Exhibit Q
Threatened and Endangered Plant and Animal Species

Boardman to Hemingway Transmission Line Project



1221 West Idaho Street
Boise, Idaho 83702

Mark Stokes, Project Leader
(208) 388-2483
mstokes@idahopower.com

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

Application for Site Certificate

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Appendix Q-1. Threatened and Endangered Plant Species in the Analysis Area

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
BLM	Bureau of Land Management
CAP	Community Advisory Process
DPS	distinct population segment
EFSC or Council	Energy Facility Siting Council
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FWS	U.S. Fish and Wildlife Service
GAP	Gap Analysis Project
GeoBOB	Geographic Biotic Observation
GIS	geographic information system
GPS	Global Positioning System
IDFG	Idaho Department of Fish and Game
IPC	Idaho Power Company
km	kilometer
kV	kilovolt
LWD	large woody debris
MP	milepost
NAIP	National Agriculture Imagery Program
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NPCC	Northwest Power and Conservation Council
NWSTF Boardman	Naval Weapons Systems Training Facility Boardman
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
OESA	Oregon Endangered Species Act
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statute
OSU	Oregon State University
Project	Boardman to Hemingway Transmission Line Project
ROE	right of entry
ROW	right-of-way
Second Amended Project Order	Second Amended Project Order, Regarding Statutes, Administrative Rules, and Other Requirements Applicable to the Proposed BOARDMAN TO HEMINGWAY TRANSMISSION LINE (July 26, 2018)
T&E	threatened and endangered (species)
TVES	Terrestrial Visual Encounter Surveys
USFS	United States Forest Service
WAGS	Washington ground squirrel

Exhibit Q
Threatened and Endangered Plant and Animal Species

1.0 INTRODUCTION

Exhibit Q provides an analysis of the potential impacts of the Boardman to Hemingway Transmission Line Project (Project) on state-listed threatened and endangered (T&E) species.[1] Exhibit Q demonstrates the design, construction, and operation of the Project, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of any T&E species.

2.0 APPLICABLE RULES AND SECOND AMENDED PROJECT ORDER PROVISIONS

2.1 General Standards for Siting Facilities

The Threatened and Endangered Species Standard at Oregon Administrative Rule (OAR) 345-022-0070 provides:

> *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 [Oregon Revised Statute (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.*

2.2 Site Certificate Application Requirements

OAR 345-021-0010(1)(q) requires Exhibit Q 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) 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.*

[1] Impacts to State Sensitive Species as well as fish and wildlife habitats are addressed in Exhibits P1 and P2.

(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.

2.3 Second Amended Project Order Provisions

The Second Amended Project Order states that all requirements of OAR 345-021-0010(1)(q) apply. Additionally, the Second Amended 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 fish and wildlife species. Threatened and endangered plant species are protected by the Oregon Department of Agriculture. The applicant shall include in its application for a site certificate state-listed threatened and endangered fish, wildlife, and plant species that have potential to occur in the analysis area. As a result of Council rulemaking in 2017, it is not necessary for the applicant to include in Exhibit Q information related to species that are listed only by the federal government, though the applicant may choose to do so at its own discretion. The applicant shall identify the species based on a review of literature, consultation with knowledgeable individuals, ODFW, and reference to the list of species published by the Biodiversity Information Center (formerly called the Oregon Natural Heritage Information Center).

The applicant has proposed a "phased survey" approach for data collection during the site certificate review process, and the Department understands that the entirety of the site boundary for the proposed facility may not yet been surveyed due to limited site access. On April 24, 2018 the Department issued a memo titled; "Energy Facility Siting Council Decisions for Linear Facilities with Restricted Access within a Site Boundary: Boardman to Hemingway Transmission Line". This memo outlines how the Department will review applications and make recommendations to Council for Threatened and Endangered Species that have been evaluated in the pASC and ASC. For linear facilities, such as transmission lines, there may be situations where the applicant is able to conduct field surveys on several parcels within the site boundary but may not have access on adjacent parcels. In such circumstances, it may be possible that the combination of on-site field surveys plus a desktop evaluation of existing data, aerial

> *photography, and "over the fence" surveys may meet the information requirements of Exhibits Q. If the field survey coverage is sufficient for ODOE and ODFW to consider that the information provided is representative of the threatened and endangered plant and animal species occurrence or habitat, it is possible that this information could be sufficient to be evaluated for compliance with the Council's Threatened and Endangered Species standard. Exhibit Q shall 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 in the analysis area. The schedule for future surveys, and the estimated date that results will be available, shall also be incorporated into Exhibit Q.*
>
> *As for other biological resources, the application shall include information detailing 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.*
>
> *The applicant shall 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 shall 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.*

(Second Amended Project Order, Section III(q)).

> *OAR 345-022-0070 applies only to state-listed plant and animal species. Note also that OAR 345-022-0070 applies to all lands affected by a proposed facility including state, federal and private lands.*

(Second Amended Project Order, Section III(e), footnote 4).

3.0 ANALYSIS

3.1 Analysis Area

The analysis area for Exhibit Q is the area within the Site Boundary and 0.5 mile from the Site Boundary (see Second Amended Project Order, Table 2). The Site Boundary is defined 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" (OAR 345-001-0010(55)). The Site Boundary encompasses the following facilities in Oregon:

- The Proposed Route, consisting of 270.8 miles of new 500-kilovolt (kV) electric transmission line, removal of 12 miles of existing 69-kV transmission line, rebuild of 0.9 mile of a 230-kV transmission line, and rebuild of 1.1 miles of an existing 138-kV transmission line;
- Four alternatives that each could replace a portion of the Proposed Route, including the West of Bombing Range Road Alternative 1 (3.7 miles), West of Bombing Range Road Alternative 2 (3.7 miles), Morgan Lake Alternative (18.5 miles), and Double Mountain Alternative (7.4 miles);
- One proposed 20-acre station (Longhorn Station);
- Ten communication station sites of less than ¼-acre each and two alternative communication station sites;

- Permanent access roads for the Proposed Route, including 206.3 miles of new roads and 223.2 miles of existing roads requiring substantial modification, and for the alternative routes including 30.2 miles of new roads and 22.7 miles of existing roads requiring substantial modification; and
- Thirty temporary multi-use areas and 299 pulling and tensioning sites of which four will have light-duty fly yards within the pulling and tensioning sites.

The Project features are fully described in Exhibit B, and the Site Boundary for each Project feature is described in Exhibit C, Table C-24. The location of the Project features and the Site Boundary is outlined in Exhibit C.

3.2 Methods

This section discusses the methods used during biological field surveys to identify, among other things, T&E species that will potentially be affected by the Project. The Revised Final Biological Survey Work Plan (see Exhibit P1, Attachment P1-2) contains agency comments regarding the plan and survey protocols, as well as Idaho Power Company's (IPC) responses to those comments (i.e., describing how any concerns by the agencies were addressed).

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 P1, Attachment P1-2, Revised Final Biological Survey Work Plan)[2]. During Phase 1 (i.e., the initial desktop review), IPC compiled existing biological information from multiple data sources regarding the occurrence of T&E species within the Site Boundary. In Phase 2, IPC undertook comprehensive field survey efforts in portions of the Site Boundary for which IPC was granted right-of-entry (ROE). Phase 3 surveys include preconstruction surveys and surveys of previously unsurveyed areas to identify T&E species locations for avoidance and mitigation, compliance with temporal or spatial restrictions, and micro-siting route changes.

A detailed description of the T&E field surveys completed for the Project is provided in Section 3.2.1 below.

3.2.1 Field Surveys and Initial Desktop Review

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) that may be affected by the proposed facility.

3.2.1.1 Initial Desktop Review

Existing data were utilized to determine the preliminary list of T&E species that could potentially occur within the analysis area. Updates were made to the list based on the Project alignment changes. Databases and literature from the following data sources were reviewed for information on the location of T&E species:

- Oregon Biodiversity Information Center (ORBIC; 2016a and 2016b); [3]
- StreamNet (2016);

[2] The Revised Final Biological Survey Work Plan (i.e., Attachment P1-2) provided proposed dates for the phased survey effort. Many of the surveys were conducted earlier (i.e., in an earlier year) than proposed. Table Q-1 provides a list of dates on which surveys were actually completed.

[3] 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.

- ODFW (2012, 2016a);
- Oregon Department of Agriculture (ODA; 2016);
- Oregon Department of Forestry (ODF; 2013);
- United States Forest Service (USFS; 2015, 2016);
- The Geographic Biotic Observation (GeoBOB) database (Bureau of Land Management [BLM] 2016a);
- BLM species lists (BLM 2015, 2016b);
- Idaho Department of Fish and Game (IDFG) rare plant databases (IDFG 2016);
- Watershed basin plans;
- ODFW native fish status report (ODFW 2005);
- Federal Register notifications;
- Northwest Power and Conservation Council (NPCC) reports (NPCC 2005a, 2005b, 2005c, 2005d, and 2005e); and
- National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries; 2009).

In the spring of 2013, IPC conducted geographic information system (GIS) mapping of fish-bearing streams along the Project routes. This mapping incorporated data from the existing GIS data layers and sources listed above (e.g., StreamNet, ODFW, and ODF) into one GIS layer. Using this layer, IPC created maps of fish-bearing streams along the Project routes, and these maps were distributed to local biologists at ODFW, USFS, and BLM for review and comment. Based on comments received from the agencies and other local biologists—as well as Tetra Tech fish biologists' evaluation of likely channel characteristics (derived from GIS) suitable for fish habitat—updates were made to the GIS layer that resulted in the most conservative upstream extent of potential fish distribution related to the proposed Project. This revised GIS layer identified the extent of fish distribution and locations for which ODFW had already made a fish presence determination, and additional upstream extents identified as potentially fish-bearing that require an IPC fish presence determination and ODFW concurrence (for Oregon streams). This resulted in a total of 76 potentially fish-bearing streams, including 73 road and 55 transmission line crossing sites (128 total crossings) in both Idaho and Oregon associated with the Project, that were identified in this desktop analysis as locations to conduct surveys in 2014 and 2016.

Wildlife species other than fish were considered potentially present if there was a known occurrence within 0.5 mile of the Site Boundary, or if their range and suitable habitat overlapped this area.

Plant species were considered potentially present if there was a known 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, a lack of documented occurrence in an area does not necessarily constitute a true lack of species occurrence. Local agency experts were therefore 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 3.2.1.2).

3.2.1.2 Development of Field Survey Protocols and Agency Consultation

On August 22, 2008, IPC held a meeting in Baker City, Oregon, with land managers and biologists from the ODFW, IDFG, USFS, U.S. Fish and Wildlife Service (FWS), NOAA Fisheries, and BLM. The purpose of the 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, T&E 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, IPC conducted a meeting with the Oregon Department of Energy (ODOE), ODFW, USFS, FWS, NOAA Fisheries, and BLM 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 Route and alternative routes under consideration at that time. Additional meetings and agency consultation took place as Project alignment and updates were made.

Input from agency specialists was used to identify the T&E 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 P1, Attachment P1-2). The Biological Surveys Summary Report 2010–2016 (see Exhibit P1, Attachment P1-7A) and the Fish Habitat and Stream Crossing Assessment Summary Report (Fish Habitat Report, hereafter; see Exhibit P1, Attachment P1-7B) include further details on species lists, methodology, and results of surveys completed between 2010 and 2016 with regard to the current Site Boundary.

3.2.1.3 Survey Access

IPC attempted to gain ROE to all areas that 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 ROE to their lands; therefore, IPC has not completed surveys for the areas to which ROE was not granted by the landowner.

3.2.1.4 Surveys

This section provides a summary of the surveys that were conducted for T&E 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 certain fish and wildlife surveys conducted that were not directly related to T&E species can be found in Exhibit P1 (e.g., raptor nest surveys) and Exhibit P2 (Greater sage-grouse [*Centrocercus urophasianus*] surveys).

Table Q-1 lists the various biological surveys that were conducted (relative to Exhibit Q), the survey protocols that were used, the dates of the most recent surveys, the approximate acreage of area requiring surveys, the total acreage that has been surveyed to date, and future survey efforts.

The survey areas for Washington ground squirrels (WAGS; *Urocitellus washingtoni*), T&E plants, and Terrestrial Visual Encounter Survey (TVES) are shown in Figures Q-1 through Q-3, respectively. The T&E plant survey and TVES did not have the same number of acres surveyed due to changes in ROE status and because some areas identified as only containing unsuitable

habitat for T&E plants may not have been surveyed. Field surveys for fish presence and habitat at road and transmission line crossings were conducted using methods provided in the Fish Presence Determination Survey Plan and Fisheries Habitat and Crossing Assessment Plan (Tetra Tech 2014a, 2014b). The protocols used in these plans were reviewed by ODFW and federal agencies prior to their implementation. The Fish Habitat Report (see Exhibit P1, Attachment P1-7B) supplies the results of these fish-related field studies.

Table Q-1. Biological Surveys Related to Exhibit Q

Survey Name	Protocol Used	Total Area Requiring Surveys (acres)	Surveys Completed to Date (acres / date)	Future Survey Efforts
WAGS	Status and Habitat Use of the Washington Ground Squirrel on State of Oregon Lands (Morgan and Nugent 1999); see Exhibit P1, Attachment P1-7A.	18,263; see Figure Q-1	1,757 / May 2014	IPC will perform pre-construction WAGS surveys of all previously surveyed and unsurveyed areas of ground squirrel habitat within the three years prior to scheduled construction. Survey results will be provided to ODOE.
T&E Plant Survey	The USFS and BLM's "Intuitive Controlled Survey" method was used to identify T&E plants and their habitat (USFS and BLM 1998).	22,904; see Figure Q-2	14,727 / June 2016	IPC will perform pre-construction T&E plant surveys of all previously surveyed and unsurveyed areas with potential habitat and where species were previously observed and/or areas with known occurrences. Survey results will be provided to ODOE.
Terrestrial Visual Encounter Survey	USFS Multiple Species Inventory and Monitoring Technical Guide (Manley et al. 2006); see Exhibit P1, Attachment P1-7A.	22,904; see Figure Q-3	15,331 / June 2016	IPC will survey all previously unsurveyed parcels prior to construction. Survey results will be provided to ODOE.
Fish Presence and Crossing Assessment Surveys	Tetra Tech (2014a, b); agencies reviewed protocols.	Not Applicable	Not Applicable / August 2016	IPC will survey all previously unsurveyed parcels prior to construction. Survey results will be provided to ODOE.

BLM – Bureau of Land Management; IPC – Idaho Power Company; ODOE – Oregon Department of Energy; T&E – threatened and endangered species; USFS – U.S. Forest Service; WAGS – Washington ground squirrel



