Base	-	-	-	-
	Work Areas	1[1]	1[3]	-	3[2]
	Multiple Disturbance Types Not Including Existing Access Roads	2[1]	-	1[1]	-
Proposed 138/69-kV Rebuild	Existing Access Road Needing Improvement	-	-	-	1[1]
	New Access Road	-	-	-	1[3]

[4] The disturbance footprint consists of all areas that would be disturbed during construction of the Project; this is not the same thing as the Site Boundary which includes areas that would not be directly disturbed.

Table Q-4. Populations of Federal or State Listed Plant Species Located within the Project's Currently Proposed Disturbance Footprint (based on existing databases and survey data) (continued)

Facility	Disturbance Type	Cronquist's Stickseed	Laurence's Milk-Vetch	Mulford's Milk-Vetch	Snake River Goldenweed
Proposed 138/69-kV Rebuild (cont.)	Tower Base	-	-	-	1[3]
	Work Areas	-	-	-	1[1]
	Multiple Disturbance Types Not Including Existing Access Roads	-	-	-	1[1]
Malheur S Alternate Corridor Segment	Existing Access Road Needing Improvement	1[1]	-	1[1]	-
	New Access Road	1[1]	-	-	-
	Tower Base	1[3]	-	-	-
	Multiple Disturbance Types Not Including Existing Access Roads	2[1]	-	-	-
Double Mountain Alternate Corridor Segment	New Access Road	-	-	-	-
	Tower Base	-	-	-	-
	Work Areas	-	-	-	-
	Multiple Disturbance Types Not Including Existing Access Roads	1[1]	-	-	-
Willow Creek Alternate Corridor Segment	Multiple Disturbance Types Not Including Existing Access Roads	-	-	-	1[1]

[1] Values from existing databases.
[2] Values from both existing databases and Project-related surveys.
[3] Values from Project-related surveys.

Potential Adverse Effects

This species was detected during Project surveys, and there are known occurrences (based on existing databases) within the analysis area. Therefore, this species does occur within the analysis area, and adverse impacts could be possible without proper avoidance and minimization. If construction activities were allowed to occur within areas occupied by Cronquist's stickseed, this species would experience direct mortality via crushing, burial, or grubbing. Soil disturbance could promote the spread or establishment of invasive plant species, which could compete with and eventually exclude Cronquist's stickseed from the area. Furthermore, Project-related control and treatment of invasive plant species (e.g., weed removal and/or use of herbicides) can result in collateral damage to non-targeted species if conducted improperly. Invasive plant species can also increase the risk of fires, which can adversely affect federally- or state-listed plant species. In addition, without proper construction and restoration techniques, soil disturbance could result in erosion, thereby reducing or eliminating habitat quality for federally- or state-listed plant species. However, these potential impacts would be avoided and/or minimized by the measures discussed below as well as in Section 3.3.2.

In order to prevent direct impacts from occurring to federally- or state-listed plant species, preconstruction surveys would be conducted and all known and newly identified occurrences (based on existing databases as well as survey results) would be avoided by micro-siting Project components away from occupied areas whenever practical (disturbances would be excluded within buffer distance recommended by the ODA). It is anticipated that the placement of newly proposed developments (e.g., new access roads, fly yards, tower locations) could be adjusted to avoid directly impacting federally- or state-listed plant species occurrences; however, it would be much harder to avoid plants that are located along existing disturbances (e.g., existing access roads that would be improved as part of the Project). For example, re-routing an existing road in order to avoid a sensitive plant species could result in additional impacts to other sensitive resources due to the construction of a new road-bed as opposed to utilizing an existing road-bed. As shown in Table Q-4, most of the occurrences of Cronquist's stickseed located within the currently proposed disturbance footprint are in areas where the Project alignment could be micro-sited to avoid these occurrences (e.g., new access roads, fly yards, tower locations); however, two occurrences along the Proposed Corridor and one occurrence along the Malheur S Alternate Corridor Segment are located along an existing access road that would need improvement. If avoidance of these occurrences cannot be achieved during the road improvement, impacts would be minimized by the measures discussed in Section 3.3.2 as well as the draft Species Conservation Plan (see Exhibit P, Attachment P-6). In addition, topsoil in all disturbed areas (including suitable habitats for federally- or state-listed plant species where no detections of these species have occurred) would be stored separately from subsoil layers and would be restored back to the area from which it was removed (thereby conserving the soil-stored seedbank; see Section 3.3.2).

Some indirect impacts to federally- or state-listed plant species could occur even if the plants are avoided during construction. Indirect impacts could include soil erosion, spread of invasive weeds, and alteration of fire regimes. The avoidance, minimization, and mitigation measures discussed in Section 3.3.2 would be implemented to reduce the risk and magnitude of indirect impacts to federally- or state-listed plant species.

Cusick's Lupine

Background, Habitat, and Threats

Cusick's lupine is state-listed as endangered in Oregon. This perennial in the pea family grows in open, arid areas on ash deposits; it is typically found growing among dense sagebrush and on nearly unvegetated slopes (ORNHIC 2010a). This lupine typically grows to approximately 15 inches tall with a somewhat matting habit; it has crowded racemes of white to bluish flowers (Hitchcock et al. 1961). Cusick's lupine flowers in mid-June. Cusick's lupine's small population size and potentially low genetic variability exposes this species to an increased risk of extirpation resulting from stochastic events (e.g., disease or poor growing years). Additional risks to this species include off-road vehicle use, grazing by livestock, and losses due to native herbivores (ODA 2011).

Occurrence

There are only 5 known populations of Cusick's lupine, all of which are found in a specific area of Baker County, Oregon (BLM 2009), which is located outside of the analysis area. Therefore, there are no known occurrences of Cusick's lupine within the analysis area, and this species was not detected during Project surveys.

Potential Adverse Effects

Potential impacts to this species are highly unlikely to occur, as it is not known or suspected to occur within or near the analysis area. However, if it was to occur in the analysis area, potential

impacts as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Golden Buckwheat

Background, Habitat, and Threats

Golden buckwheat is state-listed as threatened in Oregon. This woody perennial herb grows in a matted form, close to the ground. The leaves are clustered on basal off-shoots, and are covered on both surfaces with dense wooly hairs. Clusters of capitate yellow flowers bloom from June through September (OSU 2010). This species grows in sparsely vegetated areas with a basalt rock substrate between 4,200 and 4,500 feet in elevation (OSU 2010). Threats to this species include habitat degradation resulting from off-road vehicle use, grazing, and trampling by livestock (ODA 2011).

Occurrence

Golden buckwheat is found in two counties in Oregon, including Malheur County (ORNHIC 2010b); however, there are no known occurrences of golden buckwheat within the analysis area. Furthermore, this species was not detected during Project surveys, indicating that it may not be present in the analysis area; however, suitable habitat for this species (i.e., basalt rocky barren areas with in Malheur County) does occur within the analysis area.

Potential Adverse Effects

As there are no known records of this species within the analysis area, and it was not detected during surveys, it is possible that golden buckwheat does not occur in this area. However, as suitable habitat for this species does occur in the analysis area it is also possible that this species occurs in this area but has simply not been detected to date, indicating that adverse impacts are possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Howell's Spectacular Thelypody

Background, Habitat, and Threats

Howell's spectacular thelypody was included as a federally threatened species under the federal ESA in June 1999 (64 Federal Register 8393). This species is also state-listed as endangered in Oregon. This plant is a biennial forb in the mustard family that can grow to 2 feet tall. It has a basal rosette of leaves that are approximately 2 inches long with wavy edges; the stem leaves are smaller and do not have wavy margins (ODA 2008). This plant is found in alkali meadows that are seasonally wet in the spring and at an elevation between 3,000 and 3,500 feet. Typically, Howell's spectacular thelypody habitat includes areas that have not been disturbed by agriculture and are dominated by basin wildrye (*Leymus cinereus*) with greasewood (*Sarcobatus vermiculatus*) and alkali saltgrass (*Distichlis stricta*; FWS 2002). It has been found in Union, Baker, and Malheur counties; documented populations are located in the Baker-Powder Valley and the Willow Valley. Of the 11 documented populations, only 2 are protected (FWS 2002). The habitat of Howell's spectacular thelypody has been disturbed primarily for agriculture uses although grazing, invasive species, and other human activities also threaten the species. This biennial species is short-lived and depends on frequent seed production for its continued survival. This species also needs adequate moisture to thrive; therefore, droughts can have adverse impacts to the species (CPC 2010).

Occurrence

There are several occurrences of Howell's spectacular thelypody within the portion of the analysis area located in the North Powder and Baker Valley areas; the closest occurrence is 0.5

mile from the Site Boundary (based on existing databases). There is also an occurrence of this species within 5 miles of the Flagstaff Alternate Corridor Segment, with the closest occurrence located 3.5 miles from the Site Boundary (based on existing databases). However, these known occurrences are all located outside of the currently proposed disturbance footprint. Furthermore, this species was not detected during Project surveys.

Potential Adverse Effects

Although this species was not detected during Project surveys, there are known occurrences (based on existing databases) within the analysis area, and suitable habitat is present. Therefore, Howell's spectacular thelypody may occur within areas potentially affected by the Project and adverse impacts could be possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Laurence's Milk-Vetch

Background, Habitat, and Threats

Laurence's milk-vetch is state-listed as threatened in Oregon. Laurence's milk-vetch is a perennial between 4 and 20 inches tall with branched leaflets that are pinnately compound. Blooming of cream or yellow flowers occurs in May through July, and they develop pendulant seed pods between June and August. Laurence's milk-vetch is often found along the edges of streams or roadsides adjacent to cultivated land in areas with loess deposits, although it may also be found growing in coarser substrates; it occurs in bluebunch wheatgrass (*Pseudoroegneria spicata*)–Idaho fescue (*Festuca idahoensis*) dominated grasslands (ORNHIC 2010a). As this species is dependent on pollinators to produce seed and cannot self-fertilize, it is sensitive to impacts/losses that occur to its pollinators. Furthermore, this species is sensitive to habitat loss and degradation resulting from agricultural development, grazing, road maintenance activities, and invasions by exotic weeds, as well as seed predation by insects (ODA 2011).

Occurrence

Laurence's milk-vetch is found in four counties in Oregon, including Morrow and Umatilla counties (ORNHIC 2010b). There are several occurrences within the portion of the analysis area located in Morrow and Umatilla counties (based on existing databases). Furthermore, this species has been found west of Pilot Rock Oregon (between Alkali Canyon and Slusher Canyon) during Project-specific sensitive plant surveys. As shown in Table Q-4, there are five occurrences within the currently proposed disturbance footprint, four of which are located within the disturbance footprint of existing access roads that would need improvements.

Potential Adverse Effects

This species is known to occur within the analysis area, based on both existing data as well as survey results. In addition, this species is located within the Project's currently proposed disturbance footprint (including three occurrences located along existing access roads). The potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Malheur Valley Fiddleneck

Background, Habitat, and Threats

Malheur Valley fiddleneck is state-listed as threatened in Oregon. This annual herb from the borage family grows between 4 and 8 inches tall. It has alternate, lanceolate leaves and bristly hairs located primarily on the leaves. Tubular yellow flowers bloom between April and June (OSU 2010). This species typically grows on rocky, sparsely vegetated slopes in the Owyhee

uplands of Malheur County, Oregon, near 2,740 to 3,100 feet in elevation (ORNHIC 2010a). This species is known to hybridize with the more common *Amsinckia tessellate*. Threats to this species include habitat loss and degradation resulting from grazing, invasion by exotic species, and mining developments (ODA 2011).

Occurrence

Six populations of Malheur Valley fiddleneck are known, all of which are located in eastern Oregon but are outside of the analysis area. There are no known occurrences of Malheur Valley fiddleneck within the analysis area (based on existing databases), and this species was not detected during Project surveys.

Potential Adverse Effects

Impacts to this species are unlikely to occur, as all known populations are located outside of the analysis area. However, if this species was to occur in the analysis area, potential impacts as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Mulford's Milk-Vetch

Background, Habitat, and Threats

Mulford's milk-vetch is state-listed as endangered in Oregon. This milk-vetch is a perennial herb with opposite leaflets and a terminal leaflet regularly spaced along the stem. Mulford's milk-vetch is 4 to 12 inches tall and flowers from late April through June. White flowers, which can age to yellow and are occasionally tinted purple, are clustered in racemes of 5 to 20 flowers. Pendulous seed pods are present from May through June (ORNHIC 2010a). It is commonly found at elevations between 2,100 and 2,800 feet along sandy, southerly facing ridges. Remaining populations are usually restricted to roadsides. This species was listed as endangered in Oregon because it is restricted to 29 known locations within a 460-square-mile area, none of which are currently protected (ORNHIC 2010a).

Occurrence

Mulford's milk-vetch is known to occur in Malheur County, Oregon (ORNHIC 2010b). There are several occurrences of Mulford's milk-vetch within the portion of the analysis area located in Malheur County (based on existing databases). There are three populations located within the Site Boundary for the Proposed Corridor and a single population within the Site Boundary for the Malheur S Alternate (based on existing databases). There are also several occurrences of this species within the Site Boundary for the Double Mountain Alternate Corridor Segment; the closest being less than 0.25 mile away. Furthermore, suitable habitat for this species (i.e., shrub-steppe or desert shrub located in Malheur County) occurs within the analysis area. As shown in Table Q-4, one known occurrence is located within the Project's disturbance footprint for the Malheur S Alternate (along an existing access road that needs improvement) and one known occurrence along the Proposed Corridor (located along disturbance footprints not related to existing access roads). However, this species was not detected during Project surveys.

Potential Adverse Effects

Although this species was not detected during Project surveys, there are known occurrences (based on existing databases) within the analysis area, and suitable habitat is present. In addition, two of the known occurrences are located within the Project's potential disturbance footprint (based on existing databases). Therefore, it is likely that Mulford's milk-vetch occurs within the analysis area, and adverse impacts could be possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Oregon Semaphore Grass

Background, Habitat, and Threats

Oregon semaphore grass is state-listed as threatened in Oregon. It is a perennial in the grass family that grows to 20 to 35 inches tall. It has slender rhizomes with purplish-red scales. Culms are erect with overlapping sheaths. The ligule is about 0.16 inch long, white, and lacerate. Leaf blades are erect, flat, 3 to 7 inches long, and abruptly narrowed into an acute apex. Flowering occurs in June, and seeds mature through mid-August (CPC 2010). This grass grows in shallowly inundated meadows between 2,450 and 3,950 feet in elevation. This species is known to have low seed viability and spreads predominantly by rhizomes, which may contribute to a limited genetic diversity (CPC 2010).