Figure Q-1. Washington Ground Squirrel Survey Area

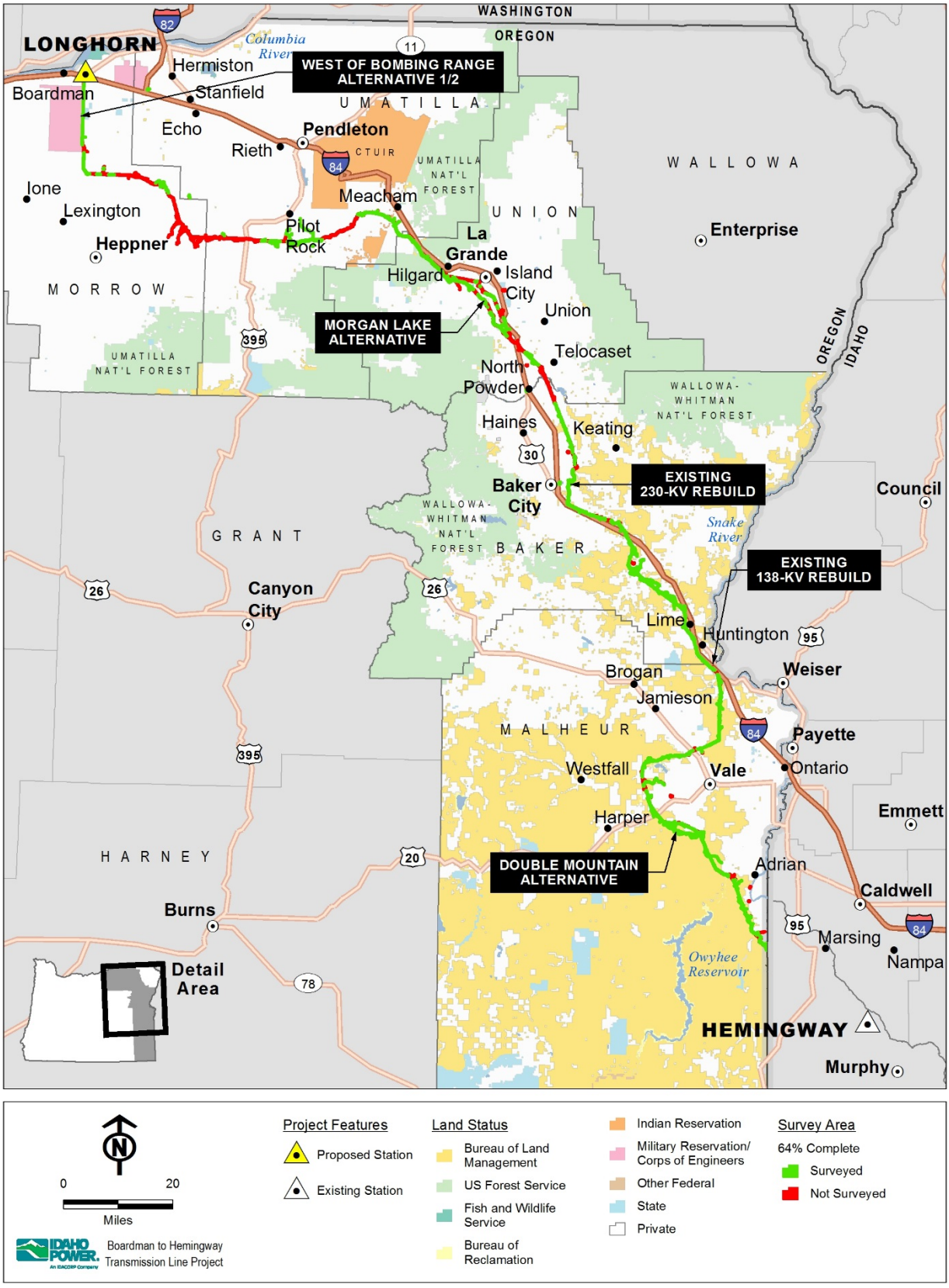


Figure Q-2. Threatened and Endangered Plant Survey Area

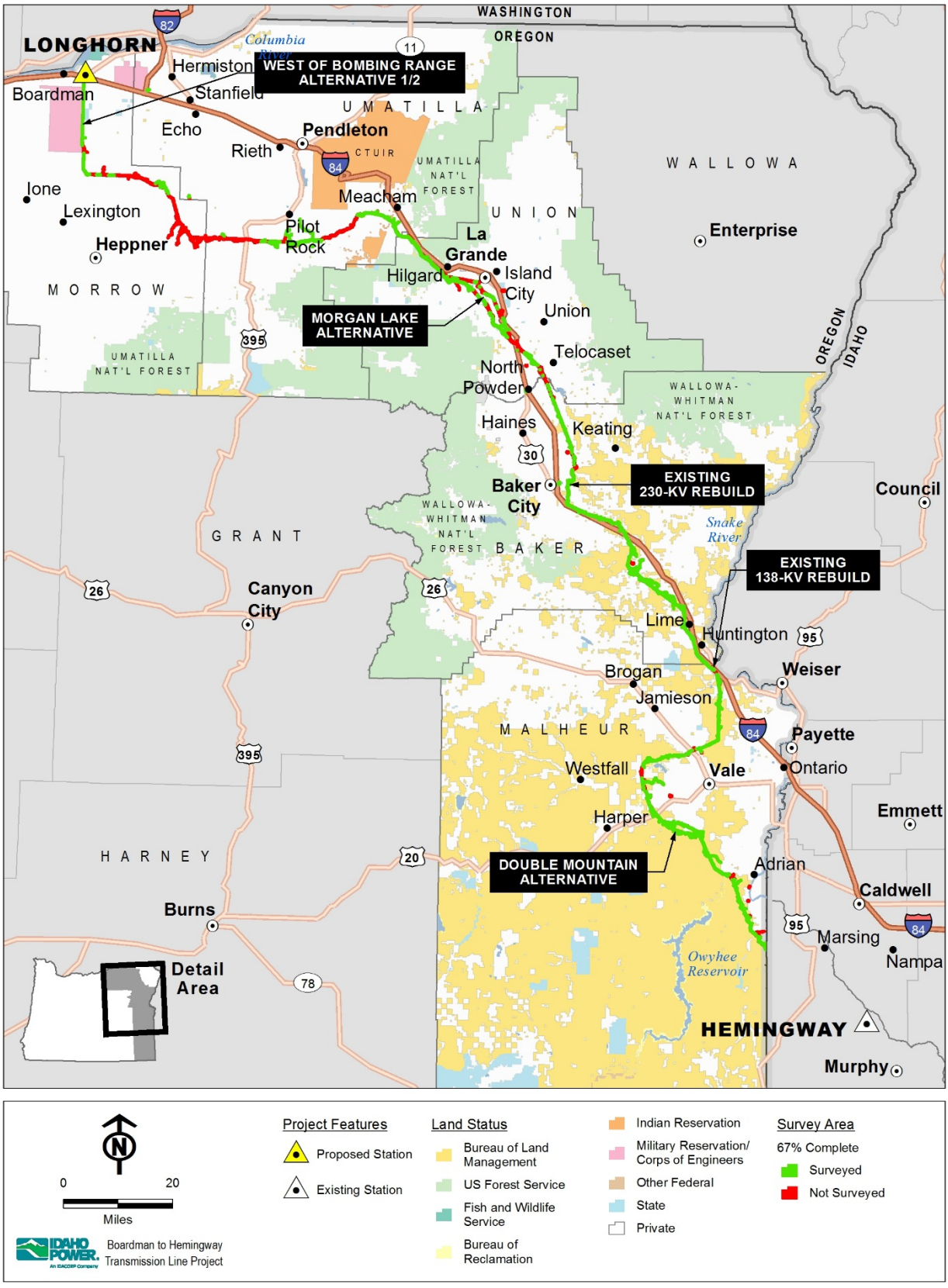


Figure Q-3. Terrestrial Visual Encounter Survey Area

Washington Ground Squirrel Surveys

The objective of these surveys was to identify the presence of WAGS colonies in the vicinity of the Project so that impacts to WAGS may be avoided and/or minimized. The protocols used during the WAGS surveys were based on the survey methods described in Morgan and Nugent (1999). The details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Exhibit P1, Attachment P1-2).

The survey area extends from Bombing Range Road in Morrow County east to East Birch Creek Road south of Pilot Rock, Oregon, in Umatilla County (milepost [MP] 0 to 64 of the Proposed Route). ODFW considers a 785-foot buffer in continuous suitable habitat around WAGS colonies as Category 1 habitat. As a result, the survey area consisted of the analysis area plus a 785-foot buffer in suitable habitat. Suitable habitat for WAGS includes native grasslands and shrub-steppe; however, the species is also known to use lesser quality habitat such as non-native annual grasslands. IPC has identified a total of 18,263 acres of survey area.

During surveys, a crew of two to eight biologists walked meandering line transects, each spaced 165 feet apart, to provide survey coverage of the habitat within the analysis area as well as a 785-foot buffer around the analysis area. The survey area was surveyed twice, once in April and once in May, to correspond with the highest WAGS activity period when juveniles have emerged and alarm calls are most frequent. During the second survey, transects were walked perpendicularly to the first survey transects to maximize coverage of the habitat. Surveys were initially conducted in 2011; additional surveys were conducted in 2012, 2013, and 2014 to capture modifications to the Project location.

Colonies were designated active when WAGS activity was confirmed through visual detection of a squirrel, audio confirmations (hearing alarm or social calls), and/or fresh WAGS scat near burrows. Three active colonies were identified within the survey area, none of which occur within the analysis area.

Of the 18,263 acres of WAGS survey area, 1,757 acres have been surveyed including all of the survey area along the Naval Weapons Systems Training Facility (NWSTF) Boardman. The vast majority of unsurveyed WAGS habitat is attributed to the recent modification of the location of the Proposed Route in Morrow and Umatilla counties. ODFW has provided guidance on WAGS pre-construction surveys and has indicated that surveys for this species are valid for 3 years (i.e., the year of survey and 2 years after). With this in mind, IPC, in consultation with ODOE, has decided to delay additional WAGS surveys until later in the Project schedule so that survey results will be valid for Project construction. For more information regarding this survey, see Attachment P1-7A. Future survey efforts are identified in Exhibit P1, Table P1-1.

Threatened and Endangered Plant Surveys

The protocols used during the T&E plant surveys, as well as the details and justifications of these protocols, are detailed in the Revised Final Biological Survey Work Plan (see Exhibit P1, Attachment P1-2), as well as the Biological Surveys Summary Report (see Exhibit P1, Attachment P1-7A). The following is a summary of the timing and scope of these surveys.

The survey area for T&E plant surveys is the Site Boundary. Of the 22,904 acres within the survey area, 14,727 acres have been surveyed to date (Table Q-1). The analysis area for Exhibit Q is the area within the Site Boundary and 0.5 mile from the Site Boundary. A desktop analysis was used to determine which species of T&E plants are known from within the analysis area where surveys were not completed. Data utilized in the desktop analysis included those locations mapped by ORBIC (2016a), BLM (2016a), USFS (2016), and IDFG (2016).

Biologists familiar with the T&E species potentially present within the survey area performed surveys using USFS and BLM's intuitive-controlled pedestrian survey method (USFS and BLM 1998). Initial surveys began in 2011 and followed a two-phased approach where suitable habitat polygons for T&E plants were identified through GIS analysis of National Agriculture Imagery Program (NAIP), Gap Analysis Project (GAP) data, and ORBIC occurrence data. These suitable habitat polygons were the areas targeted for surveys. Spacing between the individual biologists was adjusted based on habitat, in order to achieve 100 percent visual coverage.

Additional surveys were conducted in 2012, 2013, 2014, and 2016. The method of limiting surveys to suitable habitat polygons was later deemed ineffective as some T&E plants were identified outside of those polygons, so 2012, 2013, 2014, and 2016 surveys were expanded to include all areas within the Site Boundary. The 2012 T&E plant survey area was updated from 2011 to include additional survey areas resulting from changes in alternate routes and methodology. Biologists traversed representative cross sections of accessible portions of the study area to identify locations with high potential for T&E plant occurrence. When potential habitat, based on published data for each species, was identified, biologists walked a systematic transect looking for T&E plants. The 2013, 2014, and 2016 surveys included additional alternative routes and changes in Project alignment and were conducted concurrently with the TVES, but timed to meet the phenology of potential T&E plant species.

When a T&E plant species was located, a Global Positioning System (GPS) position was recorded (point locations were recorded for individual occurrences occupying an area less than 20 feet in diameter, while polygons or boundaries with several points were recorded for larger occurrences). Photographs were taken and electronic data were recorded consistent with the Oregon Rare Plant Field Survey Form (ORBIC 2016b). Field crews used GPS technology for data collection activities. Trimble GeoXT survey grade receivers loaded with 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 at different times as described in Table Q-2. Project surveys were conducted within the agency-recommended survey window for the species and when species phenology was conducive to identification. A summary of survey dates and locations are shown below in Table Q-2.

Table Q-2. T&E Plant Survey Periods and Locations

Year	Date	Route	Milepost[1]	Ecoregion[2]
2011	April 24–May 2	Proposed Route	263-267	Northern Basin and Range
			269-270	
	July 5–14		158-164	Blue Mountains
			226-234	Snake River Plain
			247-250	
			251-252	Northern Basin and Range
2012	April 30–May 9	Double Mountain Alternative	1-2	Snake River Plain
			5-6	
	July 9–18	Proposed Route	78-96	Blue Mountains
		Morgan Lake Alternative	0-1	
			3-4	
			12-18	

Year	Date	Route	Milepost[1]	Ecoregion[2]
2013	April 29–May 8	Proposed Route and West of Bombing Range Road Alternative 1,2	0-1	Columbia Plateau
			5-13	
	May 20–May 30	Proposed Route	165-170	Blue Mountains
			212-218	Snake River Plain
	June 25–July 2		1-4	Columbia Plateau
			142-147	Blue Mountains
			155-157	
2014	June 3–5	Proposed Route and West of Bombing Range Road Alternative 1,2	3-12	Columbia Plateau
2016	April 26–May 20	Double Mountain Alternative	0-1	Snake River Plain
			3-4	
		Proposed Route	234-237	Snake River Plain
			254-265	Northern Basin and Range
	June 7–16	Proposed Route	15-24	Columbia Plateau
			34-35	
			58-69	
			170-174	Blue Mountains
			179-191	
	June 21–29	Morgan Lake Alternative	4-10	Blue Mountains
			16-17	
		Proposed Route	96-99	
			109-116	
			122-125	
			133-142	
			148-155	
			175-179	

[1] Surveys were completed in areas where right of entry was granted. See Exhibit C, Project Location.
[2] EPA 2005

Terrestrial Visual Encounter Survey

TVES surveys were initially conducted in 2011; additional surveys were conducted in 2012, 2013, 2014, and 2016 in order to capture changes that were made to the Site Boundary, including the addition of alternative routes. The protocols used during the TVES were adapted from the USFS Multiple Species Inventory and Monitoring Technical Guide (Manley et al. 2006). The details and justifications for these methods are provided in the Revised Final Biological Survey Work Plan (Exhibit P1, Attachment P1-2), as well as the Biological Surveys Summary Report (Exhibit P1, Attachment P1-7A). The following is a summary of the timing and scope of these surveys.

The TVES is a walking survey that identifies wildlife species, including T&E species, presence through evidence of use. The TVES includes visual and auditory confirmation of a species, and evidence of sign such as burrows, nests, feathers, fecal material, and tracks. In addition to functioning as a general wildlife survey, the TVES also recorded ecological systems that were grouped into habitat types, noxious weeds, unique habitats, and potential wetlands.

The survey area for the TVES is the Site Boundary. Of the 22,904 acres within the survey area, 15,331 acres have been surveyed to date (Table Q-1). 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 Site Boundary in a single pass. Three observers were used to reduce observer fatigue, improve consistency in identifications by comparing observations, and provide a second opinion for difficult identifications.

Fish Presence and Assessment Surveys

Fisheries presence, habitat, and crossing assessment surveys were intended to achieve several objectives. First, for streams not already designated as fish-bearing streams by the ODFW, the data collected were intended to adequately determine if streams do, or likely could, support fish use. Second, the habitat data collected were intended to help describe riparian and in-stream conditions, both of which are important components of fish habitat quality. Lastly, habitat data were collected to provide additional information about Project-related risks to assist with crossing assessments.

Fish Presence Determination

Fish presence was assumed for streams designated by ODFW as fish-bearing streams. For those streams not already designated as fish-bearing by ODFW, field data were used as the primary factor to determine potential fish presence. The presence or absence of fish habitat, or potential need for fish sampling, was typically based on channel gradient and bankfull width with considerations of available habitat. Characteristics used to evaluate available fish habitat are described below, with additional details and specific criteria related to fish presence determination, including fish sampling, provided in the Fish Habitat Report (Attachment P1-7B). Fish sampling was conducted only in the rare case where potential fish presence could not be reasonably determined from habitat surveys.

Fish Habitat Characteristics

Surveys were conducted to determine the general habitat condition of streams at locations where the Project construction footprint proposes a direct impact to the resource. Data were collected at each road and transmission line crossing area (where landowner access permission was obtained) using the Stream Habitat Survey Datasheet (Appendix A of the Fish Habitat Report in Exhibit P1, Attachment P1-7B). Fish habitat surveys included characterizing conditions upstream and downstream of the location over a reach length typically of 100 to 500 feet, extending farther when necessary to accurately assess available fish habitat.

Three general types of fish habitat data were collected, within distinct geomorphic stream segments: riparian vegetation characteristics, stream morphology, and stream substrate characteristics. Data were collected using the Stream Habitat Survey Datasheet noted above, and data collected within each segment focused on common habitat measures including:

- Riparian classes present (within 100 feet from channel);
- Shade;
- Riparian tree characteristics;
- Overhanging vegetation;
- Channel gradient;
- Active and bankfull channel widths;
- Floodplain width;

- Bank stability;
- Undercut banks;
- Pool and large woody debris (LWD) frequency;
- Presence of beaver activity;
- Substrate characteristics and size; and
- Percent embeddedness and fines (Bain and Stevenson 1999; ODFW 2010; USFS 2001, 2010).

Other parameters were also measured and assessed, including road and transmission line crossing risk, fish passage conditions at road crossings, and transmission line crossing characteristics. These were recorded and reported following the protocols described in the Fish Habitat Report (Attachment P1-7B).

3.2.1.5 Path Forward to Complete Surveys

As discussed above, IPC did not complete surveys for T&E species or their habitat on those parcels where IPC did not have ROE. Moreover, surveys for WAGS on certain parcels were delayed until after the site certificate so that survey results will be valid for Project construction. To ensure the necessary T&E species surveys—as well as other fish and wildlife surveys—are completed prior to construction, IPC requests that the Council adopt the following conditions to be included in the site certificate providing schedules for the forthcoming biological surveys:

> ***Fish and Wildlife Condition 1****: Prior to construction, the certificate holder shall conduct, as applicable, the following biological surveys on those portions of the site boundary that have not been surveyed at the time of issuance of the site certificate:*
> *a. Great Gray Owl;*
> *b. Flammulated Owl;*
> *c. Terrestrial Visual Encounter Surveys;*
> *d. Wetlands; and*
> *e. Fish Presence and Crossing Assessment Surveys.*
>
> ***Fish and Wildlife Condition 2****: Prior to construction, the certificate holder shall conduct, as applicable, the following biological surveys on all portions of the site boundary, regardless of whether those portions have been surveyed at the time of issuance of the site certificate:*
> *a. Washington ground squirrels;*
> *b. Raptor Nests; and*
> *c. State-Listed Threatened and Endangered Plants.*

3.3 Identification of Threatened and Endangered Species

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) that may be affected by the proposed facility.

Table Q-3 lists the T&E species that could 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 3.2.1).

Table Q-3. State-Listed Threatened and Endangered Species Potentially Present within the Analysis Area

Common Name *Scientific Name*	State Status	Documented Use of Analysis Area[1]
WILDLIFE		
Wolverine *Gulo gulo*	Threatened	No records in existing databases. Not found during surveys.
Washington Ground Squirrel *Urocitellus washingtoni*	Endangered	Multiple records in existing databases, mostly along the Boardman Bombing Range; three active colonies identified in the analysis area during surveys.
FISH		
Snake River Spring/Summer Chinook Salmon *Oncorhynchus tshawytscha*	Threatened	ORBIC record in the Grande Ronde River. Current literature states that this species occurs in streams or drainages within the analysis area.
PLANTS		
Cronquist's Stickseed *Hackelia cronquistii*	Threatened	Eleven occurrences within the analysis area in Malheur County, based on BLM and ORBIC databases, as well as observations from 2012, 2013, and 2016 field surveys. Estimated 877 acres and 9,833 individuals within the analysis area.
Howell's Spectacular Thelypody *Thelypodium howellii* ssp. *spectabilis*	Endangered	One ORBIC occurrence in Union County within the analysis area. Not found during surveys. Estimated 40 acres and 1,000 individuals within the analysis area, based on a 1995 field visit reported by ORBIC. More recent field visits were made from the roadside, where only a few individuals were observed.
Lawrence's Milkvetch *Astragalus collinus* var. *laurentii*	Threatened	Three occurrences within the analysis area in Morrow and Umatilla counties, based on ORBIC database and observations from 2016 surveys in Umatilla County. Estimated 3 acres and 61 individuals within the analysis area.
Mulford's Milkvetch *Astragalus mulfordiae*	Endangered	Two occurrences within the analysis area in Malheur county, based on BLM and ORBIC databases and observations from 2016 surveys. Estimated 173 acres and 4,753 individuals within the analysis area.
Oregon Semaphore Grass *Pleuropogon oregonus*	Threatened	No existing database records or survey observations within the analysis area. Closest known occurrence is 0.2 mile away from the analysis area.

Common Name ***Scientific Name***	State Status	Documented Use of Analysis Area[1]
Smooth Mentzelia *Mentzelia mollis*	Endangered	No existing database records or survey observations within the analysis area. Closest known occurrence is 0.2 mile away from the analysis area.
Snake River Goldenweed *Pyrrocoma radiata*	Endangered	Four occurrences within the analysis area in Baker County, based on BLM and ORBIC databases, as well as observations from 2012, 2013, and 2016 field surveys. Estimated 500 acres and 12,155 individuals within the analysis area.
Sterile Milkvetch (a.k.a. Cusick's Milkvetch) *Astragalus cusickii* var. *sterilis*	Threatened	No existing database records or survey observations within the analysis area. Closest known occurrence is nearly 5 miles west of the analysis area.

[1] Based on results of Project-specific surveys, as well as the databases discussed in Section 3.2 (e.g., 2016 ORBIC, BLM, USFS, and IDFG data). The number of occurrences for plants within the analysis area were identified based on a 0.62-mile separation distance as described in NatureServe (2004).

3.4 Species Occurrence and Potential Adverse Impacts

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.

3.4.1 Impacts on Fish and Wildlife Species in General

The duration, nature, and extent of the Project's potential impacts on fish and wildlife species in general—including the relevant T&E species—are discussed in Exhibit P1.

3.4.2 Species-Specific Impacts

The following subsections discuss the life histories, habitat requirements, current threats, and likelihood of occurrence within the analysis area for each T&E species. They also present a summary of potential species-specific impacts for each T&E species identified in Table Q-3. Sections 3.7 and 3.8 discuss the potential for Project-related impacts to affect the continued existence of each species or its critical habitat (if applicable), and any proposed mitigation.

3.4.2.1 Wildlife

Wolverine

Background

The wolverine was listed as threatened by the Oregon Game Commission in 1975, and was grandfathered as a state threatened species during enactment of the Oregon Endangered Species Act (OESA) (ORS 496.171 to 496.192 and 498.026) in May 1987 and reaffirmed by rule in 1989 (ODFW 2011a). On February 4, 2013, the FWS proposed to list the North American wolverine as a threatened species under the federal Endangered Species Act (ESA) (78 Federal Register 7864). In August 2014, the FWS withdrew this proposal (FWS 2014); however, in April of 2016 a federal judge overturned the 2014 FWS decision, restoring federal proposed

threatened status to the North American wolverine (Robbins 2016). The FWS is currently reviewing the status of this species (81 Federal Register 71670).

Habitat

Wolverines in North America occur within a variety of alpine, boreal, and arctic habitats including high elevation areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season in the contiguous United States (78 Federal Register 7863). Oregon State University (OSU; 2014) lists the absence of human activity as the key feature of wolverine habitat, although the FWS in its proposal to list the wolverine under the ESA identified conflicting literature on this subject, indicating that rather than avoidance of human disturbance, the wolverine's negative association with human presence reflects the species' preference for cold, snowy, and high-elevation habitat that humans avoid (78 Federal Register 7863).

Threats

The greatest threat to the wolverine is lack of suitably large, remote habitat (OSU 2014). FWS identified projected decreases and fragmentation of wolverine habitat or range due to future climate change as a threat to the species now and in the future (78 Federal Register 7863).

Occurrence

Wolverines were thought to have been extirpated in Oregon but have been documented in Linn, Harney, Wheeler, Hood River, and Grant counties since 1965, and in 2011 two individuals were confirmed in Wallowa County (ODFW 2011a). According to ORBIC (2016b), the current and historic distribution for the wolverine includes three counties crossed by the Project: Umatilla, Union, and Baker. The Institute for Natural Resources (INR 2011) predicts good quality habitat for the wolverine within the analysis area in Union County. The wolverine has been documented travelling over 500 miles during dispersal, indicating its ability to re-colonize areas, habitat permitting (Inman et al. 2009). Due to their large home ranges and dispersal distances, as well as habitat preferences, wolverines may occur in the analysis area.

Potential Adverse Effects

Direct mortality of wolverines is not expected because wolverines present within the analysis area during construction would be expected to avoid the area under construction, although there is a very low likelihood that wolverines could be struck by construction vehicles. Potential indirect effects include habitat fragmentation and disturbance as a result of increased human presence in the area during construction and operation activities as well as improved access for recreation. Minimal areas with persistent snow pack will be impacted by the Project, limiting habitat effects. Additionally, wolverines are known to successfully disperse long distances between habitats through human-dominated landscapes and across transportation corridors (79 Federal Register 47521), indicating that construction and operation of the Project will not limit dispersal of wolverines. In suitable habitat that will be revegetated following construction, the duration of impacts to this habitat will vary depending on vegetation type as described above; forested and woodland areas could take anywhere from 50 to many hundreds of years to recover, especially in the high elevation areas preferred by wolverines that have a short growing season.

Visual and noise disturbance during construction will likely cause wolverines 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. However, these effects are expected to be minor as the Project roughly parallels Interstate 84 through the most likely potential wolverine habitat crossed by the Project, and thus existing noise and visual disturbance are already present on the landscape.

Washington Ground Squirrel

Background

The WAGS was recognized as a candidate species for listing under the ESA in 1994 (59 Federal Register 58982). The species remained a candidate for listing during Project surveys from 2011 to 2014. However, a recent finding by the FWS in September 2016 has led to a decision that the species is not in danger of extinction, and therefore does not warrant listing under the ESA (81 Federal Register 64854). The finding cites an abundance of potential habitat, connectivity between patches of habitat, and current management actions and policies favorable to the species as critical factors in the decision making (81 Federal Register 64855). The WAGS is currently listed as endangered under the OESA.

Habitat

WAGS 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 2004a). Colonies of WAGS also occasionally border agricultural fields, and where adequate resources exist, are adaptable enough to inhabit or forage in a variety of disturbed anthropogenic habitats, such as in or around the edges of pastures, highway roadsides, and railroad right-of-ways (ROWs; WHCWG 2012).

Threats

The biggest factor causing the decline of this species is habitat loss (NatureServe 2016). 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 WAGS face 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 a certain Candidate Conservation Agreement and the understanding that impacts from future agricultural and wind developments will be minimized due to the OESA and Columbia Basin Ecoregion wind energy guidelines (75 Federal Register 69239).

Occurrence

There are multiple records for WAGS 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 2016a, 2016b). Furthermore, Project surveys identified three active colonies within the analysis area, all located in Morrow County at MPs 7.8, 13.8, and 14.6, respectively. The colonies located are all within or adjacent to the NWSTF Boardman and occur within a relatively large block of suitable habitat.

Potential Adverse Effects

As discussed in Exhibit P1, WAGS burrows, as well as a 785-foot buffer around the burrows (restricted to suitable habitat), are classified as Category 1 habitats under the ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0025) and defined by ODFW as required areas for squirrel survival. Project surveys have identified Category 1 habitat within the analysis area; however, IPC has sited the Project to avoid including Category 1 WAGS habitat within the Site Boundary. Changes to the Project location have resulted in a lack of survey information for WAGS across a large portion of potential habitat in Morrow and Umatilla counties (see Exhibit P1, Attachment P1-7A and Figure Q-1). IPC will avoid direct impacts to Category 1 WAGS habitat through avoidance as surveys are completed.

The preliminary design for the Project includes impacts to Category 2 WAGS habitat, defined by ODFW as an area of potential WAGS use within 4,921 feet of Category 1 habitat (Table Q-4). The impacts originate from ground-disturbing activities associated with construction of the Project. As described above, the duration of permanent impacts to all Category 2 WAGS habitat is expected to be indefinite because the Project is expected to remain in service in perpetuity (see Exhibit W for details). Areas temporarily impacted by the Project will be restored as described in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3). The duration of temporary impacts to Category 2 WAGS habitat will vary by vegetation type. Temporary impacts to Category 2 WAGS habitat in agricultural areas will likely be short-term, roughly 1 to 3 years. Similarly, temporary impacts to Category 2 WAGS habitat in introduced upland vegetation will likely be short-term because these areas have previously been disturbed. The duration of temporary impacts to Category 2 WAGS habitat in native grassland will likely be 3 to 7 years, while temporary impacts to Category 2 WAGS habitat in shrub-steppe without big sage will likely last 30 to 100 years. Mitigation for Category 2 WAGS habitat will be commensurate with impact duration as described in the Fish and Wildlife Habitat Mitigation Plan (Exhibit P1, Attachment P1-6).

Table Q-4. Direct Impacts to Category 2 Washington Ground Squirrel Habitat

General Vegetation Type	Habitat Type	Acres Disturbed[1]					
		Proposed Route		West of Bombing Range Road Alternative 1		West of Bombing Range Road Alternative 2	
		Temp	Perm	Temp	Perm	Temp	Perm
Shrub/Grass	Introduced Upland Vegetation	10.6	1.9	5.3	0.3	5.3	0.3
	Native Grasslands	9.1	0.7	1.0	0.2	1.0	0.2
Total		**19.7**	**2.7**	**6.3**	**0.4**	**6.3**	**0.4**

[1] Numbers may not sum exactly due to rounding.
Notes: "Temp" = temporary impacts; "Perm" = permanent impacts.

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 to 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).

If the Project's transmission line and structures become an attractant to raptors and ravens, 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 to which 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 and up to 40.5 miles in Idaho from roost sites to food sources and 16.8 miles in Michigan (ranging from 0.5 to 91.3 miles), with breeding pairs often traveling up to 0.8 mile while searching food (i.e., they were flying to a landfill), and 0.35 mile 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; 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). The portion of the Project along the NWSTF Boardman is co-located with existing powerlines and will replace an existing transmission line. Therefore, for the portion of the Project within and adjacent to the NWSTF Boardman, the Project is not expected to provide new perching opportunities.

No research has been published on sensitivity of WAGS to transmission lines (WHCWG 2012). Although it is possible that transmission towers and lines could have an impact on the squirrels by providing predator perches as described above, transmission corridors may also retain suitable habitat for squirrels (WHCWG 2012). During surveys for the Project on the NWSTF Boardman in 2014, ground squirrels and active burrows were observed under the existing transmission line, indicating that WAGS are likely to continue to utilize the habitat following the construction of the Project.

3.4.2.2 Fish

Various terms are applied by regulatory agencies to define groups of fish species for purposes of management prescriptions.

- A distinct population segment (DPS), is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. The ESA provides for listing species, subspecies, or DPSs of vertebrate species.
- An evolutionarily significant unit (ESU), is a Pacific salmon population or group of populations that is substantially reproductively isolated from other conspecific populations and that represents an important component of the evolutionary legacy of the species. An ESU may be considered a DPS for purposes of listing under the ESA (see 56 Federal Register 58612).
- The State of Oregon uses the term Species Management Units for fish of interest that are interbreeding members of the same species present in the same geographic region.

Results from the desktop analysis described in Section 3.2.1.1, as well as the field surveys conducted in 2014 and 2016, are reported in the Fish Habitat Report (see Exhibit P1, Attachment P1-7B). Provided below are descriptions of the nature, extent, locations, and timing for the T&E fish species identified in Table Q-3.

Snake River Spring/Summer Chinook Salmon ESU

Background

The Snake River spring/summer Chinook salmon ESU is listed as threatened under the ESA (70 Federal Register 37160), and is also listed as threatened under the OESA.

Critical habitat for Snake River spring/summer Chinook salmon 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 line (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 primary constituent elements 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). 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 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/summer 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 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-run 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 will be present in the analysis area is in the mainstem Grande Ronde River, which will be crossed by the transmission line (see Table Q-5). None of the other local tributaries are considered habitat for this species (StreamNet 2016). The mainstem Grande Ronde River is a migration and rearing corridor and not a spawning area for spring/summer Chinook salmon (StreamNet 2016).

Potential Adverse Effects

Impacts to the Snake River Spring /Summer Chinook salmon ESU could occur at locations where the Project either crosses areas that contain these species or at crossings directly upstream of occupied areas (approximately 600 feet upstream[4]), as well as occupied areas that are not directly crossed but which are located adjacent to general soil disturbance and vegetation 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) will affect the type and magnitude of impacts that could occur to T&E fish species or their habitats. Potential Project-related impacts to Snake River Spring/Summer Chinook salmon habitats could include alterations to suspended sediments, sedimentation, temperature, LWD input, as well as potential impacts related to the toxic effect of spills and use of chemicals adjacent to or within waterbodies.

As currently proposed, the proposed transmission line will span two T&E fish-bearing streams (Table Q-5). No direct road crossings of any Snake River Spring /Summer Chinook salmon–bearing streams will occur; however, one road crossing will have road improvements on a non-T&E non-fish-bearing stream within 600 feet upstream from a Snake River Spring /Summer Chinook salmon-bearing stream that could have some downstream effects to it. Nevertheless, impacts to fish passage, as well as impacts related to fish salvage, are not likely to occur at any crossings for any T&E fish species.

The potential impacts of this Project on waterbodies and the Snake River Spring/Summer Chinook Salmon ESU (i.e., T&E fish species) are discussed in more detail within the following subsections. Table Q-5 lists the stream crossings that contain Snake River Spring /Summer Chinook salmon, as well as the amount of soil disturbance adjacent to the waterbody, and the amount of forested riparian vegetation that will potentially be removed at each transmission line and road crossing. The table includes stream crossings specific to the Snake River Spring/Summer Chinook Salmon ESU. Exhibit P1, including Attachment P1-7B, provides all crossings associated with both current and historic fish species.

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 will initially occur during construction; however, ongoing vegetation maintenance in forested habitats will 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, removal of trees in riparian areas is expected to be low (see Table Q-5). Furthermore, in areas spanned by the transmission line, trees will not be removed if the height of the tree (once mature) will not come within 50 feet of the conductors (see Exhibit P1, Attachment P1-4, Vegetation Management Plan). Construction of new access roads across forested riparian areas will, however, result in removal of trees within the extent of the roadbed. These roads will typically consist of a 14- to 16-foot-wide

[4] Research by Ritter (1984) suggests that noticeable increases in suspended sediment (e.g., over 20 milligrams per liter) would not likely occur within 100 feet downstream for small perennial streams and possibly about 200 feet for large perennial streams. These results from Ritter (1984), as well as other studies, were utilized for streams crossed by transmission lines or roads where actions actually disturb the stream bank or bottom (see further discussion in the "Turbidity and Sedimentation" section). Based on these studies, a conservative estimate of 600 feet was used to evaluate crossings directly upstream of fish-bearing streams.

cleared areas on flat ground, up to 30 feet wide in some sloping areas to accommodate cut or fill. However, there will be no new road crossing on or adjacent roads or crossing structure modifications proposed for any currently or historically present T&E fish-bearing streams.

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 22 to 26 degrees Celsius (°C) depending on the species (EPA 2003; Ecology 2002; ODEQ 1995). Fatal temperature limits for Chinook salmon have been recorded at 25°C (acclimation temperature 20 and 24°C) by Brett (1952) and 24.9°C (acclimation temperature 21.1°C) by Orsi (1971). 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).

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, will be greater in smaller streams than in larger ones, due largely to shallower depth and lower volume of water in smaller streams. The vegetation characteristics at accessible crossings that were field surveyed are included in the Fish Habitat Report (in Exhibit P1, Attachment P1-7B). Table Q-5 also provides the vegetation characteristics for the two transmission line crossings. Much of this streamside vegetation other than trees will not be permanently cleared by the Project, and will likely help maintain shade and prevent measurable temperature increases. As a result, Project actions will not likely result in a substantial temperature increase that could result in a biological effect for streams that contain T&E fish resources.

Large Woody Debris and Organic Input

LWD is an essential element in streams for maintenance of good trout and salmon habitat in the Pacific Northwest (Bustard and Narver 1975; Bisson et al. 1987; Tschaplinski and Hartman 1983; Heifetz et al. 1986; Murphy and Koski 1989; Holtby 1988; McMahon and Hartman 1989; Spence et al. 1996). LWD provides cover for fish, adds stream complexity, moderates sediment movement, helps create pools, adds hydraulic control, provides organic input, is substrate for aquatic insects, and can be a food source indirectly to these same organisms (Hicks et al. 1991; Beechie and Sibley 1997; Reeves et al. 2003; Bisson et al. 1987; Everest and Reeves 2007). In fish-bearing streams, LWD supplies direct habitat for fish resources. In non-fish-bearing streams, it has the direct benefit of helping moderate the movement of sediment, by helping to store sediment in the channel and reduce large influxes to fish streams, and ultimately adds large and small organic debris to downstream fish streams. While the source of LWD is varied (e.g., landslides, mortality, bank erosion, and wind blow down), the majority of LWD to streams occurs from trees within one site potential tree height of the stream channel (FEMAT 1993).

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Table Q-5. Stream Crossings by Transmission Line and Roads that Contain T&E Fish Species (Snake River Spring/Summer Chinook Salmon ESU)

Route Name	County	Subwatershed Name	HUC	Crossing Type[1]	MP[2]	Stream Name at Crossing	Stream Name Downstream of Crossing	Riparian Vegetation Type[3]	Soil Impact within 500 ft of Stream (acres)[4]	Impact to Forested Riparian (acres)[5]	Known Habitat Use
Roads											
Proposed Route	Union, OR	Coleman Ridge-Grande Ronde River	170601040307	Road, New, Primitive	99.6	Unnamed stream [1182366453311][6]	Grande Ronde River	Mixed	0.20	0.01	Rearing/Migration
Transmission Lines											
Proposed Route	Union, OR	Coleman Ridge-Grande Ronde River	170601040307	Transmission Line	99.5	Grande Ronde River	Snake River	Mixed	0.00	0.88	Rearing/Migration
Morgan Lake Alternative	Union, OR	Coleman Ridge-Grande Ronde River	170601040307	Transmission Line	99.6	Grande Ronde River	Snake River	Mixed	0.00	0.68	Rearing/Migration

T&E – state-listed threatened and endangered; ESU – evolutionarily significant unit; HUC – Hydrologic Unit Code; MP – milepost; Rearing and Migration only

[1] Roads at crossing were either “new,” meaning a new road would be constructed at the crossing; “improved,” meaning an existing road is present, but some modification would be needed on the road and crossing; or “unchanged,” meaning the road is adequate, but the stream crossing would need modification.

[2] The mileposts reflect the location of the crossing relative to the Proposed Route.