Occurrence

There are only two known populations of Oregon semaphore grass, including one in Union County (ORNHIC 2010b). There are several occurrences of Oregon semaphore grass within the portion of the analysis area located in Union County (i.e., individual occurrences from one population; based on existing databases), the closest occurrence is located 0.3 mile from the Site Boundary, and suitable habitat for this species (i.e., emergent wetlands in Union County) does occur within the analysis area. However, the known occurrences of this species are all located outside of the Project's disturbance footprint. Furthermore, this species was not detected during Project surveys.

Potential Adverse Effects

Although this species was not detected during Project surveys and its known distribution is restricted to two populations, there are known occurrences (based on existing databases) within the analysis area, and suitable habitat is present. Therefore, it is possible that Oregon semaphore grass occurs within areas potentially affected by the Project, and that adverse impacts are possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Packard's Mentzelia

Background, Habitat, and Threats

Packard's mentzelia is state-listed as threatened in Oregon. It is a small, upright annual with linear leaves. This species grows in barren, excessively dry ash deposits with unusually high amounts of potassium (CPC 2010). Single yellow flowers bloom from May to mid-June, after which the plant forms seeds and dies. This plant is known to occur from 2,900 to 5,900 feet in elevation in Malheur County, Oregon (ORNHIC 2010b). Threats to this species include habitat loss and degradation resulting from off-road vehicle use, road construction, mining developments, and invasion by exotic species (ODA 2011).

Occurrence

There are no known occurrences of Packard's mentzelia within the analysis area (based on existing databases), and it was not detected during Project surveys. Furthermore, this species grows in a specific soil type (i.e., ashy soil) not known to be present within the portion of the analysis area located in Malheur County; therefore, this species is unlikely to occur in the analysis area.

Potential Adverse Effects

Potential impacts to this species are highly unlikely to occur, as it is not known to occur within or near the analysis area and suitable habitat is not likely to occur in this area either. However, if

this species was to occur in the analysis area, impacts, as well as the measures to reduce the risk of these impacts, would be similar to those described for Cronquist's stickseed.

Red-Fruited Lomatium

Background, Habitat, and Threats

Red-fruited lomatium is state-listed as endangered in Oregon. This small, perennial herb is in the carrot family and grows in the Blue Mountains on rocky slopes in coarse soil and in areas with a southerly or easterly aspect between 7,500 and 8,500 feet in elevation (USFS 2005). The red-fruited lomatium grows to a height of 7 inches, although its leaves are generally located close to ground level. Yellow or white flowers emerge in June, just prior to leaf emergence; red fruits are large and conspicuous. The primary threats to this species include impacts from mountain goats (e.g., grazing pressures, and crushing due to dust-wallowing by goats), as well as impacts related to recreational hikers (ODA 2011).

Occurrence

Red-fruited lomatium is known to occur within Baker County, Oregon, but there are no known occurrences of red-fruited lomatium within the analysis area (based on existing databases), and it was not detected during Project surveys. However, suitable habitat for this species does occur within the analysis area.

Potential Adverse Effects

As there are no known records of this species within the analysis area, and it was not detected during surveys, it is possible that red-fruited lomatium does not occur in this area. However, as suitable habitat for this species does occur in the analysis area it is also possible that this species occurs in this area but has simply not been detected to date, indicating that adverse impacts are possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Salt Heliotrope

Background, Habitat, and Threats

Salt heliotrope is state-listed as endangered in Oregon. It is a tap-rooted, short-lived perennial or annual herb in the borage family that grows in saline areas in dry, open forests, woodlands, and grasslands up to 6,700 feet in elevation (Calflora 2011). This succulent plant has only stem leaves and blue or white flowers in terminal racemes (Hitchcock and Cronquist 1973). Current threats to this species are uncertain.

Occurrence

There are several occurrences of salt heliotrope within the analysis area (based on existing databases). The closest occurrence is located 0.4 mile from the Site Boundary for the Flagstaff Alternate (based on existing databases). The closest occurrence to the Proposed Corridor is located 1.6 mile from the Site Boundary (based on existing databases). However, the known occurrences of this species are all located outside of the Project's disturbance footprint. Furthermore, this species was not detected during Project surveys.

Potential Adverse Effects

Although this species was not detected during Project surveys, there are known occurrences (based on existing databases) within the analysis area, and suitable habitat is present. Therefore, salt heliotrope may occur within areas potentially affected by the Project, and adverse impacts could be possible without proper avoidance and minimization. Potential

impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Smooth Mentzelia

Background, Habitat, and Threats

Smooth mentzelia is state-listed as endangered in Oregon. It is a small annual that may grow to a height of 2 to 4.5 inches. Blooming of yellow flowers clustered in a terminal head occurs in May and June. This species grows on nearly barren volcanic ash and clay soils, including montmorillonite. This plant is also adapted to very dry soils with high levels of potassium (CPC 2010). This species is found in the Succor Creek drainage in Malheur County, Oregon, at elevations around 4,500 feet. It is likely that smooth mentzelia populations are sensitive to climatic fluctuation, with drastic reductions in population sizes observed during drought years (ODA 2011); other threats to this species include impacts associated with off-road vehicle use, trampling by livestock, as well as habitat loss/degradation associated with invasion by exotic species and mining developments (ODA 2011).

Occurrence

There are several occurrences of smooth mentzelia within the portion of the analysis area located in Malheur County (based on existing databases). One known population of smooth mentzelia is located within the Site Boundary for the Proposed Corridor (based on existing databases); however, this known occurrence is located outside of the Project's disturbance footprint. Furthermore, this species was not detected during Project surveys.

Potential Adverse Effects

Although this species was not detected during Project surveys, there are known occurrences (based on existing databases) within the analysis area, and suitable habitat is present. Therefore, smooth mentzelia may occur within the analysis area, and adverse impacts could be possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Snake River Goldenweed

Background, Habitat, and Threats

The Snake River goldenweed is state-listed as endangered in Oregon. It is a robust perennial in the aster family that may grow between 15 and 35 inches tall. This species has a basal group of leaves with long petioles; the leaf blades may be almost 20 inches long and are broadly elliptical. The large yellow flower heads may be single or in corymbs, and typically bloom between June and September. This plant is only known to grow in the Snake River Canyon in northeast Oregon and Idaho at elevations ranging from approximately 1,950 to 7,900 feet (ORNHIC 2010b; eFloras 2010). Threats to this species include livestock grazing, seed predation by insects, and competition with exotic species (ODA 2011).

Occurrence

There are multiple occurrences of Snake River goldenweed within the portion of the analysis area located in Baker and Malheur counties (based on existing databases), and 11 occurrences were detected in Baker County during surveys. Furthermore, as shown in Table Q-4, multiple occurrences are located within the Project's disturbance footprint, some of which are located within the disturbance footprint of existing access roads that would need improvement.