[3] Riparian areas were determined as one site-potential tree height (150 feet) from the GAP data. The USFS and BLM (1997) indicated that site potential tree height in the forested areas of the Project is 150 feet in areas considered to be “Moist Forest” and 120 feet in “Dry Forest.” The GAP data and associated analysis sorted vegetation types into forest, which include all class designated as having trees, "non-forest" were all types classified as not having trees (e.g. shrubs/grasses or wetlands), "mixed" indicates that the area adjacent (within 150 feet of the stream) to the stream that included some area of forest and non-forest vegetation types.

[4] Soil disturbance includes areas of new and reconstructed roads, tower pads and all other work areas within 500 feet of road and transmission line stream crossings.

[5] Area of Project right-of-way within 150 feet of road and transmission line stream crossings, which are also classified as forested plus any ground disturbance caused by construction outside of the ROW. This is the maximum potential removal of forest area; however, much of the area would not be cleared because the amount of forested area spanned by the transmission line will vary at most crossings.

[6] This crossing is of a non-T&E fish bearing stream within 600 feet (stream distance) upstream of a T&E fish bearing stream.

Clearing of riparian vegetation at transmission line crossings and other construction facilities can reduce the source and quantity of LWD to streams. Wood present in streams will take decades to decay for the larger pieces (Murphy and Koski 1989). Beechie et al. (2000) considered 1.5 to 2.0 percent per year loss of in-stream LWD in Northwest streams to be reasonable. Thus, much of the current LWD in streams will remain over several decades. However, over the long term there will be less LWD quantity at the transmission line stream crossings, leading to reduced habitat conditions locally and possibly downstream. The area of wooded riparian vegetation removed, assuming complete removal of all trees within one site potential tree height (150 feet) on each side of the stream crossing, is shown in Table Q-5. This could reduce site-specific LWD supply directly in T&E fish-bearing streams.

Turbidity and Sedimentation

The clearing of vegetation, installation or modification of stream crossing structures, 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 (Bisson and Bilby 1982; Sigler et al. 1984; Lloyd et al. 1987; Hicks et al. 1991; Meehan 1991; Servizi and Martens 1992; Anderson et al. 1996; Newcombe and Jensen 1996; Spence et al. 1996). 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 construction period, 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 installation or modification of stream crossing structures, as well as any other in-water work, is typically a major contributor to waterbody sedimentation; however, no direct road crossing of T&E fish-bearing streams will occur, reducing the chance for direct crossing effects on sediment input.

Two of the most important factors in determining the risk of erosion and sedimentation to streams are soil disturbance (e.g., from existing roads, tower pads, clearing of vegetation) distance from the stream and the presence of vegetation between the disturbance and the stream (MacDonald et al. 2001; Croke and Hairsine 2006; Rashin et al. 2006; Olsen et al. 2007; McCune 2010). Some studies noted that approximately 100-foot vegetated buffers have been considered effective at reducing sediment to streams from land-disturbing activities (Croke and Hairsine 2006; Olsen et al. 2007). Modeling by Olsen et al. (2007); however, noted large contributions of sediment from beyond this distance with or without buffers. McCune (2010) found that direct connection of flow from roads, which would include sediment, decreased linearly for a distance up to about 660 feet. Knutson and Naef (1997) summarized literature on riparian function, including riparian distance considered suitable to adequately reduce sediment entry from overland runoff to streams. The maximum vegetative buffer distance considered in the literature to adequately control sediment entry to water bodies was 300 feet (Knutson and Naef 1997). Based on these studies, the stream proximity of the total ground disturbance area can influence sediment contribution to streams, with potential increases in erosion and sedimentation associated with soil disturbance between 100 and 660 feet. Considering this varied literature and likely vegetation disturbance resulting from Project activities, a distance of

500 feet was considered conservative for potential sediment movement to streams from soil disturbance activity.

Regarding downstream sediment transport, 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 will occur from normal stream crossing related to transmission line construction activities. Transmission line disturbance is likely more similar to, but much less than, 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) will not likely occur within 100 feet downstream for small T&E fish streams and possibly about 200 feet for large T&E fish streams crossed by the transmission line where actions actually disturb the stream bank or bottom. This estimate is likely still higher than what is likely to occur from transmission line stream crossings that will occur as a result of the Project. It should be noted that turbidity levels (as measured in nephelometric turbidity units) are strongly correlated with suspended sediment levels (Lloyd et al. 1987; Rosetta 2005) and will follow similar patterns of change in magnitude.

The FWS (2004b and 2007) evaluated potential effects associated with construction of stream crossing structures and instream restoration projects and identified that turbidity and sedimentation plumes may occur up to 600 feet downstream of individual projects. In addition, the FWS (2004b and 2007) documented that besides direct construction, turbidity and sedimentation plumes could also affect fish during the initial seasonal high flows for brief periods (e.g., 3 hours). Based on the literature from Ritter (1984), Reid et al. (2002), and FWS (2004b and 2007), increased turbidity and sedimentation could occur between 100 and 600 feet downstream of a crossing, with the potential to impact T&E fish species and their habitat.

The clearing of vegetation associated with transmission line crossings and the presence and use of existing access roads have the potential to increase the input of sediment into adjacent waterbodies where T&E fish species are present. The clearing of vegetation will include removal of some riparian trees at the transmission line crossings, which has the potential to add sediment to streams. Because there are no road crossings directly associated with T&E fish species and therefore no work required to be done inside the channel bankfull margins, there will be no potential for increases in sedimentation associated with direct road crossings. There is, nevertheless, a limited potential for small increases in sedimentation from improvements to a non-fish-bearing stream crossing less than 600 feet upstream of a T&E fish-bearing stream.

Based on the previously noted literature on construction effects at stream crossings, downstream sediment travel in streams is likely to be generally low. It is expected that effects will generally be limited to 600 feet below disturbances. This would include one road crossing within 600 feet of a T&E fish-bearing stream. Furthermore, IPC has developed measures to limit the risk of erosion and sedimentation; these measures are contained in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3), the Vegetation Management Plan (Exhibit P1, Attachment P1-4), and the Spill Prevention, Control, and Countermeasure Plan (see Exhibit G, Attachment G-4).

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 or other types of road crossing structures are poorly designed, constructed, or maintained, they can affect the population of entire stream drainages. Given that there are no proposed road crossings of T&E fish-bearing streams, no Project effects on fish passage are anticipated.

As part of the Project, IPC, in consultation with ODFW and federal agencies, first determined which streams in the Project contain or historically contained fish (see the Fish Habitat Report in Exhibit P1, Attachment P1-7B). Following field surveys, IPC developed the fish passage plans. These plans will be further finalized in consultation with ODFW, for all road stream crossings containing or historically containing fish (see Exhibit BB, Attachment BB-3). These fish passage plans provide crossing improvements for all fish-bearing stream crossings associated with the Project. More details about this process and plans are discussed in Exhibit P1 and Exhibit BB, Attachment BB-3. However, if any future route modification requires road crossing improvement or modifications beyond those identified in the fish passage plans, IPC will install all culverts or other stream crossing structures in accordance with ODFW fish passage rules and approvals. In addition, culverts or other stream crossing structures on federally managed lands (if needed) will be installed in accordance with BLM and USFS requirements. As a result of these requirements, recommendations, and project designs, the Project is unlikely to adversely affect fish passage for any T&E fish species.

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 will 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 noxious weeds and 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 will follow the avoidance and minimization measures outlined in the Spill Prevention, Control, and Countermeasures Plan (see Exhibit G, Attachment G-4, as well as Exhibit J, which contains some of the preliminary measures that will be followed), which will be developed by the project Engineering, Procurement, and Construction contractor and submitted to ODOE prior to commencing construction of the Project. Both Exhibit G, Attachment G-4, and Exhibit J contain measures that will prevent hazardous substances from entering fish-bearing streams. Use of herbicides will be restricted to applicable agency/landowner approved methods and herbicide types (see Exhibit P1, Attachment P1-5, Noxious Weed Plan; and Exhibit P1, Attachment P1-4, Vegetation Management Plan), which will include restrictions on where herbicides could be used (e.g., restriction on use near waterbodies).

Fish Salvage

As there are no new or modified road crossings where T&E fish may be present, no fish salvage is expected to occur for this Project on any stream with T&E fish species.

Summary of Potential Adverse Effects

The Snake River Spring/Summer Chinook Salmon ESU occurs within the analysis area; therefore, potential adverse impacts are possible. This ESU is present only at the proposed transmission line crossing of the Grande Ronde River, as well as within 600 feet downstream of a new road stream crossing on a small tributary to the Grande Ronde River. Potential impacts to this ESU at this crossing, as well as the measures to reduce the risk of these impacts, will be similar to those described above where those activities were to occur.

3.4.2.3 Plants

BLM (2016), ORBIC (2016a), IDFG (2016), and USFS (2016) databases, along with field survey data results (see Exhibit P1, Attachment P1-7A, Biological Surveys Summary Report), were combined in GIS to generate species occurrence information. For the five species that have known occurrences within the analysis area (Cronquist's stickseed, Howell's spectacular thelypody, Lawrence's milkvetch, Mulford's milkvetch, and Snake River goldenweed), all locations within the rangewide distribution for each species and within the analysis area greater than 0.62 mile (1 kilometer [km]) apart were considered a separate occurrence, and those closer than 0.62 mile (1 km) were considered the same occurrence, regardless of data source. Assigning groups of T&E plant observations into occurrences helps provide a repeatable method of discussing distribution. The 0.62-mile (1-km) separation distance is the default distance used when assessing occurrences of plant species and provides a repeatable method for assigning observations in different but nearby places into occurrences for discussions of distribution and ranking (NatureServe 2004). Observations that were less than 0.62 mile (1 km) apart but separated by the Snake River (the Oregon-Idaho boundary) were considered separate occurrences. Species occurrences from ORBIC identified as "historic," "extirpated", or "failed to find" were removed from the groupings. Although the ORBIC occurrences removed from the groupings were not included in the impact assessment, they are included in the species-specific discussions below.

Impacts to T&E plant species were quantified utilizing GIS by estimating the total number of individuals that could be impacted from construction of the Project based on the combined dataset, described above. The anticipated number of plants impacted was estimated based on the total count of individuals in a particular GIS polygon and the percentage of the polygon that overlaps the disturbance footprint. Existing roads that will not need substantial improvements are assumed to have no direct impacts (plants removed), so are not included in the impact assessment.

Cronquist's Stickseed

Background, Habitat, and Threats

Cronquist's stickseed is state-listed as threatened in Oregon. It has a global rank of G3 or vulnerable. Oregon's state rank is S3 (vulnerable), while it is ranked as S1 (critically imperiled) in Idaho (NatureServe 2016). This perennial species is in the borage family and resembles the common garden forget-me-not (*Myosotis sylvatica*). It can grow between 6 to 24 inches 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 (OSU 2016). Flowers are white tinted with blue, and are present in late April to May; seeds mature in June. It grows in shrub-steppe habitat on sandy, north-facing slopes (ODA 2016). Rangewide, 97 percent of occurrence acres are found

in the Snake River Plain ecoregion, with 3 percent of occurrence acres in the North Basin and Range ecoregion (EPA 2005). Habitat loss and degradation from 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 2016).

Occurrence

This plant occurs primarily in northeastern Malheur County, with one occurrence in southeast Baker County, Oregon, and one occurrence in adjacent Washington and Payette counties, Idaho (ORBIC 2016a, BLM 2016a, IDFG 2016, Attachment P1-7A in Exhibit P1; see Figure Q-4). There are 50 known occurrences rangewide for the species, with an estimate of over 30,000 individuals in total (NatureServe 2016). Total acreage of all known occurrences (not including the historical occurrences) is 1,834 acres, of which 94 percent is in Oregon. About 83 percent of these occurrences are on BLM lands, with approximately 17 percent on private lands (Table Q-6).

Table Q-6. Occurrences of Cronquist's Stickseed Rangewide

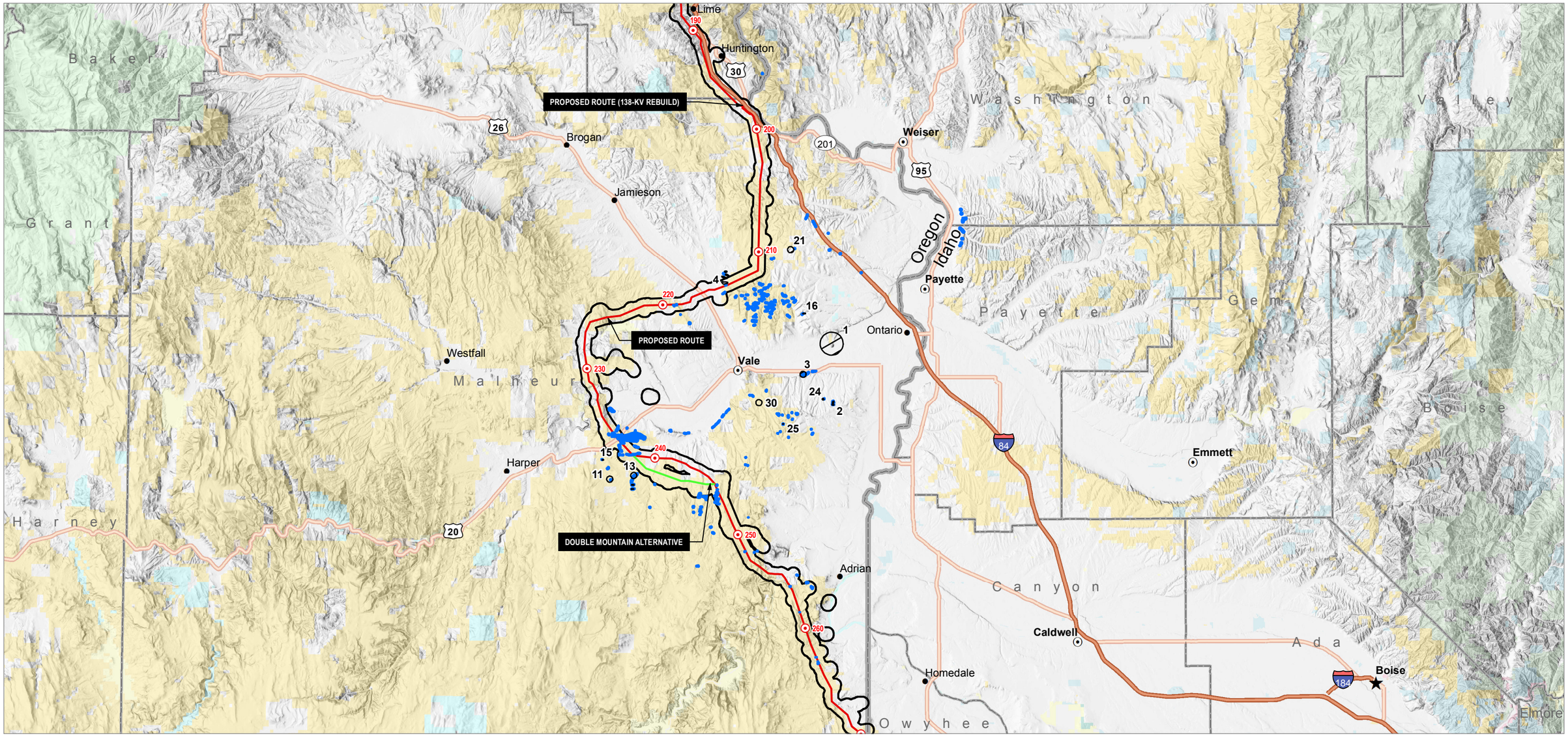
Land Status	Total Acres of Rangewide Occurrences by State[1, 2]	
	Oregon	**Idaho**
Private	215	103
BLM	1,516	0
Bureau of Reclamation	<1	0
Total (by state)	**1,732**	**103**
Total (states combined)	**1,834**	

[1] Occurrences were created based on a 0.62-mile separation distance rangewide, as described above.
[2] Acre totals may not sum exactly due to rounding.

There are 11 known occurrences of Cronquist's stickseed along the portion of the analysis area located in Malheur County; however, the entire disturbance footprint has not been surveyed due to lack of ROE to private lands. The occurrences within the analysis area range from 2 individuals up to 6,311 individuals and from as small as 0.02 acre to 772 acres. Six of the 11 known occurrences in Malheur County were observed during surveys. A small portion of 2 of the 11 occurrences is located within the currently proposed disturbance footprint[5] (see Table Q-7). These 2 occurrences are located in the middle, but on or near the western edge, of Cronquist stickseed's known range.

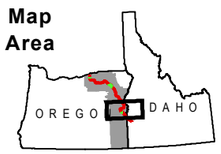
[5] The disturbance footprint consists of all areas that will be disturbed during construction of the Project; this is not the same thing as the Site Boundary, which includes areas that will not be directly disturbed.