Potential Adverse Effects

This species was detected during Project surveys, and there are known occurrences (based on existing databases) within the analysis area. In addition, these known occurrences are located within the Project's currently proposed disturbance footprint (including one occurrence located along an existing access road). Therefore, Snake River goldenweed may occur within areas potentially affected by the Project, and adverse impacts could be possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

Sterile Milk-Vetch (a.k.a. Cusick's Milk-Vetch)

Background, Habitat, and Threats

Sterile milk-vetch is state-listed as threatened in Oregon. It is a hairy, perennial forb that grows to approximately 2 to 6 inches tall (ORNHIC 2010a). The stems are stiff and thin with narrow, wiry, widely spaced leaves. This plant flowers and sets fruit between June and July. Each flowering stem has 2 to 5 white flowers that turn yellow as the flowers age. The pendulous seed pods are green with purple blotches. This species has a limited range, confined to the 30-mile length of the Owyhee River in Idaho and in Malheur County, Oregon (ORNHIC 2010a). Sterile milk-vetch grows in barren, sparsely vegetated areas on ash deposits (ORNHIC 2010a). There are 75 known occurrences of this species; of these, only 8 are protected.

Occurrence

Although this species was not detected during Project surveys, there are multiple occurrences of sterile milk-vetch the portion of the analysis area near the Owyhee Reservoir (based on existing databases). The closest occurrence is 0.6 mile from the Site Boundary for the Malheur S Alternate. However, none of these known occurrences are located within the Project's disturbance footprint.

Potential Adverse Effects

Although this species was not detected during Project surveys, there are known occurrences (based on existing databases) within the analysis area; however, quality habitat (i.e., ashy soils) is not present. Therefore, sterile milk-vetch may occur within the analysis area, and adverse impacts could be possible without proper avoidance and minimization. Potential impacts to this species as well as the measures to reduce the risk of these impacts would be similar to those described for Cronquist's stickseed.

3.3.2 Measures to Avoid and Reduce Adverse Impacts

OAR 345-021-0010(1)(q)(C)

For each species identified under (A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact

3.3.2.1 Avoidance and Minimization Prior to Construction

During initial routing of the Project, avoidance of sensitive resources was taken into consideration by IPC. Sensitive resources areas that were avoided to the extent practical during the initial siting process included, but were not limited to, BLM-designated areas of critical environmental concern (ACECs), BLM-designated wilderness study areas, all waterbodies (including wetlands, wild and scenic rivers, special status streams), ESA-listed critical habitats, areas with sensitive wildlife resources (e.g., sage-grouse leks, Washington ground squirrel colonies, raptor nests), visually sensitive areas (e.g., USFS-designated visual resource retention and preservation lands), USFS-designated inventoried roadless areas, city and town boundaries, the Boardman Bombing Range, and irrigated cropland. Furthermore, the Project

was designed to follow existing developments and utility corridors, such as existing roads and power lines, to the extent practical, to consolidate impacts of the Project in areas that have already been disturbed as opposed to impacting undisturbed areas. IPC also conducted extensive public outreach, in the form of the CAP, as well as consulting with land-managing agencies regarding possible route locations for the Project. As avoidance of one sensitive resource can often result in the route becoming located within range of another sensitive resource (e.g., avoiding forested habitats can result in the route passing through shrubland habitats), input from the public and land-managing agencies has resulted in alternate corridor segments that weigh avoidance of one resource against another. Details regarding the siting process and the constraints considered during the development of the Proposed Corridor and alternate corridor segments are presented in the Project Siting Studies (IPC 2010, 2012; also Exhibit B, Attachments B-1 and B-2).

To prevent direct impacts from occurring to federal and state listed species, preconstruction surveys would be conducted and all known and newly identified occurrences (based on existing databases as well as survey results) would be avoided. Listed fish species would be assumed in all waters where their presence has been identified previously, and best management practices (BMPs) to minimize impacts to fish species would be implemented in all fish-bearing waters. Preconstruction surveys would aid in determining if any additional areas have become occupied by threatened or endangered species since the initial Phase 2 surveys.

All practical efforts would be made to avoid sensitive plants that are located along existing roads that need improvement (e.g., improvements may be able to avoid the plants if they are located along the road's outer shoulder; see the draft Species Conservation Plan found in Exhibit P, Attachment P-6 for more details); however, complete avoidance of these plants may not be possible (e.g., if the plant is growing on the inner shoulder or the middle or the travel path). For these instances, the affected plant would be transplanted to a new location outside of the disturbance footprint. Permission from the applicable management agency would be obtained prior to relocating the plant, if applicable (e.g., the FWS would be contacted prior to moving listed plants located on federally managed lands). In addition, as the likelihood of successfully transplanting these federal and state listed species plants is uncertain, seeds from these plants would also be collected and planted to new locations (if seeds are available at the time of construction) and portions of the soil-stored seedbank would be relocated as well. The location for transplanting as well as sowing of the collected seeds would be selected based on agency input as well as suitable on-site conditions (i.e., re-planting/sowing in suitable habitats that are not currently planned for future disturbance). It is assumed that the site for replanting and/or sowing would be in the general vicinity of the plant's original location. Furthermore, an incidental take permit (under the ESA) would be required for any federally listed plant located on federally-managed lands may be impacted by the Project.[5] A Public Land Action Permit would be required for any Oregon State–listed plant that is located on Oregon State–anaged lands that requires transplanting (based on current information, there is only one population of Snake River Goldenweed located on state-managed lands that may require relocation, and subsequently a Public Land Action Permit). The exact location, number, and species composition of listed plant species within the Project area would be determined during preconstruction surveys.

3.3.2.2 Avoidance and Minimization during Construction

To avoid and minimize impacts to sensitive wildlife and fish species during construction, all agency-required spatial and timing restrictions would be followed on the lands that they manage unless the agencies approve an exception (see Exhibit P, Attachment P-6). These restrictions

[5] Based on current information, there are no federally-listed plant species located on federally managed lands that would require transplanting.

have been designated by federal and state agencies for various resources, and include restrictions on when and where disturbance activities can occur. Adherence to these agency required spatial and timing restrictions would minimize the potential impact of Project related disturbances to sensitive resources. The agencies would only approve an exception to these restrictions (through their established exception process) if they determine that activities would not impact the sensitive resource that year (e.g., the area is not utilized by the targeted resource during that season). Unlike the federal agency restrictions, for the most part the ODFW does not have required spatial and timing restrictions (with some exceptions), but instead provides recommended spatial and timing restrictions; IPC has taken these agency recommendations and guidelines (i.e., measures that are not legally required) into consideration when developing the draft Species Conservation Plan (see Exhibit P, Attachment P-6).

IPC will develop a set of maps that depict the extent of federal and state listed species within the Project area. These maps will be maintained at the Project site, and will show applicable buffer zones and temporal restrictions on disturbances near or within sensitive areas. Sensitive areas will be flagged on-site, when applicable (e.g., flagging of some areas may not be advisable due to the potential to attract predators to these flagged areas) to ensure avoidance during construction. Construction personnel will attend mandatory training on the importance of protecting sensitive resources, as well as the need to adhere to all applicable restrictions and permit requirements (see the Species Conservation Plan found in Exhibit P, Attachment P-6 for more details).

No culverts are proposed for installation within fish-bearing streams at this time. However, if culverts are needed, they would be installed in accordance with ODFW fish passage rules and would require ODFW approval, in order to minimize impacts to water and fish resources (see Exhibit J). On federally managed-lands, BLM and USFS requirements regarding culvert installation would also be followed (see Exhibit J).

Areas that are not needed for permanent Project maintenance and/or operation would be restored to preconstruction conditions, as described in Attachments P-4 and P-6 of Exhibit P. In addition, measures would be taken to minimize the introduction or spread of noxious- and invasive-plant species during construction. These revegetation efforts, as well as the measures to reduce the risk of noxious- and invasive-plant species introduction and/or spread are outlined in IPC's draft Reclamation and Revegetation Plan (Exhibit P, Attachment P-4).

Furthermore, BMPs and environmental protection measures (EPMs) would be implemented during construction to minimize erosion, reduce the risk of fire, minimize disturbance to wildlife, minimize harassment or accidental vehicular collisions with wildlife, as well as to ensure successful reclamation of temporarily disturbed areas following construction. These measures are listed in Exhibit P, Attachment P-4 (i.e., the draft Reclamation and Revegetation Plan) and Exhibit P, Attachment P-6 (the draft Species Conservation Plan).

3.3.2.3 Minimization and Mitigation during Operation

After construction is complete, IPC will restore the habitat to preconstruction conditions, as described in Attachments P-4 and P-6. Working conditions along the transmission line would also be maintained to minimize damage to the line and structures, and avoid interruptions in the delivery of power. IPC has developed BMPs and EPMs that would be implemented during the Project's operation, including measures to ensure successful reclamation of disturbed areas, reduce the risk of introducing or spreading noxious- and invasive-plant species, minimize unauthorized use of access roads, and requirements for reporting any wildlife mortalities to the applicable agencies. These measures are listed in the Draft Species Conservation Plan (see Exhibit P, Attachment P-6).

3.3.3 Potential Impacts to Plants Covered under a Conservation Program

OAR 345-021-0010(1)(q)(D)

For each plant species identified under (A), a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3)

Howell's spectacular thelypody is the only listed plant species found in Table Q-1 that has a protection or conservation program. The goals of this program are to investigate the biology and ecology of this rare plant using greenhouse studies and to perfect techniques for raising and replanting this species. Greenhouse-grown individuals were transferred to the wild to create seven new populations along Baldock Slough in Baker County, Oregon, and seeds were also sown. As of June 2008, all seven of these populations persist. The Project crosses Baldock Slough; therefore, the locations of these outplanting sites would be marked and avoided to prevent impacts to these plants. In addition, preconstruction surveys would be conducted to determine whether any locations of Howell's spectacular thelypody lie within the route, and any locations found would be avoided. Therefore, the new population sites established through this conservation program, as well as any natural populations of this species, are unlikely to be directly compromised by the Project. Potential indirect impacts would be avoided and minimized through implementation of the measures discussed in Section 3.3.2. As a result, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Howell's spectacular thelypody.

3.3.4 Potential Impacts to Plants without Conservation Programs

OAR 345-021-0010(1)(q)(E)

For each plant species identified under paragraph (A), if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species

None of the plant species in Table Q-1, except for the Howell's spectacular thelypody, are currently covered by a conservation program. If construction activities were allowed to occur within areas occupied by these species, plants would experience direct mortality via crushing, burial, or grubbing. In order to prevent direct impacts from occurring to federal and state listed plant species, preconstruction surveys would be conducted and all known and newly identified occurrences (based on existing databases as well as survey results) would be avoided by micro-siting Project components away from occupied areas whenever practical (disturbances would be excluded within the buffer distance required by the ODA). It is anticipated that the placement of newly proposed developments (e.g., new access roads, fly yards, tower locations) could be adjusted to avoid directly impacting federal and state listed plant species occurrences; however, it would be much harder to avoid plants that are located along existing disturbances (e.g., existing access roads that would be improved as part of the Project). For example, rerouting an existing road to avoid a sensitive plant species could result in additional impacts to other sensitive resources due to the construction of a new road-bed as opposed to utilizing an existing road-bed. If avoidance of federally- and state-listed plants located along existing roads cannot be achieved during road improvement, impacts would be minimized by the measures discussed in Section 3.3.2 (e.g., re-locating existing plants, or collecting seeds and replanting). To protect plants that may not be visible above ground during preconstruction surveys (e.g., those present in the soil stored seed-bank), cleared topsoil would be stored separately from subsoil layers, and would be restored back in the area from which it was removed. Therefore, mortality is not expected and direct impacts to listed plants are expected to be minimal. Indirect

impacts to federally- and state-listed plants could include soil erosion, spread of invasive weeds, and alteration of fire regimes. Measures would be implemented in order to avoid and minimize the effects of these potential indirect impacts (see Section 3.3.2).

3.3.4.1 Cronquist's Stickseed

Cronquist's stickseed was detected during surveys, and there are multiple known occurrences of this species within the analysis area (based on existing databases). Therefore, this species is likely present in areas potentially affected by the Project, and adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Cronquist's stickseed.

3.3.4.2 Cusick's Lupine

Cusick's lupine was not detected during surveys, and is suspected to only occur within five known populations, all of which are located outside of the analysis area. Therefore, it is likely that this species does not occur within the analysis area and no Project-related impacts to this species are expected to occur. As a result, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Cusick's lupine.

3.3.4.3 Golden Buckwheat

There are no known occurrences of golden buckwheat within the analysis area, and it was not detected during surveys; however, suitable habitat for this species does occur within the analysis area. Therefore, it is possible that this species occurs within the analysis area as well, but has not been detected by surveys to date; indicating that adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of golden buckwheat.

3.3.4.4 Laurence's Milk-Vetch

Laurence's milk-vetch was detected during Project surveys (in the vicinity of the Boardman Bombing Range and Pilot Rock), and there are multiple known occurrences of this species within the analysis area (based on existing databases and Project surveys). Therefore, adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Laurence's milk-vetch.

3.3.4.5 Malheur Valley Fiddleneck

Malheur Valley fiddleneck was not detected during surveys, and is suspected to only occur within six known populations, all of which are located outside of the analysis area. Therefore, it is likely that this species does not occur within the analysis area and no Project-related impacts to this species are expected to occur. As a result, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Malheur Valley fiddleneck.

3.3.4.6 Mulford's Milk-Vetch

Although Mulford's milk-vetch was not detected during surveys, there are multiple known occurrences of this species within the analysis area (based on existing databases). Therefore, this species may be present in areas potentially affected by the Project, and adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Mulford's milk-vetch.

3.3.4.7 Oregon Semaphore Grass

Although Oregon semaphore grass was not detected during surveys, there are multiple known occurrences of this species within the analysis area (based on existing databases). Therefore, this species may be present in areas potentially affected by the Project, and adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Oregon semaphore grass.