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0 8
Miles

Map Area



Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Proposed Route
- Alternative
- Mile

Rangewide Occurrence
- Analysis Area
- Cronquist's Stickseed
- Historic Cronquist's Stickseed- ORBIC Occurrence #

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Other Federal
- State or Local
- US Forest Service
- US Fish and Wildlife Nat'l Wildlife Refuge
- Private

Other Features
- Interstates
- Highways
- State Capital
- County Seat
- Other City

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Cronquist's Stickseed Rangewide Occurrences

Table Q-7. Occurrences of Cronquist's Stickseed within the Analysis Area and Project's Currently Proposed Disturbance Footprint

Analysis Area Occurrence Number[1]: Ecoregion (EPA 2005)	Route and Closest Milepost (MP)[2]	Data Source[3]	Land Owner-ship[4]	Number of Plants within Analysis Area (Total in Occurrence)[5]	Acres[6] Within Analysis Area (Total Acres of Occurrence)	Occurrence Within Disturbance Footprint	Nearest Distance to Disturbance Footprint (feet)	Acres of Occurrence within Disturbance Footprint	Anticipated Number of Plants Impacted[7]	Disturbance Feature(s)[8]
1: Snake River Plain Ecoregion	Proposed Route MP 214 to 215	BLM, ORBIC, 2013 Surveys	BLM	240 (240)	6.7 (6.7)	No	47	0	0	Structure work area, new bladed access road
2: Snake River Plain Ecoregion	Proposed Route MP 219	2013 Surveys	BLM	470 (470)	5.7 (5.7)	Yes	0	< 0.01	<1	New bladed access road, structure work area
3: Snake River Plain Ecoregion	Proposed Route MP 236 to 238	BLM, ORBIC, 2012 and 2016 Surveys	BLM, Private	6,198 (6,311)	271.3 (771.9)	Yes	0	0.05	<1	Structure work area, new bladed access road, and existing road with no substantial improvements
4: Snake River Plain Ecoregion	Double Mountain Alternative MP 6 to 7 and Proposed Route 245 to 247	BLM, ORBIC	BLM	250 (354)	57.2 (76.0)	No	210	0	0	Work Areas and existing roads with substantial improvements
5: Northern Basin and Range	Proposed Route MP 251	BLM	BLM	500 (500)	1.1 (1.1)	No	30	0	0	Structure work area

Analysis Area Occurrence Number[1]: Ecoregion (EPA 2005)	Route and Closest Milepost (MP)[2]	Data Source[3]	Land Owner-ship[4]	Number of Plants within Analysis Area (Total in Occurrence)[5]	Acres[6] Within Analysis Area (Total Acres of Occurrence)	Occurrence Within Disturbance Footprint	Nearest Distance to Disturbance Footprint (feet)	Acres of Occurrence within Disturbance Footprint	Anticipated Number of Plants Impacted[7]	Disturbance Feature(s)[8]
6: Northern Basin and Range	Proposed Route MP 252	BLM	BLM	1 (2)	1.0 (1.7)	No	2,294	0	0	Existing road with substantial improvement and existing road with no substantial improvements
7: Northern Basin and Range	Proposed Route MP 256	BLM, ORBIC	Private, BLM	1,001 (1,001)	2.4 (2.4)	No	1,342	0	0	Existing road with substantial improvement and existing road with no substantial improvements
8: Northern Basin and Range	Proposed Route MP 256	2016 Surveys	BLM, BOR	92 (92)	0.03 (0.03)	No	484	0	0	Structure work area
9: Northern Basin and Range	Proposed Route MP 257 to 258	BLM, ORBIC	BLM	570 (575)	10.0 (10.1)	No	623	0	0	Existing road with substantial improvement and existing road with no substantial improvement
10: Northern Basin and Range	Proposed Route MP 259	2016 Surveys	BLM	10 (10)	0.02 (0.02)	No	146	0	0	Existing road with substantial improvement
11: Northern Basin and Range	Proposed Route MP 263	2012 and 2016 Surveys	BLM	450 (450)	1.0 (1.0)	No	4	0	0	Structure work areas and new bladed access road

Analysis Area Occurrence Number[1]: Ecoregion (EPA 2005)	Route and Closest Milepost (MP)[2]	Data Source[3]	Land Owner-ship[4]	Number of Plants within Analysis Area (Total in Occurrence)[5]	Acres[6] Within Analysis Area (Total Acres of Occurrence)	Occurrence Within Disturbance Footprint	Nearest Distance to Disturbance Footprint (feet)	Acres of Occurrence within Disturbance Footprint	Anticipated Number of Plants Impacted[7]	Disturbance Feature(s)[8]
Occurrences Overlapping Analysis Area Summary										
Northern Basin and Range	Proposed Route MP 214 to 263 and Double Mountain MP 6 to 7	BLM, ORBIC, and 2012, 2013, and 2016 Surveys	BLM, Private, BOR	9,782 (10,005)	356.4 (876.6)	2 of 11	0 to 2,294	0.05	1	Structure work areas and access roads

[1] Occurrences were created based on a 0.62-mile (1-kilometer) separation distance within the analysis area for use in the analysis of impacts (NatureServe 2004).
[2] See Attachment Q-1, Maps 8-14.
[3] BLM = BLM 2016, ORBIC = ORBIC 2016a, Surveys = project-specific surveys, see Exhibit P1, Attachment P1-7A, Biological Surveys Summary Report 2010–2016.
[4] Land ownership of occurrence, listed in order of acreage with most being first.
[5] Number of plants within the occurrence overlapping the analysis area, estimated based on existing BLM and ORBIC databases and survey data. Number of plants within the analysis area estimated based on total count in a particular polygon and the percentage of the polygon that overlaps the analysis area.
[6] Acres of occurrence within the analysis area. All overlap between existing database and survey data were removed to avoid double counting.
[7] Estimated from existing databases and survey data based on the total count in a particular polygon and the percentage of the polygon that overlaps the disturbance footprint. Existing roads that will not need any substantial improvements are assumed to have no direct impacts (i.e., plants removed), so are not included in the count.
[8] Type of disturbance feature that overlaps the occurrence or is closest to the occurrence.
BLM – Bureau of Land Management; BOR – Bureau of Reclamation; MP – milepost; ORBIC – Oregon Biodiversity Information Center

Twelve ORBIC occurrences were removed from the rangewide and analysis area groupings (Table Q-8). All were ranked by ORBIC as historic and most were last observed in the 1980s; one was last observed in 1896. The historic occurrences total nearly 2,500 acres.

Table Q-8. ORBIC Occurrences of Cronquist's Stickseed Removed from Analysis

ORBIC Assigned Occurrence Number	ORBIC Assigned Rank	Last Date Observed	Reason Removed from Analysis	Acres[1]
1	H - Historical	1896	Historic rank	1,734.9
2	H - Historical	5/28/1985	Historic rank	11.1
3	H - Historical	5/29/1985	Historic rank	123.4
4	H - Historical	5/28/1985	Historic rank	100.2
11	H - Historical	5/24/1985	Historic rank	123.4
13	H - Historical	5/29/1985	Historic rank	136.7
15	H - Historical	5/29/1985	Historic rank	2.8
16	H - Historical	6/11/1985	Historic rank	6.4
21	H - Historical	7/27/1987	Historic rank	123.4
24	H - Historical	6/14/1986	Historic rank	7.7
25	H - Historical	7/8/1987	Historic rank	1.4
30	H - Historical	5/27/1985	Historic rank	123.4
			Total	**2,494.7**

[1] Acre totals may not sum exactly due to rounding.

Potential Adverse Effects

There are 11 known occurrences (based on existing BLM and ORBIC databases and surveys) of Cronquist's stickseed within the analysis area; 6 were observed during Project surveys, and small portions of 2 occurrences are within the disturbance footprint (Attachment Q-1, Maps 8 to 14). The 9 other occurrences are either adjacent to an existing road with no substantial improvements, or between 4 to 2,294 feet away from a proposed disturbance feature (Table Q-7).

Potential adverse effects during construction and operations could include loss of habitat and direct mortality as a result of vegetation clearing for roads, towers, and construction areas. Direct impacts could include removal of individual plants, the seed bank, habitat and/or habitat of pollinators. Indirect impacts will include habitat degradation and fragmentation, potential for establishment of noxious weeds and invasive plants, potential for wildland fire, or a change in vegetation community as a result of construction.

Dust deposition on plants during construction and from transport along access roads through occupied habitat could affect photosynthesis, respiration, transpiration, and reproduction, which could negatively impact productivity of Cronquist's stickseed and possibly the structure of the plant community within its habitat (Farmer 1993; Trombulak and Frissell 2000).

Despite the known occurrences, it is anticipated that few, if any, individuals will be directly removed due to construction and operation of the Project. Two occurrences will be directly impacted (Occurrences 2 and 3, Table Q-7; Attachment Q-1, Maps 8 and 9). Occurrence 2 has approximately 470 known individuals and is approximately 6 acres, while occurrence 3 has over 6,300 individuals and is approximately 772 acres. Less than 0.05 total acre of occupied habitat will be directly impacted between both occurrences 2 and 3, which is less than 0.003 percent of the total known acres of rangewide occurrences. Impacts to habitat connectivity for pollinators will be minimal due to the minimal direct impacts. The potential adverse effects will be avoided and/or minimized by the measures discussed in Section 3.5.

Howell's Spectacular Thelypody

Background, Habitat, and Threats

Howell's spectacular thelypody was included as a threatened species under the ESA in June 1999 (64 Federal Register 8393). This species is also listed as endangered under the OESA. Howell's spectacular thelypody has a global rank of G2T2 (critically imperiled and an Oregon state rank of S1, critically imperiled (ORBIC 2016b). 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 2016). 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). The habitat of Howell's spectacular thelypody has been disturbed primarily by conversion to agriculture although grazing, invasive species, and other human activities also threaten the species. All known occurrences are within the Blue Mountains ecoregion (EPA 2005).

Occurrence

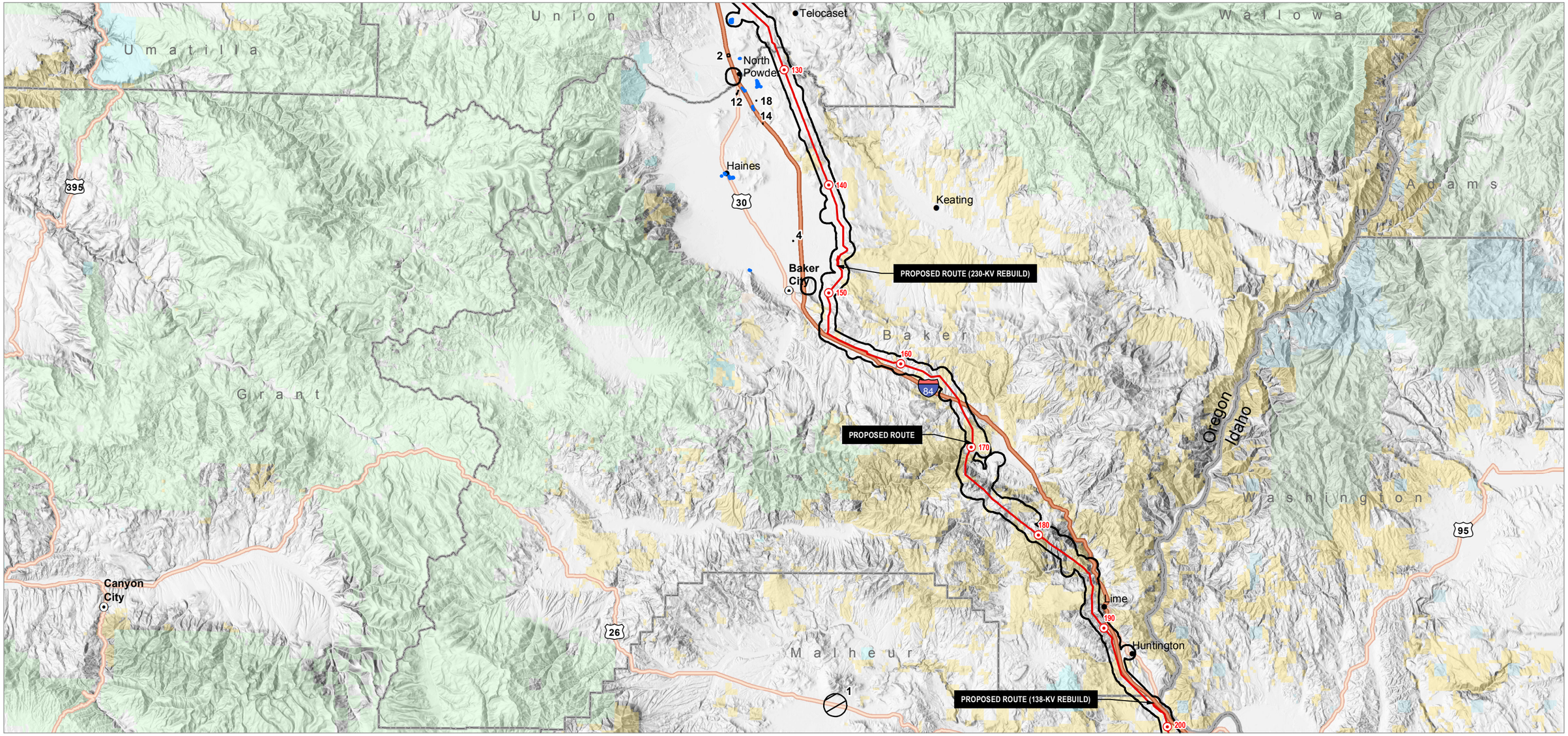
Howell's spectacular thelypody has been found in Union, Baker, and Malheur counties (ODA 2016; ORBIC 2016a, 2016b), though the one occurrence in Malheur County is now considered extirpated (ORBIC 2016a). Of the seven currently known occurrences of this species (ORBIC 2016a), only two are protected (FWS 2002; ODA 2016). Total acres of known occurrences for this species is 116 acres, all of which occur on private land (ORBIC 2016a).

There is one occurrence of Howell's spectacular thelypody within the analysis area, located north of the town of North Powder, in the Clover Creek Valley in Union County (Table Q-9). This occurrence, which is entirely on and surrounded by private land, is the northernmost known occurrence in this species range (Figure Q-5) with an estimated 1,000 individuals, based on a 1995 field visit. More recent field visits were made from the roadside, where only a few individuals were observed. The occurrence is estimated to have a fair to poor estimated viability (ORBIC 2016a). This known occurrence is located approximately 107 feet outside of the Project's disturbance footprint and across an existing road from a proposed temporary multi-use area, where no permanent features are anticipated. The proposed multi-use area has not been surveyed for the species, due to lack of ROE to this private land parcel. The area will be surveyed prior to construction. The analysis area is predominantly east of the known rangewide distribution of this species, except for the one occurrence within the analysis area (Figure Q-5). No individuals or potential habitat have been observed during field surveys.

Table Q-9. Occurrences of Howell's Spectacular Thelypody within the Analysis Area and Project's Currently Proposed Disturbance Footprint

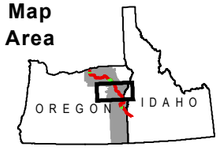
Analysis Area Occurrence Number[1]: Ecoregion (EPA 2005)	Route and Closest Milepost (MP)[2]	Data Source(s)[3]	Land Ownership	Number of Plants within Analysis Area (Total in Occurrence)[4]	Acres[5] Within Analysis Area (Total Acres of Occurrence)	Occurrence Within Disturbance Footprint	Nearest Distance to Disturbance Footprint (feet)	Acres of Occurrence within Disturbance Footprint	Anticipated Number of Plants Impacted[6]	Disturbance Feature(s)[7]
1: Blue Mountains Ecoregion	Proposed Route MP 124	ORBIC	Private	1,000 (1,000)	39.8 (39.8)	No	107	0	0	Multi-use work area

[1] Occurrences were created based on a 0.62-mile (1-kilometer) separation distance within the analysis area for use in the analysis of impacts (NatureServe 2004).
[2] See Attachment Q-1, Map 3.
[3] BLM = BLM 2016, ORBIC = ORBIC 2016a, Surveys = project-specific surveys, see Exhibit P1, Attachment P1-7A, Biological Surveys Summary Report 2010–2016.
[4] Number of plants within the occurrence within the analysis area, estimated based on existing BLM and ORBIC databases and survey data. Number of plants within the analysis area estimated based on total count in a particular polygon and the percentage of the polygon that overlaps the analysis area.
[5] Acres of occurrence within the analysis area. All overlap between existing database and survey data were removed to avoid double counting.
[6] Estimated from existing databases and survey data based on the total count in a particular polygon and the percentage of the polygon that overlaps the disturbance footprint.
[7] Type of disturbance feature that overlaps the occurrence or is closest to the occurrence.
BLM – Bureau of Land Management; ORBIC – Oregon Biodiversity Information Center



0 8
Miles

Map Area



Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Proposed Route
- Mile

Rangewide Occurrence
- Analysis Area
- Howell's Spectacular Thelypody
- Historic Howell's Spectacular Thelypody- ORBIC Occurrence #

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Other Federal
- State or Local
- State or Local Wildlife or Parks and Recreation Area
- US Forest Service
- US Fish and Wildlife Nat'l Wildlife Refuge
- Private

Other Features
- Interstates
- Highways
- County Seat
- Other City

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Howell's Spectacular Thelypody Rangewide Occurrences

Six historic ORBIC occurrences were removed from the rangewide and analysis area groupings (Table Q-10, Figure Q-5). Three were ranked as either extirpated or possibly extirpated by ORBIC. The other three were ranked as "failed to find" and were last observed between 11 and 27 years ago.

Table Q-10. ORBIC Occurrences of Howell's Spectacular Thelypody Removed from Analysis

ORBIC Assigned Occurrence Number	ORBIC Assigned Rank[1]	Last Date Observed	Reason Removed from Analysis	Acres[2]
1	X – Extirpated	8/16/1969	Extirpated rank	1,735
2	X? – Possibly extirpated	1970?	Possibly extirpated rank	31
4	F – Failed to find	6/19/1995	Failed to find rank	2
12	F – Failed to find	6/18/2005	Failed to find rank	4
14	X? – Possibly extirpated	5/31/1990	Possibly extirpated rank	1
18	F – Failed to find	4/19/1989	Failed to find rank	2
			Total	**1,775**

[1] The Oregon Biodiversity Information Center (ORBIC) assigned ranks that include a question mark indicates uncertainty in the rank. The question mark is part of the ORBIC assigned rank and thus included in the table as received from ORBIC.
[2] Acre totals may not sum exactly due to rounding.

Potential Adverse Effects

Although this species was not detected during Project surveys, there is one known occurrence (based on the ORBIC database) within the analysis area (Attachment Q-1, Map 3) 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.

If the species does occur, potential adverse effects during construction and operations could include loss of habitat and direct mortality as a result of vegetation clearing for roads, towers, and construction areas. In addition, the Project could lead to increased risk of invasion by noxious weeds or change in vegetation community as a result of disturbance. No direct impacts to individual plants or known occupied habitat are anticipated, but indirect impacts could occur. Adverse effects will be avoided and minimized, as described in Section 3.5.