3.3.4.8 Packard's Mentzelia

Packard's mentzelia was not detected during surveys, and there are no known occurrences of this species within or near the analysis area. Furthermore, suitable habitat for this species is not known to occur within the analysis area. Therefore, it is likely that this species does not occur within the analysis area and no Project-related impacts to this species are expected to occur. As a result, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Packard's mentzelia.

3.3.4.9 Red-Fruited Lomatium

There are no known occurrences of red-fruited lomatium within the analysis area, and it was not detected during surveys; however, suitable habitat for this species does occur within the analysis area. Therefore, it is possible that this species occurs within the analysis area, but has not been detected by surveys to date; indicating that adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of red-fruited lomatium.

3.3.4.10 Salt Heliotrope

Although salt heliotrope was not detected during surveys, there are multiple known occurrences of this species within the analysis area (based on existing databases). Therefore this species may be present in areas potentially affected by the Project, and adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of salt heliotrope.

3.3.4.11 Smooth Mentzelia

Although smooth mentzelia was not detected during surveys, there are multiple known occurrences of this species within the analysis area (based on existing databases). Therefore, this species may be present in areas potentially affected by the Project, and adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of smooth mentzelia.

3.3.4.12 Snake River Goldenweed

Snake River goldenweed was detected during surveys, and there are multiple known occurrences of this species within the analysis area (based on existing databases). Therefore this species may be present in areas potentially affected by the Project, and adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Snake River goldenweed.

3.3.4.13 Sterile Milk-Vetch (a.k.a. Cusick's Milk-Vetch)

Sterile milk-vetch was not detected during surveys, however, there are known occurrences of this species near the analysis area. Therefore, this species may be present in areas potentially affected by the Project, and adverse impacts to this species are possible without proper avoidance and minimization. However, due to the proposed preconstruction surveys, the commitment to avoid or reduce impacts to all known or newly discovered plants, the segregation of topsoil to preserve soil-stored seedbanks, as well as the general BMPs and avoidance measures discussed in Section 3.3.2, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of sterile milk-vetch.

3.3.5 Potential Impacts to Wildlife

OAR 345-021-0010(1)(q)(F)

For each animal species identified under (A), a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

The potential Project impacts to each of the federally- and state-listed wildlife species identified in this Exhibit are discussed in Section 3.3.1. This section addresses the potential impacts of the Project on the likelihood of survival or recovery of each special status wildlife species or their federal ESA-designated critical habitats, when the avoidance and minimization measures discussed in Section 3.3.2 are also taken into consideration.

3.3.5.1 Gray Wolf

Gray wolves have not been detected within the analysis area to date; however, as they typically range over broad regions and are habitat generalists, it is possible that they could occur within the analysis area during Project construction, operation, and retirement. However, the Project would not impact habitats considered unique to wolf populations, and the likelihood that they

would occur in the general area is low. Furthermore, general avoidance and minimization measures would be implemented in order to limit the impact of the Project on wildlife and their habitats (see Section 3.3.2). Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of the gray wolf.

3.3.5.2 Washington Ground Squirrel

As discussed in Exhibit P, Washington ground squirrel colonies as well as a 785-foot buffer around the colony (restricted to suitable habitat) were classified as Category 1 habitats under the ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0025). IPC will attempt to avoid direct impacts to Category 1 habitat for the Washington ground squirrel. Potential indirect impacts of the Project include increased predation as a result of increased perching opportunities for raptors and ravens provided by the new transmission line. However, this impact would also be limited through the avoidance of all Category 1 squirrel habitats, and the fact that the Project is co-located with existing transmission lines near Washington ground squirrel colonies. Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of the Washington ground squirrel.

3.3.5.3 Special Status Fish Species (i.e., Bull Trout, Middle Columbia River Steelhead, Snake River Basin Steelhead, Snake River Chinook)

Federal- and state-listed fish species do occur within some of the waterbodies that would be crossed by the Project (see Table Q-3). Potential impacts to these species could result from the clearing of riparian vegetation, soil disturbance adjacent to waterbodies, potential alterations to fish movement due to culverts, the risk of toxins entering waterbodies, and the risk of injury or mortality resulting from fish salvage. However, impacts to these federally- and state-listed fish species and their federal ESA-designated critical habitat would be avoided and minimized through the measures discussed in Sections 3.3.1 and 3.3.2. As a result, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of the bull trout, Middle Columbia River steelhead, Snake River Basin steelhead, or the Snake River Chinook. If the Project's design is altered such that a listed fish species would be taken, IPC would obtain an incidental take permit (under the ESA).

3.3.6 Monitoring Plan

OAR 345-021-0010(1)(p)(G)

A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).

The draft Reclamation and Revegetation Plan (Attachment P-4 of Exhibit P) and draft Habitat Mitigation Plan (Exhibit P, Attachment P-7) contain a description of the monitoring plan that would be implemented to determine if the revegetation and mitigation efforts are successful. The draft Species Conservation Plan (Exhibit P, Attachment P-6) and the draft Habitat Mitigation Plan (Attachment P-7) discuss monitoring plans related to wildlife and their habitats.

4.0 CONCLUSION

Exhibit Q contains evidence upon which the Council can make findings under OAR 345-022-0070 and conclude that the design, construction, and operation of the Project, taking into account mitigation, are (1) consistent with the protection and conservation programs that the ODA has adopted under Oregon Revised Statute (ORS) 564.105(3) for listed plant species (when applicable); (2) not likely to cause a significant reduction in the likelihood of survival or recovery of the listed fish and wildlife species; and (3) not likely to cause a significant reduction in listed plant species for which the ODA has not adopted a protection and conservation program.

5.0 SUBMITTAL AND APPROVAL COMPLIANCE MATRICES

Tables Q-5 and Q-6 provide cross references between the Exhibit submittal requirements of OAR 345-021-0010 and the Council's Approval standards of OAR 345-022-0000 and where they are discussed in this Exhibit.

Table Q-5. Submittal Requirements Matrix

Requirement	Location
OAR 345-021-0010	
(q) **Exhibit Q.** Information about threatened and endangered plant and animal species that may be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0070. The applicant shall include:	Exhibit Q
(A) Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2), ORS 564.105(2) or 16 USC § 1533 that may be affected by the proposed facility	Sections 3.2 and 3.3.1
(B) For each species identified under (A), a description of the nature, extent, locations and timing of its occurrence in the analysis area and how the facility might adversely affect it	Section 3.3.1
(C) For each species identified under (A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact	Section 3.3.2
(D) For each plant species identified under (A), a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3)	Section 3.3.3
(E) For each plant species identified under paragraph (A), if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species	Section 3.3.4
(F) For each animal species identified under (A), a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species	Section 3.3.5
(G) The applicant's proposed monitoring program, if any, for impacts to threatened and endangered species	Section 3.3.6

Table Q-6. Approval Standard

Requirement	Location
OAR 345-022-0070	
To issue a site certificate, the Council, after consultation with appropriate state agencies, must find that: (1) For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction and operation of the proposed facility, taking into account mitigation: (a) Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3), or (b) If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species;	Sections 3.3.3 and 3.3.4

Table Q-6. Approval Standard (continued)

Requirement	Location
(2) For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction and operation of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.	Sections 3.3.5 and 4

6.0 RESPONSE TO COMMENTS FROM REVIEWING AGENCIES AND THE PUBLIC

Table Q-7 provides cross references between comments cited in the Project Order from reviewing agencies and the public and where discussion can be found in this Exhibit.

Table Q-7. Reviewing Agency and Public Comments

Reviewing Agency Comments	Location
TBD	
Public Comments	
Exhibit Q must address impacts and proposed mitigation measures for threatened and endangered species	Sections 3.3.1, 3.3.2, 3.3.3, 3.3.4, and 3.3.5

7.0 REFERENCES

Anderson, P., B. Taylor, and G. Balch. 1996. Quantifying the Effects of Sediment Release on Fish and Their Habitats. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 2346. Department of Fish and Oceans. Vancouver and Manitoba, Canada.

BLM (Bureau of Land Management). 2008. State Director's Special Status Species List. USDA Bureau of Land Management – Oregon and Washington. January 2008.

BLM. 2009. *Lupinus Lepidus* var. *cusickii* Population Monitoring in Denny Flat, Baker County, Oregon. Institute for Applied Ecology and USDI Bureau of Land Management, Vale District.

BLM. 2012a. GeoBOB database for Oregon and Washington. Database provided to IPC by the Bureau of Land Management.

BLM. 2012b. Bureau of Land Management. Dept. of Interior. California State Office Manual Handbook H-6840-1, the Special Status Plant Management Manual Handbook of California BLM. Release 6-27. Washington.

Bisson, P.A., and R.E. Bilby. 1982. Avoidance of Suspended Sediment by Juvenile Coho Salmon. *North American Journal of Fisheries Management* 4:371-374.

Boarman, W., and B. Heinrich. 1999. Common Raven (*Corvus corax*). In *The Birds of North America Online* (A. Poole, Ed.). Ithaca, NY: Cornell Laboratory of Ornithology.

Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status Review of West Coast Steelhead from Washington, Idaho, Oregon, and California. NOAA Technical Memorandum NMFS-NWFSC-27. National Marine Fisheries Service, Northwest Fisheries Science Center, Coastal Zone and Estuarine Studies Division. Seattle, Washington.

Brett, J.R. 1952. Temperature Tolerance in Young Pacific Salmon, Genus *Oncorhynchus*. *Journal of the Fisheries Research Board of Canada* 9(6):265–323.

Calflora. 2011. The Calflora Database. Available online at: http://www.calflora.org

Coates, P., and D. Delehanty. 2010. Nest Predation of Greater Sage-Grouse in Relation to Microhabitat Factors and Predators. *Journal of Wildlife Management* 74(2):240-248

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Unpublished report. Western Association of Fish and Wildlife Agencies. Cheyenne, Wyoming.

CPC (Center for Plant Conservation). 2010. CPC National Collection Plant Profile. Available online at: http://www.centerforplantconservation.org

DeGraaf, R., and M. Yamasaki. 2000. *New England Wildlife: Habitat, Natural History, and Distribution*. UPNE. 1st edition.

DeWalle, D.R. 2010. Modeling Stream Shade: Riparian Buffer Height and Density as Important as Buffer Width. *Journal of the American Water Resource Association* 46(2):323–333.

Ecology (Washington State Department of Ecology). 2002. Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria. Draft Discussion Paper and Literature Summary. Pub. No. 00-10-070. Water Quality Program, Washington Department of Ecology, Watershed Management Section, Olympia, WA.

Eder, T. 2002. *Mammals of Washington and Oregon*. Lone Pine Publishing, Auburn, Washington.

eFloras. 2010. *Flora of North America*. Gared, St. Louis, Montana and Harvard University Herbaria, Cambridge, Massachusetts. Available online at: http://www.efloras.org

Engel, K.A., L.S. Young, K. Steenhof, J.A. Roppe, and M.N. Kochert. 1992. Communal Roosting of Common Ravens in Southwestern Idaho. *Wilson Bulletin* 104:105–121.

EPA (U.S. Environmental Protection Agency). 2003. EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. Region 10 Office of Water, Seattle, WA.

FWS (U.S. Fish and Wildlife Service). 2002. Recovery Plan for Howell's Spectacular Thelopody (*Thelypodium howellii* ssp. *Spectabilis*). Region 1, Portland, OR. June 3. Available online at: http://www.fws.gov/pacific/news/2002/thelypody/RecovPlan.pdf

FWS. 2004. Conference Opinion on the Issuance of the Four Enhancement of Survival Permits for the Threemile Canyon Farms Multi-Species Candidate Conservation Agreement with Assurances. Oregon Fish and Wildlife Office, Portland, Oregon.

FWS. 2008. Bull Trout (*Salvelinus confluentus)* Five Year Review: Summary and Evaluation. USFWS, Portland, Oregon.

Gilmer, D., and J. Wiehe. 1977. Nestling by Ferruginous Hawk and Other Raptors on High Voltage Powerline Towers. *Prairie Naturalist* 9:1-10

Good, T.P., R.S. Waples, and P. Adams (eds.). 2005. Updated Status of Federally Listed ESUs of West Coast Salmon and Steelhead. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-NWFSC-66. 598pp.

Hicks, B.J., J.D. Hall, P.A. Bisson, and J.R. Sedell. 1991. Responses of Salmonids to Habitat Changes. Pages 483-518 in Meehan, W.R. (ed.), *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*. Special Publ. 19. Bethesda, Maryland: American Fisheries Society.

Hicks, M. 2000. Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards. Draft Discussion Paper and Literature Summary. Washington State Department of Ecology, Olympia, Washington.

Hitchcock, L., and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press, Seattle, WA.

Hitchcock, C. L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1961. *Vascular Plants of the Pacific Northwest, Part 3: Saxifragaceae to Ericaceae.* University of Washington Press, Seattle. 614 pp.

IPC (Idaho Power Company). 2008. Transmission Line Clearing Specifications. 12-100-01. September

IPC. 2010. Boardman to Hemingway Transmission Line Project Siting Study. August.

IPC. 2011. Revised Plan of Development. Boardman to Hemingway Transmission Line Project. Boise, Idaho. November.

IPC. 2012. Boardman to Hemingway Transmission Line Project Supplemental Siting Study. June.

Knight, R., and J. Kawashima. 1993. Response of ravens and red-tailed hawk populations to linear right0of-ways. *Journal of Wildlife Management* 57:266–271.

Lloyd, D.S., J.P. Koenings, and J.D. LaPerriere. 1987. Effects of Turbidity in Fresh Waters of Alaska. *North American Journal of Fisheries Management* 7:18–33.

Manley, P., B. Van Horne, J. Roth, W. Zielinski, M. McKenzie, T. Weller, F. Weckerly, and C. Vojta. 2006. Multiple Species Inventory and Monitoring Technical Guide. Gen. Tech. Rep. WO-73. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. 204p.

Manzer, D.L., and S.J. Hannon. 2005. Relating grouse nest success and corvid density to habitat: a multi-scale approach. *Journal of Wildlife Management* 69:110–123.

Meehan, W.R. (ed.). 1991. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitat. Special Publication 19. American Fisheries Society, Bethesda, Maryland.