Lawrence's Milkvetch

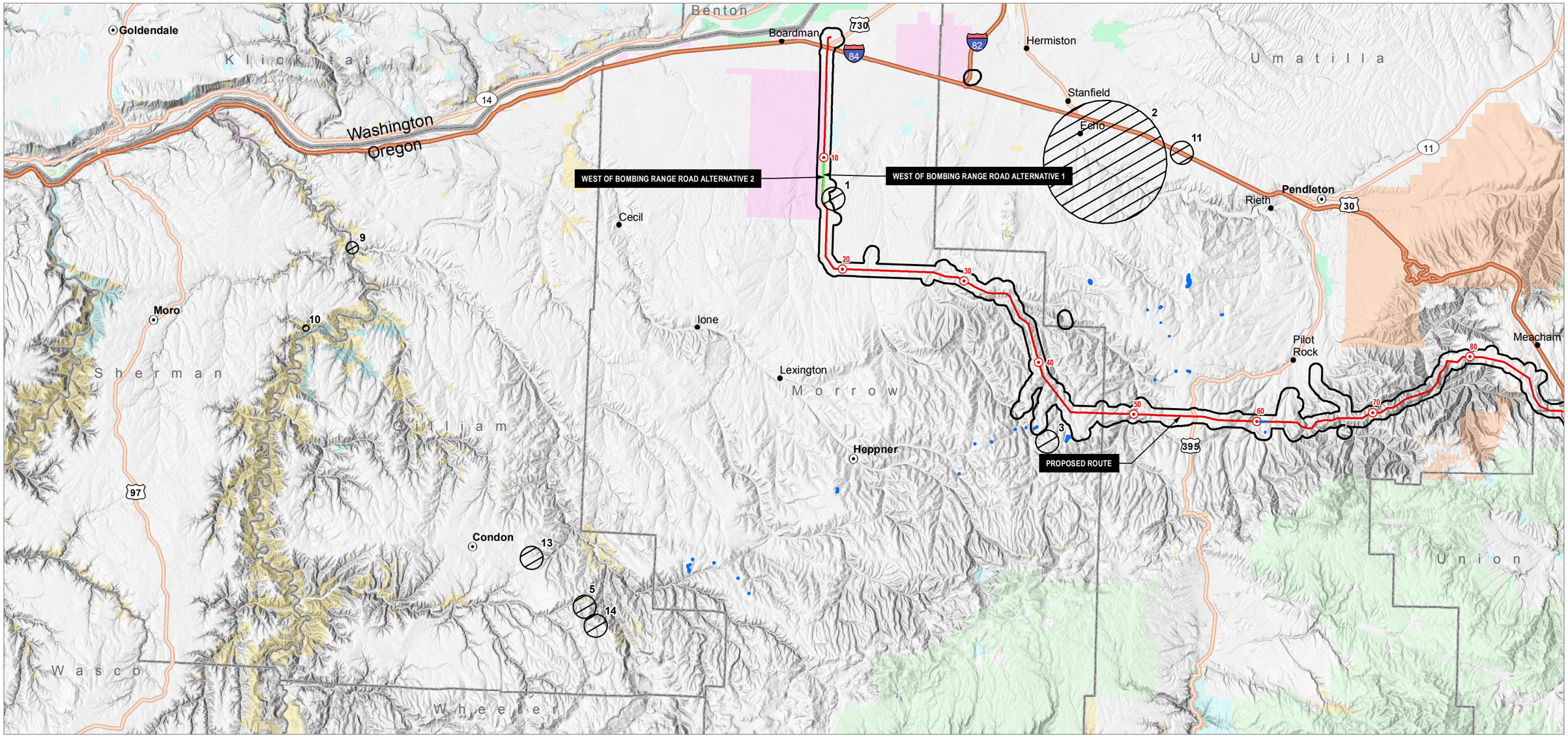
Background, Habitat, and Threats

Lawrence's milkvetch is listed as threatened under the OESA. It has a global rank of G5T1, critically imperiled, and an Oregon state rank of S1 (critically imperiled; ORBIC 2016b). Lawrence's milkvetch is a perennial species between 8 and16 inches tall with branched leaflets that are pinnately compound. Blooming of cream or yellow flowers occurs in May through early June, and they develop pendulant seed pods between June and August. Lawrence's milkvetch is often found on dry slopes with sandy or rocky soils overlying basalt. Known occurrences are small and fragmented, often on roadsides adjacent to cultivated land. It occurs in bluebunch wheatgrass (*Pseudoroegneria spicata*)–Idaho fescue (*Festuca idahoensis*) dominated grasslands (ODA 2016). All known occurrences are within the Columbia Plateau ecoregion (EPA 2005). 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 2016).

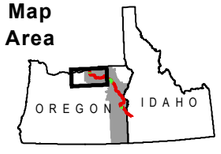
Occurrence

Lawrence's milkvetch is found in two counties in Oregon, with historic locations from two additional counties, including Morrow and Umatilla and possibly Gilliam, and Sherman (ORBIC 2016a, 2016b; NatureServe 2016; ODA 2016). There are 24 known occurrences (ORBIC 2016a) with less than 2,000 individuals total and many of the occurrences have not been visited since 1983 or earlier (ORBIC 2016a; NatureServe 2016). Rangewide, there are a total of 200 acres of non-historic occurrences, all of which are on private land (ORBIC 2016a; Figure Q-6).

There are three occurrences, with up to 61 total individuals, within the analysis area located in Morrow and Umatilla counties (based on the ORBIC database (2016a) and 2016 field surveys; Table Q-11). The analysis area is located within the north-central portion of this species' distribution (Figure Q-6). As shown in Table Q-11, there are no occurrences within the currently proposed disturbance footprint.



Map Area



0 8

Miles

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Proposed Route
- Alternative
- Mile

Rangewide Occurrence
- Analysis Area
- Lawrence's Milkvetch
- Historic Lawrence's Milkvetch- ORBIC Occurrence #

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Indian Reservation
- Military Reservation or Corps of Engineers
- Other Federal
- State or Local
- State or Local Wildlife or Parks and Recreation Area
- US Forest Service
- US Fish and Wildlife Nat'l Wildlife Refuge
- Private

Other Features
- Interstates
- Highways
- County Seat
- Other City

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Lawrence's Milkvetch Rangewide Occurrences

Table Q-11. Occurrences of Lawrence's Milkvetch within the Analysis Area and Project's Currently Proposed Disturbance Footprint

Analysis Area Occurrence Number[1]: Ecoregion (EPA 2005)	Route and Closest Milepost (MP)[2]	Data Source[3]	Land Ownership	Number of Plants in Occurrence (Total in Occurrence)[4]	Acres[5] Within Analysis Area (Total Acres of Occurrence)	Occurrence Within Disturbance Footprint	Nearest Distance to Disturbance Footprint (feet)	Acres of Occurrence within Disturbance Footprint	Anticipated Number of Plants Impacted[6]	Disturbance Feature(s)[7]
1: Columbia Plateau Ecoregion	Proposed Route MP 44-45	ORBIC	Private	17 (17)	3.0 (3.0)	No	30	0	0	Existing road with substantial modification
2: Columbia Plateau Ecoregion	Proposed Route MP 60-61	2016 Surveys	Private	37 (37)	0.1 (0.1)	No	69	0	0	Structure work area and new primitive road
3: Columbia Plateau Ecoregion	Proposed Route MP 61	2016 Surveys	Private	7 (7)	0.02 (0.02)	No	1	0	0	New primitive road
Occurrences Overlapping Analysis Area Summary										
Columbia Plateau Ecoregion	Proposed Route MP 44-61	ORBIC and 2016 Surveys	Private	61 (61)	3.2 (3.2)	0 of 3	1 to 69	0	0	Existing road, structure work area, and new primitive roads.

[1] Occurrences were created based on a 0.62-mile separation distance within the analysis area for use in the analysis of impacts (NatureServe 2004).
[2] See Attachment Q-1, Maps 1 and 2.
[3] BLM = BLM 2016, ORBIC = ORBIC 2016a, Surveys= project-specific surveys, see Exhibit P1, Attachment P1-7A, Biological Surveys Summary Report 2010–2016.
[4]Number of plants within the occurrence within the analysis area, estimated based on existing BLM and ORBIC databases and survey data.
[5] Acres of occurrence within the analysis area. All overlap between existing database and survey data were removed to avoid double counting.
[6] Estimated from existing databases and survey data based on the total count in a particular polygon and the percentage of the polygon that overlaps the disturbance footprint. Existing roads that will not need any substantial improvements are assumed to have no direct impacts (plants removed), so are not included in the count.
[7] Type of disturbance feature that overlaps the occurrence or is closest to the occurrence.
BLM – Bureau of Land Management; ORBIC – Oregon Biodiversity Information Center

Nine ORBIC occurrences were removed from the rangewide and analysis area groupings (Table Q-12, Figure Q-6). Eight were given a historic rank by ORBIC, as most have not been observed since the 1950s. One occurrence (ORBIC Occurrence 1) has a rank of D, poor estimated viability. Only two individuals were observed back in 1976, and the identification was never verified.

Table Q-12. ORBIC Occurrences of Lawrence's Milkvetch Removed from Analysis

ORBIC Assigned Occurrence Number	ORBIC Assigned Rank	Last Date Observed	Reason Removed from Analysis	Acres[1]
1	D – Poor estimated viability	6/1976	Rank of D – poor viability and only 2 observed in 1976	1,736
2	H – Historical	5/30/1958	Historic rank	49,970
3	H – Historical	5/29/1958	Historic rank	1,736
5	H – Historical	5/29/1955	Historic rank	1,737
9	H – Historical	4/28/1950	Historic rank	494
10	H – Historical	4/29/1950	Historic rank	124
11	H – Historical	6/9/1950	Historic rank	1,735
13	H – Historical	5/28/1955	Historic rank	1,737
14	H – Historical	1984	Historic rank	1,737
			Total	**49,970**

[1] Acre totals may not sum exactly due to rounding.

Potential Adverse Effects

This species was detected during Project surveys, and there are three known occurrences (based on existing databases and surveys) within the analysis area. The three known occurrences have been avoided and are between 1 and 69 feet away from the disturbance footprint. Potential indirect impacts could occur, but avoidance and minimization measures will help reduce these potential impacts. Dust deposition on plants during construction and from transport along access roads through occupied habitat could affect photosynthesis, respiration, transpiration, and reproduction, which could negatively impact productivity of Lawrence's milkvetch and possibly the structure of the plant community within its habitat (Farmer 1993; Trombulak and Frissell 2000).

If the species is found to occur and cannot be avoided, potential adverse effects during construction and operation could include loss of habitat and direct mortality as a result of vegetation clearing for roads, towers, and construction areas. Direct impacts could include removal of individual plants, the seed bank, habitat and/or habitat of pollinators. Indirect impacts could include habitat degradation and fragmentation, potential for establishment of noxious weeds and invasive plants, potential for wildland fire, or a change in vegetation community as a result of construction.

No direct impacts to individual plants or known occupied habitat are anticipated, but indirect impacts could occur. Adverse effects will be avoided and minimized, as described in Section 3.5.

Mulford's Milkvetch

Background, Habitat, and Threats

Mulford's milkvetch is listed as endangered under the OESA. It has a global rank of G2, imperiled, and an Oregon state rank of S1, critically imperiled. Its state rank in Idaho is S2, or imperiled (NatureServe 2016). This milkvetch is a perennial herb with opposite leaflets and a terminal leaflet regularly spaced along the stem. Mulford's milkvetch is 3 to 8 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 seedpods are present from May through June (ODA 2016). It grows at elevations between 2,200 and 2,800 feet in sandy substrates of old river deposits, bluffs, and foothills. Threats include habitat loss from urban development, invasive weeds, fires, livestock grazing, mining, and off-road use (ODA 2016).

Occurrence

Mulford's milkvetch is known to occur in Malheur County, Oregon (ORBIC 2016a, 2016b; NatureServe 2016) and Ada, Payette, Washington, and Owyhee counties, Idaho (IDFG 2016; NatureServe 2016). There are 37 known occurrences rangewide, 10 in Oregon and 27 in Idaho. Total acreage of all known occurrences (not including historical occurrences) is 1,313 acres, of which 37 percent are in Oregon and 63 percent in Idaho. Greater than 70 percent of all known occurrences are found on BLM-managed land, followed by private land (Table Q-13; Figure Q-7).

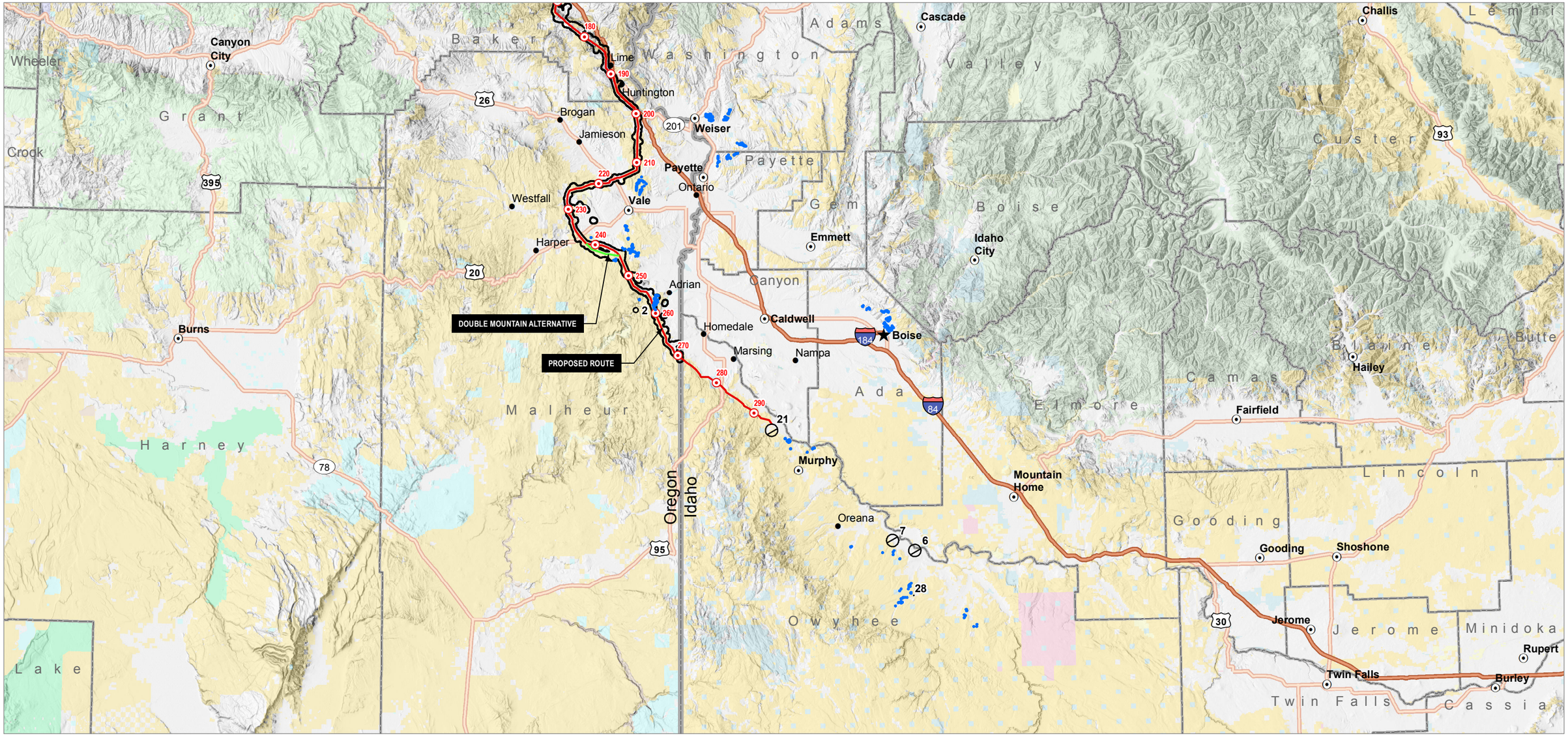
Table Q-13. Total Acres of Known Rangewide Occurrences by Land Status for Mulford's Milkvetch

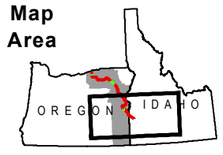
Land Status	Total Acres of Rangewide Occurrences[1]	
	Oregon	**Idaho**
BLM	470	484
Private	13	327
Bureau of Reclamation	0	18
State Parks and Recreation, Wildlife, or Other	0	1
Total (by state)	**483**	**830**
Total (states combined)	**1,313**	

[1] Acre totals may not sum exactly due to rounding.

There are two occurrences of Mulford's milkvetch within the analysis area located in Malheur County (based on existing databases and 2016 surveys). One occurrence is estimated to have 51 individuals and is over 1,300 feet from the disturbance footprint (Attachment Q-1, Map 10). The other occurrence is quite large, with over 4,700 individuals estimated within 157 acres (Table Q-14; Attachment Q-1, Maps 12 and 13). About 0.1 acre of this occurrence overlaps an existing road that will require substantial modification.

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0 20
Miles

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Proposed Route
- Alternative
- Mile

Rangewide Occurrence
- Analysis Area
- Mulford's Milkvetch
- Historic Mulford's Milkvetch-ORBIC Occurrence #

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Indian Reservation
- National Park Service
- Other Federal
- State or Local
- State or Local Wildlife or Parks and Recreation Area
- US Forest Service
- US Fish and Wildlife Nat'l Wildlife Refuge
- Private

Other Features
- Interstates
- Highways
- State Capital
- County Seat
- Other City

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Mulford's Milkvetch Rangewide Occurrences

Table Q-14. Occurrences of Mulford's Milkvetch within the Analysis Area and Project's Currently Proposed Disturbance Footprint

Analysis Area Occurrence Number[1]: Ecoregion (EPA 2005)	Route and Closest Milepost (MP)[2]	Data Source[3]	Land Ownership	Number of Plants within Analysis Area (Total in Occurrence)[4]	Acres[5] Within Analysis Area (Total Acres of Occurrence)	Occurrence Within Disturbance Footprint	Nearest Distance to Disturbance Footprint (feet)	Acres of Occurrence within Disturbance Footprint	Anticipated Number of Plants Impacted[6]	Disturbance Feature(s)[7]
1: Snake River Plain	Double Mountain Alternative MP 6 to 7 and Proposed Route MP 246	BLM, ORBIC	BLM	42 (51)	3.6 (5.5)	No	1,304	0	0	Existing road with substantial modification
2: Northern Basin and Range	Proposed Route MP 257-259	BLM, ORBIC, 2016 Surveys	BLM	4,498 (4,702)	157.0 (167.6)	Yes	0	0.1	52	Existing roads with substantial modification
Occurrences Overlapping Analysis Area Summary										
Snake River Plain and Northern Basin and Range	Double Mountain Alternative MP 6-7 and Proposed Route MP 246-259	BLM, ORBIC, 2016 Surveys	BLM	4,541 (4,753)	160.6 (173.1)	1 of 2	0	0.1	52	Existing roads with substantial modification

[1] Occurrences were created based on a 0.62-mile separation distance within the analysis area for use in the analysis of impacts (NatureServe 2004).
[2] See Attachment Q-1, Maps 10, 12, and 13.
[3] BLM = BLM 2016, ORBIC = ORBIC 2016a, Surveys = project-specific surveys, see Exhibit P1, Attachment P1-7A, Biological Surveys Summary Report 2010–2016.
[4] Number of plants within the occurrence within the analysis area, estimated based on existing BLM and ORBIC databases and survey data. Number of plants within the analysis area estimated based on total count in a particular polygon and the percentage of the polygon that overlaps the analysis area.
[5] Acres of occurrence within the analysis area. All overlap between existing database and survey data were removed to avoid double counting.
[6] Estimated from existing databases and survey data based on the total count in a particular polygon and the percentage of the polygon that overlaps the disturbance footprint.
[7] Type of disturbance feature that overlaps the occurrence or is closest to the occurrence.
BLM – Bureau of Land Management; ORBIC – Oregon Biodiversity Information Center

Five ORBIC occurrences were removed from the rangewide and analysis area occurrence groupings. Five were ranked by ORBIC as extirpated or possibly extirpated and one is considered possibly historic. Last observations for these historic occurrences were between 1938 and 1999 (Table Q-15).