McCullough, D.A. 1999. A Review and Synthesis of Effects of Alterations to the Water Temperature Regime on Freshwater Life Stages of Salmonids, with Special Reference to Chinook Salmon. Environmental Protection Agency, Region 10. Seattle, WA.

McCullough, D.A., S. Spalding, D. Sturdevant, and M. Hicks. 2001. Issue Paper 5 – Summary of Technical Literature Examining the Physiological Effects of Temperature on Salmonids. Prepared as part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA 910-D-01-005. Region 10 office of Water, Seattle, WA.

Morgan, R.L., and M. Nugent. 1999. Status and Habitat Use of the Washington Ground Squirrel (*Spermophilus washingtoni*) on State of Oregon Lands, South Boeing, Oregon in 1999. Report to the Oregon Department of Fish and Wildlife.

Myers, J.M., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright , W. Stewart Grant, F.W. Waknitz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status Review of Chinook Salmon from Washington, Idaho, Oregon, and California. NOAA Technical Memorandum NMFS-NWFSC-35. National Marine Fisheries Service, Northwest Fisheries Science Center, Coastal Zone and Estuarine Studies Division. Seattle, Washington.

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life. Available online at: http://www.natureserve.org (accessed January 24, 2011).

Newcombe, C.P., and J.O.T. Jensen. 1996. Channel Suspended Sediment and Fisheries: A Synthesis for Quantitative Assessment of Risk and Impact. *North American Journal of Fisheries Management* 16: 693–727.

NMFS (National Marine Fisheries Service). 1996. Factors for Decline – A Supplement to the Notice of Determination for West Coast Steelhead Under the Endangered Species Act. National Marine Fisheries Service. Portland Oregon and Long Beach California.

NMFS. 1998. Factors Contributing to the Decline of Chinook Salmon: An Addendum to the 1996 West Coast Steelhead Factors for Decline Report. Protected Resource Division, NMFS. Portland, Oregon.

NMFS. 2006. Supplement to the Draft Snake River Salmon Recovery Plan for Southwest Washington. NOAA Fisheries, Northwest Region.

NMFS. 2009. Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan. NMFS, Northwest Region, Seattle, WA.

NOAA Fisheries (National Oceanic and Atmospheric Administration Fisheries Division). 2009. Office of Protected Resources. NOAA Fisheries. Available online at: http://www.nmfs.noaa.gov/pr/species/

Nowak, M.C. 2004. Grande Ronde Subbasin Plan. Prepared for the Northwest Power and Conservation Council. Portland, Oregon.

ODA (Oregon Department of Agriculture). 2008. Oregon listed plants. Available online at: http://www.oregon.gov/ODA/PLANT/CONSERVATION/statelist.shtml

ODA. 2011. ODA Plant Division, Plant Conservation. Available online at: http://www.oregon.gov/ODA/PLANT/CONSERVATION/county_list_a.shtml

ODEQ (Oregon Department of Environmental Quality). 1995. 1992-1994 Water Quality Standards Review, Temperature. Portland, Oregon.

ODFW (Oregon Department of Fish and Wildlife). 2005. Oregon Native Fish Status Report. http://www.dfw.state.or.us/fish/ONFSR/

ODFW. 2008. Threatened, Endangered, and Candidate Fish and Wildlife Species in Oregon. Available online at: http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp

ODFW. 2011a. Wolves in Oregon. Available online at: http://www.dfw.state.or.us/wolves/

ODFW. 2011b. Natural Resources Management Program – Timing Tables. Available online at: http://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=timingtables (accessed April-May 2011).

ORBIC (Oregon Biodiversity Information Center). 2008. Portland State University Oregon Biodiversity Information Center data. Available online at: http://orbic.pdx.edu/

ORBIC. 2010. Rare Threatened and Endangered Species of Oregon.

ORBIC. 2012. Portland State University Oregon Biodiversity Information Center data. Available online at: http://orbic.pdx.edu/

ORNHIC (Oregon Natural Heritage Information Center). 2010a. Field Guide to Threatened and Endangered Plants of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon.

ORNHIC. 2010b. Rare, Threatened and Endangered Species of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon.

Orsi, J.J. 1971. Thermal Shock and Upper Lethal Temperature Tolerances of Young King Salmon, *Oncorhynchus tshawytsha*, from the Sacramento-San Joaquin River System. Anadromous Fisheries Branch Administrative Report No. 71-11. California Department of Fish and Game, Sacramento, California. 16 p.

OSU (Oregon State University). 2010. Oregon Flora Project. The Rare Plant Guide. February 2010. Available online at: http://www.oregonflora.org.

Reid, S.M., S. Stoklosar, S. Metikosh, and J. Evans. 2002. Effectiveness of Isolated Pipeline Crossing Techniques to Mitigate Sediment Impacts on Brook Trout Streams. *Water Quality Research Journal of Canada* 37:473-488.

Ritter, P.W. 1984. Water Quality Concerns Associated with Pipeline Stream Crossings. In: A.E. Crabtree (editor). Proceedings of the Third International Symposium on Environmental Concerns in Rights-of-Way Management. Pages 447-456. Mississippi State University, MS.

Rosetta, T. 2005. Draft – Technical Basis for Revising Turbidity Criteria. Water Quality Division, Oregon Department of Environmental Quality.

Sauter, S.T., J. McMillan, and J. Dunham. 2001. Issue Paper 1 – Salmonid Behavior and Water Temperature. Prepared as part of EPA Region 10 temperature water quality criteria guidance development project. EPA 910-D-01-001. Region 10 office of Water, Seattle, WA.

Selong, J. H., T. E. McMahon, A. V. Zale, and F. T. Barrows. 2001. Effect of Temperature on Growth and Survival of Bull Trout, with Application of an Improved Method for Determining Thermal Tolerance for Fishes. *Transactions of the American Fisheries Society* 130:1026–1037.

Servizi, J., and D. Martens. 1992. Sublethal Responses of Coho Salmon (*Oncorhynchus kisutch*) to Suspended Sediment. *Canadian Journal of Fisheries and Aquatic Sciences* 49: 1389–1395.

Sigler, J.W., T.C. Bjornn, and F.H. Everest. 1984. Effects of Chronic Turbidity on Density and Growth of Steelheads and Coho Salmon. *Transactions of the American Fisheries Society* 113:142–150.

Spence, B.C., G.A. Lomnicky, R.M. Hughes, and R.P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, Oregon.

Steenhof, K., M. Kochert, and J. Roppe. 1993. Nesting by Raptors and Common Raven on Electrical Transmission Line Towers. *Journal of Wildlife Management* 57:271–281

StreamNet. 2010. Fish distribution and critical habitat map data for Oregon. Accessed August – September 2010. Portland, Oregon. Available online at: http://www.streamnet.org/mapping_apps.cfm

USFS (U.S. Department of Agriculture, Forest Service). 2005. Final Report, Lomatium erythrocarpum Survey. Wallowa-Whitman National Forest. October.

USFS. 2008. Regional Forester's special status species lists.

Wydoski, R.S., and R.R. Whitney. 2003. *Inland Fishes of Washington*. 2nd Edition. University of Washington Press, Seattle, Washington.