Table Q-15. ORBIC Occurrences of Mulford's Milkvetch Removed from Analysis

ORBIC Assigned Occurrence Number	ORBIC Assigned Rank[1]	Last Date Observed	Reason Removed from Analysis	Acres[2]
2	H? – Possibly historical	6/17/1976	Historic rank	493
6	X? – Possibly extirpated	5/27/1946	Possibly extirpated rank	3,088
7	X? – Possibly extirpated	5/19/1938	Possibly extirpated rank	3,087
21	X? – Possibly extirpated	6/23/1979	Possibly extirpated rank	3,086
28	X – Extirpated	1999	Extirpated rank	2
			Total	**9,757**

[1] The Oregon Biodiversity Information Center (ORBIC) –assigned ranks that include a question mark indicate uncertainty in the rank. The question mark is part of the ORBIC-assigned rank and thus included in the table as received from ORBIC.
[2] Acre totals may not sum exactly due to rounding.

Potential Adverse Effects

There are two known occurrences (based on existing databases and surveys) within the analysis area, though only one was observed during field surveys. A portion of occurrence 2 (Table Q-14; Attachment Q-1, Maps 12 and 13) is within the proposed disturbance footprint southwest of Brown Butte in Malheur County, along two different segments of an existing road that will require substantial road improvements. Surveys conducted in 2016 confirmed the presence of this species, and mapping was used to estimate the number of plants and acres of impact. Mulford's milkvetch plants were observed within and adjacent to the existing road that will require improvements. Avoidance and minimization measures will be implemented to reduce impacts; however, micrositing the location of the road is not practical because this is an existing road in steep, sandy terrain.

Potential adverse effects during construction and operation could include loss of habitat and direct mortality as a result of vegetation clearing for road improvements. Direct impacts could include removal of individual plants, the seed bank, habitat, and/or habitat of pollinators. Indirect impacts could include habitat degradation and fragmentation, potential for establishment of noxious weeds and invasive plants, potential for wildland fire, or a change in vegetation community as a result of construction. Dust deposition on plants during construction and from transport along access roads through occupied habitat could affect photosynthesis, respiration, transpiration, and reproduction, which could negatively impact productivity of Mulford's milkvetch and possibly the structure of the plant community within its habitat (Farmer 1993; Trombulak and Frissell 2000).

A conservative estimate will be a direct loss of up to 52 individuals, and up to 0.1 acres of occupied habitat within occurrence 2 due to construction of the Project. This occurrence has approximately 4,700 known individuals and is approximately 168 acres (Table Q-14). Less than 0.005 percent of the total known acres of rangewide occurrences will be directly impacted, and less than 0.04 percent of occurrence 2 will be directly impacted. Impacts to habitat connectivity

for pollinators will be minimal due to the minimal direct impacts. Adverse effects will be minimized by the measures discussed in Section 3.5 below.

Oregon Semaphore Grass

Background, Habitat, and Threats

Oregon semaphore grass (*Pleuropogon oregonus*) is not known to occur within the analysis area. The closest known occurrence is 0.2 mile outside of the analysis area. Oregon semaphore grass is listed as threatened under the OESA. It is a perennial grass 16 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 (OSU 2016; ODA 2016). This grass is an obligate wetland species and grows in shallowly inundated meadows and marshlands with sluggish moving water between 3,000 and 5,600 feet in elevation (OSU 2016; ODA 2016). Threats include heavy livestock grazing and loss of habitat from agriculture development and hydrological alterations (ODA 2016).

Occurrence

There are eight (ORBIC 2016a; NatureServe 2016) known occurrences of Oregon semaphore grass from two disjunct locations in Oregon: one in Union County and the other in Lake County (OSU 2016; ODA 2016; ORBIC 2016a). None of the occurrences are within the analysis area, with the closest being approximately 0.2 mile from the analysis area and approximately 0.7 mile from the Site Boundary. This species was not observed during field surveys, though suitable habitat for this species (i.e., emergent wetlands in Union County) does occur within the analysis area and known occurrence number 7 (ORBIC 2016a) overlaps the analysis area. This known occurrence was last observed on June 17, 1986, with just a few plants observed. The 1986 observation identified cattle grazing, ditching, and potential changes in hydrology as potential threats. The occurrence was visited during surveys on June 26, 2016, but no individuals were observed. The area had been actively grazed at the time of survey, including heavy grazing and trampling. This occurrence was ranked by ORBIC as fair estimated viability, but since it was not observed during recent surveys, it was removed from the analysis.

Potential Adverse Effects

Although this species was not detected during Project surveys and its known distribution is restricted to two areas in Oregon, there are known occurrences (based on existing databases) 0.2 mile outside of the analysis area. The entire Site Boundary has not been surveyed, due to lack of ROE on private land and Project modifications and suitable habitat is present within the analysis area. Therefore, it is possible Oregon semaphore grass occurs within unsurveyed areas potentially affected by the Project, and adverse impacts are possible without complete survey data and proper avoidance and minimization measures. If the species is found to occur and cannot be avoided, potential adverse effects during construction and operation could include loss of habitat and direct mortality as a result of vegetation clearing for roads, towers, and construction areas. In addition, the Project could lead to increased risk of invasion by noxious weeds or change in vegetation community as a result of construction. Dust deposition on plants during construction and from transport along access roads through occupied habitat could affect photosynthesis, respiration, transpiration, and reproduction, which could negatively impact productivity of Oregon semaphore grass and possibly the structure of the plant community within its habitat (Farmer 1993; Trombulak and Frissell 2000). Adverse effects will be avoided and minimized, as described in Section 3.5 below. Additionally, the habitat for Oregon semaphore grass includes wetlands, which are protected under the Clean Water Act and Oregon State Removal Fill Law. Both T&E plants and wetlands will be avoided, where possible. Mitigation of impacts to wetlands are regulated by the Oregon Department of State

Lands and U.S. Army Corps of Engineers and further described in Exhibit J, Waters of the State.

Smooth Mentzelia

Background, Habitat, and Threats

Smooth mentzelia (*Mentzelia mollis*) is not known to occur within the analysis area. The closest known occurrence is less than 0.2 mile outside of the analysis area. This species is listed as endangered under the OESA. 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 grey or green volcanic ash and clay soils, including montmorillonite. This plant is also adapted to very dry soils with high levels of potassium (OSU 2016; ODA 2016). This species is found in the Succor Creek soil formation in Malheur County at elevations from 2,500 to 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 2016). 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 2016).

Occurrence

Smooth mentzelia is known from Malheur County, Oregon, Owyhee County, Idaho, and one disjunct occurrence in Nevada (ORBIC 2016b; NatureServe 2016). There are no known occurrences of smooth mentzelia in the analysis area, though a known occurrence is less than 0.2 mile from the analysis area and smooth mentzelia was observed in two occurrences during Project surveys in Owyhee County, Idaho.

Potential Adverse Effects

Smooth mentzelia is not known to occur within the analysis area in Oregon; however, suitable habitat is present and known occurrences are less than 0.2 miles from the analysis area. Therefore, smooth mentzelia may occur within areas potentially affected by the Project, and adverse impacts could be possible without proper avoidance and minimization. If the species is found to occur and cannot be avoided, potential adverse effects during construction and operation could include loss of habitat and direct mortality as a result of vegetation clearing for roads, towers, and construction areas. In addition, the Project could lead to increased risk of invasion by noxious weeds or change in vegetation community as a result of construction. Dust deposition on plants during construction and from transport along access roads through occupied habitat could affect photosynthesis, respiration, transpiration, and reproduction, which could negatively impact productivity of smooth mentzelia and possibly the structure of the plant community within its habitat (Farmer 1993; Trombulak and Frissell 2000). Adverse effects will be avoided and minimized, as described in Section 3.5 below.

Snake River Goldenweed

Background, Habitat, and Threats

The Snake River goldenweed is listed as endangered under the OESA. It has a global rank of G3, vulnerable, and Oregon and Idaho state ranks of S3, vulnerable (NatureServe 2016). This robust perennial in the aster family grows from 12 to 39 inches tall. The leaf blades may be almost 20 inches long and are broadly elliptical. The 1- to 1.5-inch-wide yellow flower heads may be single or in corymbs, and typically bloom between June and July. This plant is only known to grow in the Snake River Canyon in northeast Oregon and Idaho at elevations ranging from approximately 2,000 to 6,000 feet (ODA 2016). Threats to this species include livestock grazing, seed predation by insects, and competition with exotic species (ODA 2016).

Occurrence

Snake River goldenweed is known to occur in Baker and Malheur counties in Oregon (ORBIC 2016a, 2016b; ODA 2016) and Washington and Payette counties in Idaho (IDFG 2016; NatureServe 2016). There are 75 known occurrences rangewide: 39 in Oregon and 36 in Idaho. The Site Boundary is within the western center of its known range (Figure Q-8). Total acreage of all known occurrences (not including historical, extirpated, and failed to find occurrences) is 5,779 acres, of which 64 percent are in Oregon. Most of the acreage of Snake River goldenweed are known from BLM land (61 percent), followed by private land (34 percent), with the rest on USFS and other federal lands (Table Q-16).

Table Q-16. Total Acres of Known Rangewide Occurrences by Land Status for Snake River Goldenweed

Land Status	Total Acres of Rangewide Occurrences[1]	
	Oregon	Idaho
BLM	2,745	755
Private	917	1,049
USFS	0	297
Other Federal	16	0
Total (by state)	**3,679**	**2,100**
Total (states combined)	**5,779**	

[1] Acre totals may not sum exactly due to rounding.

There are four occurrences of Snake River goldenweed within the analysis area in Baker and Malheur counties (based on existing databases and surveys). Two occurrences are located within the Project's disturbance footprint, portions of which are located within the disturbance footprint of existing access roads that will need improvement.

Fifteen ORBIC occurrences were removed from the rangewide and analysis area groupings into occurrences. Twelve of these occurrences received historical ranks from ORBIC, two are extirpated, and one was "failed to find." The most recent observation was 1995, over 21 years ago (Table Q-17).

Table Q-17. ORBIC Occurrences of Snake River Goldenweed Removed from Analysis

ORBIC Assigned Occurrence Number	ORBIC Assigned Rank	Last Date Observed	Reason Removed from Analysis	Acres[1]
2	H – Historical	5/20/1986	Historic rank	19
2	X – Extirpated	8/23/1941	Extirpated rank	3,085
3	F – Failed to find	7/1/1992	Failed to find rank	8
4	H – Historical	1995-06	Historic rank	3,085
11	X – Extirpated	1994-06	Extirpated rank	19
25	H – Historical	8/25/1989	Historic rank	2
26	H – Historical	7/11/1989	Historic rank	2
27	H – Historical	7/11/1989	Historic rank	49
28	H – Historical	8/12/1989	Historic rank	11
30	H – Historical	9/9/1989	Historic rank	37
31	H – Historical	9/8/1989	Historic rank	188
33	H – Historical	8/24/1989	Historic rank	27
34	H – Historical	8/25/1989	Historic rank	3

ORBIC Assigned Occurrence Number	ORBIC Assigned Rank	Last Date Observed	Reason Removed from Analysis	Acres[1]
45	H – Historical	8/24/1989	Historic rank	212
46	H – Historical	8/24/1989	Historic rank	2
			Total	**6,749**

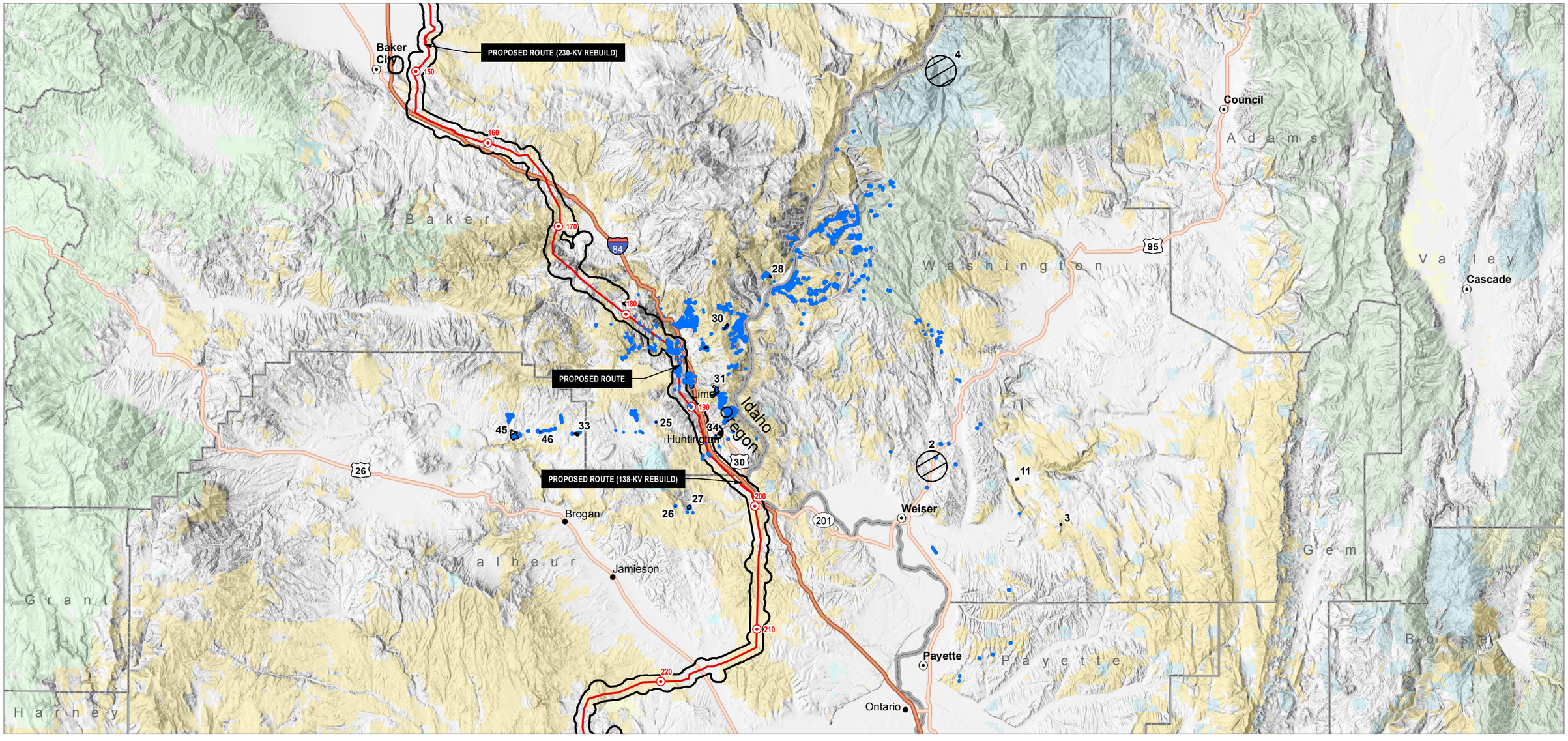
[1] Acre totals may not sum exactly due to rounding.

Potential Adverse Effects

There are four known occurrences (based on existing databases and surveys) within the analysis area (Attachment Q-1, Maps 4 to 7), though only three were observed during surveys. Portions of two of the known occurrences are located within the Project's currently proposed disturbance footprint (Table Q-18; Attachment Q-1, Maps 4 to 7). The two known occurrences that will be directly impacted are relatively large; one is more than 10 acres with an estimated 468 individuals and the other is nearly 489 acres with over 11,000 plants.

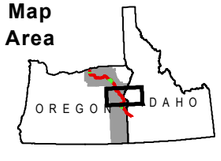
Potential adverse effects during construction and operation could include loss of habitat and direct mortality as a result of vegetation clearing for roads, towers, and construction areas. Direct impacts could include removal of individual plants, the seed bank, habitat and/or habitat of pollinators. Indirect impacts could include habitat degradation and fragmentation, potential for establishment of noxious weeds and invasive plants, potential for wildland fire, or a change in vegetation community as a result of construction. Dust deposition on plants during construction and from transport along access roads through occupied habitat could affect photosynthesis, respiration, transpiration, and reproduction, which could negatively impact productivity of Snake River goldenweed and possibly the structure of the plant community within its habitat (Farmer 1993, Trombulak and Frissell 2000).

A conservative estimate will be a direct loss of up to 1,131 individuals from 2 occurrences, and nearly 2.4 acres of occupied habitat due to construction of the Project. The 2.4 acres of direct impact is approximately 0.04 percent of the total known acres of rangewide occurrences. Potential adverse effects will be avoided and/or minimized by the measures discussed in Section 3.5.



0 8
Miles

Map Area



Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

Z:\UtilServ\Boardman_Hemingway\Reports\002_Oregon_Energy_Siting_Council\03_Final ASC\Exhibits\Q_Special Status Species\Maps\Rangewide_SnakeRiverGoldenweed_terrain.mxd

Project Features
- Proposed Route
- Mile

Rangewide Occurrence
- Analysis Area
- Snake River Goldenweed
- Historic Snake River Goldenweed- ORBIC Occurrence #

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Other Federal
- State or Local

- State or Local Wildlife or Parks and Recreation Area
- US Forest Service
- US Fish and Wildlife Nat'l Wildlife Refuge
- Private

Other Features
- Interstates
- Highways
- County Seat
- Other City

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Snake River Goldenweed Rangewide Occurrences

Table Q-18. Occurrences of Snake River Goldenweed within the Analysis Area and Project's Currently Proposed Disturbance Footprint

Analysis Area Occurrence Number[1]	Route and Closest Milepost (MP)[2]	Data Source[3]	Land Ownership[4]	Number of Plants within Analysis Area (Total in Occurrence)[5]	Acres[6] Within Analysis Area (Total Acres of Occurrence)	Occurrence Within Disturbance Footprint	Nearest Distance to Disturbance Footprint (feet)	Acres of Occurrence within Disturbance Footprint	Anticipated Number of Plants Impacted[7]	Disturbance Feature(s)[8]
1: Blue Mountains, Snake River Plain	Proposed Route MP 180 to 190	BLM; ORBIC; 2012 and 2016 Surveys	BLM, Private	8,392 (11,685)	381.1 (488.8)	Yes	0	2.4	1,130	Structure work areas, new primitive access roads, new bladed access road, existing road with substantial improvements
2: Snake River Plain	Proposed Route MP 193	BLM	Private	1 (1)	0.8 (0.8)	No	1,315	0	0	Work area, Existing road with no substantial improvements
3: Snake River Plain	Proposed Route MP 193	2013 Surveys	BLM	1 (1)	0.1 (0.1)	No	4	0	0	New bladed access road and structure work area
4: Snake River Plain	Proposed Route MP 194	BLM; ORBIC; 2013 Surveys	BLM	317 (468)	4.8 (10.7)	Yes	0	<0.1	1	New bladed road and structure work area
Occurrences Overlapping Analysis Area Summary										
Blue Mountains, Snake River Plain	Proposed Route MP 180 to 194	BLM; ORBIC; 2012, 2013, and 2016 Surveys	BLM, Private	8,711 (12,155)	386.7 (500.3)	2 of 4	0	2.4	1,131	Structure work areas and access roads

[1] Occurrences were created based on a 0.62-mile separation distance within the analysis area for use in the analysis of impacts (NatureServe 2004).
[2] See Attachment Q-1, Maps 4 to 7.
[3] BLM = BLM 2016, ORBIC = ORBIC 2016a, Surveys = project-specific surveys, see Exhibit P1, Attachment P1-7A, Biological Surveys Summary Report 2010–2016.
[4] Land Ownership of occurrence, listed in order of acreage with most being first.
[5] Number of plants within the occurrence within the analysis area, estimated based on existing BLM and ORBIC databases and survey data. Number of plants within the analysis area estimated based on total count in a particular polygon and the percentage of the polygon that overlaps the analysis area. See the introduction to Section 3.4.2.3 for a definition of occurrence; this number does not represent the rangewide population.
[6] Acres of occurrence within the analysis area. All overlap between existing database and survey data were removed to avoid double counting.
[7] Estimated from existing databases and survey data based on the total count in a particular polygon and the percentage of the polygon that overlaps the disturbance footprint. Existing roads that will not need any substantial improvements are assumed to have no direct impacts (plants removed), so are not included in the count.
[8] Type of disturbance feature that overlaps the occurrence or is closest to the occurrence.
BLM – Bureau of Land Management; ORBIC – Oregon Biodiversity Information Center

Sterile Milkvetch (*also known as Cusick's Milkvetch*)

Background, Habitat, and Threats

Sterile milkvetch (*Astragalus sterilis*) is listed as threatened under the OESA. It is a hairy, perennial forb that grows to approximately 2 to 6 inches tall (ODA 2016). The stems are stiff and thin with narrow, wiry, widely spaced leaves. This plant flowers and fruits between May to late June. Each flowering stem has 1 to 5 pale yellowish white to pink flowers. The pendulous seed pods are papery and inflated translucent 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 (NatureServe 2016). Sterile milkvetch grows in barren, sparsely vegetated areas on ash deposits from 2,700 to 4,800 feet in elevation (ODA 2016), which are vulnerable to disturbance. Threats include mining, off-road vehicles, invasive weeds, and prolonged drought (ODA 2016).

Occurrence

Sterile milkvetch is known from 72 occurrences in Malheur County, Oregon, and adjacent Owyhee County, Idaho (NatureServe 2016). There are no known occurrences within the analysis area, and the closest occurrence is just under 5 miles west of the analysis area. This species was not detected during Project surveys.

Potential Adverse Effects

Because there are no known occurrences of this species within the analysis area and the closest known occurrences is nearly 5 miles from the analysis area, the Project is not expected to have any adverse effects on this species.

3.5 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

3.5.1 General Avoidance and Minimization for T&E Wildlife, Fish, and Plants

IPC's siting process occurred between 2008 and 2016. Details regarding the siting process and the constraints considered during the development of the current Proposed Route and the alternatives are presented in the Project Siting Studies (IPC 2010, 2012, 2015, and 2017, which are included in Exhibit B, Attachments B-1, B-2, B-4, and B-6, respectively). IPC defines "constraints" as resources or conditions that potentially limit transmission line siting because of relative sensitivity to facility construction or operation or regulatory restrictions. A summary of the route selection process and constraints considered during the route selection process is presented in Exhibit B, Project Description. A summary of how T&E species were considered during the siting process is included here as it applies to all T&E species. Additional information on the siting process specific to T&E wildlife, fish, and plants is included in the wildlife, fish, and plant subsections below.

Sensitive resources, including T&E species, were avoided to the extent practical during the initial siting process. 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 the 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 resulted in alternate routes that weighed avoidance of one resource against another. The current Proposed Route and alternatives are the result of a long siting process that considered and avoided known T&E species occurrences where possible.

IPC has developed general measures that will also avoid and minimize impacts to fish and wildlife species—including T&E species—during construction and operation, as outlined in the following Management Plans.

- Reclamation and revegetation of areas temporarily impacted from construction of the Project (Reclamation and Revegetation Plan [Exhibit P1, Attachment P1-3]);
- Management of vegetation to a safe height under the transmission line (Vegetation Management Plan [Exhibit P1, Attachment P1-4]);
- Prevention of the introduction and spread of noxious weeds (Noxious Weed Plan [Exhibit P1, Attachment P1-5]); and
- Proper design and construction of culverts and stream crossing structures to avoid adverse effects on fish passage (Fish Passage Plan [Exhibit BB, Attachment BB-2]).

Implementation of these plans and associated measures will minimize erosion, minimize disturbance to T&E species, and ensure successful reclamation of temporarily disturbed areas following construction, thus avoiding and minimizing impacts to T&E species. To ensure compliance with the plans listed above, IPC proposes that the Council include the following conditions in the site certificate:

> ***Fish and Wildlife Condition 4:*** *Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Reclamation and Revegetation Plan. The protective measures described in the draft Reclamation and Revegetation Plan in ASC Exhibit P1, Attachment P1-3, shall be included and implemented as part of the final Reclamation and Revegetation Plan, unless otherwise approved by the department.*
>
> ***Fish and Wildlife Condition 17:*** *During construction, the certificate holder shall conduct all work in compliance with the final Reclamation and Revegetation Plan referenced in Fish and Wildlife Condition 4.*
>
> ***Fish and Wildlife Condition 5:*** *Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Vegetation Management Plan. The protective measures described in the draft Vegetation Management Plan in ASC Exhibit P1, Attachment P1-4, shall be included as part of the final Vegetation Management Plan, unless otherwise approved by the department.*
>
> ***Fish and Wildlife Condition 18:*** *During construction, the certificate holder shall conduct all work in compliance with the final Vegetation Management Plan referenced in Fish and Wildlife Condition 5.*
>
> ***Fish and Wildlife Condition 28:*** *During operation, the certificate holder shall conduct all work in compliance with the final Vegetation Management Plan referenced in Fish and Wildlife Condition 5.*
>
> ***Fish and Wildlife Condition 6****: Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Noxious Weed Plan. The protective measures as described in the draft Noxious Weed Plan in*

ASC Exhibit P1, Attachment P1-5, shall be included and implemented as part of the final Noxious Weed Plan, unless otherwise approved by the department.

***Fish and Wildlife Condition 19**: During construction, certificate holder shall conduct all work in compliance with the final Noxious Weed Plan referenced in Fish and Wildlife Condition 6.*

***Fish and Wildlife Condition 29**: During operation, the certificate holder shall conduct all work in compliance with the final Noxious Weed Plan referenced in Fish and Wildlife Condition 6.*

***Other Information Condition 1**: Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Fish Passage Plan. The protective measures described in the draft Fish Passage Plan in ASC Exhibit BB, Attachment BB-2, shall be included as part of the final Fish Passage Plan, unless otherwise approved by the department.*

***Other Information Condition 4**: During construction, the certificate holder shall conduct all work in compliance with the final Fish Passage Plan referenced in Other Information Condition 1.*

IPC will additionally implement traffic control measures to minimize the risk to wildlife of direct loss due to vehicle collision, and to minimize the effects of dust on wildlife, fish, and plants, including T&E species. This includes adhering to speed limits on Project roads and limiting access on Project roads. Establishing speed limits and implementing access control on Project roads can avoid and minimize impacts to T&E species. IPC proposes that the Council include the following conditions in the site certificate establishing speed limits on access roads when applicable:

***Fish and Wildlife Condition 16**: During construction, the certificate holder shall employ a speed limit of 25 miles per hour on facility access roads, unless the applicable land-management agency or landowner has designated an alternative speed limit.*

***Fish and Wildlife Condition 26**: During operation, the certificate holder shall employ a speed limit of 25 miles per hour on facility access roads, unless the applicable land-management agency or landowner has designated an alternative speed limit.*

***Fish and Wildlife Condition 27**: During operation, the certificate holder shall employ access control on facility access roads within elk habitat (i.e., elk summer range and elk winter range) and sage-grouse habitat (i.e., areas of high population richness, core area habitat, low density habitat, or general habitat), subject to approval by the applicable land-management agency or landowner.*

Construction personnel will attend mandatory training on protection of sensitive resources and all environmentally sensitive areas will be flagged, including those areas with state-protected plan species. IPC proposes that the Council include the following conditions in the site certificate regarding the same:

***Fish and Wildlife Condition 9**: Prior to construction, the certificate holder shall train all construction personnel on the protection of cultural, paleontological, ecological, and other natural resources such as (a) federal and state laws regarding antiquities, paleontological resources, and plants and wildlife, including*

collection and removal; (b) the importance of these resources; (c) the purpose and necessity of protecting them; and (d) reporting and procedures for stop work.

Fish and Wildlife Condition 15: *During construction, the certificate holder shall flag the following environmentally sensitive areas as restricted work zones:*
a. State protected plant species;
b. Wetlands and waterways that are not authorized for construction impacts;
c. Areas with active spatial and seasonal restrictions; and
d. Category 1 habitat.
The certificate holder shall submit a mapset showing the location of environmentally sensitive areas and restricted work zones to the department for its approval. The certificate holder shall make the mapset available to all construction personnel.

3.5.2 Avoidance and Minimization for Wildlife

In addition to the avoidance and minimization measures described above which are common to all T&E species, IPC has implemented or will implement measures specific to T&E wildlife species.

3.5.2.1 Wolverine

IPC will minimize wolverine habitat fragmentation and disturbance by siting portions of the Project adjacent to existing transmission lines and other previously disturbed areas such as Interstate 84. As this species it not known to regularly occur in the analysis area, no species-specific avoidance or minimization measures are proposed.

3.5.2.2 Washington Ground Squirrel

Initial siting considered habitat for WAGS as a key constraint (Exhibit B). To identify WAGS habitat and active colonies, IPC conducted surveys in suitable habitat where ROE was granted. Based on the results of Project surveys for WAGS, IPC routed the Project to avoid active colonies, including developing and eliminating potential alternatives (see Exhibit B for details).

There is potential for Category 1 WAGS habitat to be identified within the analysis area. Category 1 WAGS habitat consists of the 785-foot buffer around the outside of the cluster of holes where WAGS are residing and corresponds to a known maximum travel distance of 785 feet as described in Carlson et al. (1980). This distance has been included in other projects, such as the Leaning Juniper II Wind Power Facility (EFSC 2009), as Category 1 habitat because the area within 785 feet of WAGS burrows is defined by ODFW as required area for squirrel survival.

IPC has modified the Project location to avoid Category 1 WAGS habitat in the past and will perform WAGS surveys in previously unsurveyed areas to identify Category 1 WAGS habitat for avoidance. WAGS surveys shall be used to inform final design, facility layout, and micrositing of facility components (see ***Fish and Wildlife Condition 2*** [requiring WAGS pre-construction surveys]). WAGS Category 1 habitat will be flagged as a restrictive work zone (see ***Fish and Wildlife Condition 15*** [requiring flagging of Category 1 habitat]).

Based on the survey data gathered to date, it appears that the proposed Project will avoid all Category 1 WAGS habitat. However, it is possible pre-construction surveys will discover WAGS colonies in areas that were not previously surveyed or will show WAGS colonies have moved into the path of the Project in areas that previously showed none present. In either case, IPC will work to avoid the Category 1 habitat, which may involve spanning the conductors over the habitat. To span those areas, IPC may need to access the habitat to string the conductors or for

other ancillary work. Additionally, construction on the NWSTF Boardman will involve removing an existing BPA 69-kV line, and it is possible that pre-construction surveys find WAGS colonies near that line. If that is the case, IPC will remove any structures located in Category 1 WAGS habitat using techniques that will not cause any ground disturbance (e.g., access by foot or helicopter, cutting poles off at their base and not digging up the foundations). ODFW has indicated that such activities would not be considered an impact to WAGS Category 1 habitat for purposes of ODFW's Fish and Wildlife Habitat Mitigation Policy (ODFW 2016b). To clarify the same, IPC proposes that the Council include the following condition in the site certificate:

> ***Threatened and Endangered Species Condition 1:*** *During construction, the certificate holder shall not conduct ground-disturbing activities within Category 1 Washington ground squirrel (WAGS) habitat, subject to the following:*
> *a. The identification and categorization of WAGS habitat shall be based on the surveys referenced in Fish and Wildlife Condition 2 and the results of the surveys shall apply for up to three years.*
> *b. The certificate holder may span Category 1 WAGS habitat and may work within Category 1 WAGS habitat, provided such work does not cause any ground disturbance.*
> *c. If an occupied WAGS colony is encountered in non-Category 1 habitat (based on the surveys referenced in Fish and Wildlife Condition 2), the certificate holder shall submit to the department for its approval a notification addressing the following:*
> *i. Location of the colony; and*
> *ii. Any actions the certificate holder will take to avoid, minimize, or mitigate impacts to the colony.*

3.5.3 Avoidance and Minimization for Fish

Initial siting considered, among other constraints, wild and scenic rivers and special status streams (Exhibit B). Based on the initial siting, and following initial desktop determination of likely fish distribution, development of crossing location maps, and concurrence from agencies about locations along the route where fish will be or were historically present, field surveys were conducted to assess presence at all stream crossing sites in accessible areas. In the future, T&E fish species will be assumed in all waters where their presence has been identified by these field surveys. In addition, areas that have not been surveyed, due to lack of access to private lands or changes in the Proposed Route and other alternatives, will be surveyed prior to construction (see ***Fish and Wildlife Conditions 1 and 2*** [requiring pre-construction surveys]).

As noted above, route modifications were undertaken to aid in reducing impacts to habitat of T&E fish species, which resulted in a reduction of the number of T&E fish-bearing stream crossings by Project routes. In addition, IPC has developed measures to limit the risk of erosion and sedimentation; these measures are contained in the Draft Erosion and Sediment Control Plan (Exhibit I, Attachment I-3), Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3) and the Vegetation Management Plan (Exhibit P1, Attachment P1-4). To further avoid potential impacts to T&E fish, IPC will conduct all work in compliance with its Fish Passage Plan (Exhibit BB, Attachment BB-2; see ***Other Information Conditions 1*** and ***4***).

Currently, no road crossing of T&E fish-bearing streams will occur. However, if any future route modification require road crossing improvements or modifications beyond those identified in the fish passage plans (see Exhibit BB, Attachment BB-3), IPC will install all culverts or other stream crossing structures in accordance with ODFW fish passage rules and approvals. In addition, culverts or other stream crossing structures on federally managed lands (if needed) will be installed in accordance with BLM and USFS requirements.

3.5.4 Avoidance and Minimization for Plants

During initial siting, IPC used ORBIC, BLM, and USFS databases to avoid known T&E plant species occurrences. Additionally, many micro adjustments were made between 2012 and 2016, where the design was revised to avoid known T&E plant species occurrences (IPC 2015, 2016).

Surveys have been conducted for T&E plant species in areas where ROE has been granted. IPC will perform pre-construction T&E plant surveys of all previously surveyed and unsurveyed areas with potential habitat and where species were previously observed and/or areas with known occurrences after issuance of the site certificate but prior to construction (see ***Fish and Wildlife Condition 2*** [requiring pre-construction surveys]). Pre-construction survey results will be provided to ODOE as part of the final Fish and Wildlife Habitat Mitigation Plan:

> ***Fish and Wildlife Condition 7****: Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Fish and Wildlife Habitat Mitigation Plan.*
> *a. The final Fish and Wildlife Habitat Mitigation Plan shall include the following, unless otherwise approved by the department:*
>
> *. . .*
>
> *v. The results of the biological surveys referenced in Fish and Wildlife Condition 1 and Fish and Wildlife Condition 2.*
>
> *. . . .*
>
> ***Fish and Wildlife Condition 20****: During construction, the site certificate holder shall commence implementation of the conservation actions set forth in the final Fish and Wildlife Habitat Mitigation Plan referenced in Fish and Wildlife Condition 7.*

Where avoidance is possible, there will be a minimum buffer of 33 feet between the disturbance and the edge of the T&E occurrence as recommended by ODA. To prevent direct impacts from occurring to T&E plant species, IPC has used existing databases and Project survey results to microsite Project components away from known occurrences of T&E plant species. It is anticipated that for Project components such as new access roads, fly yards or tower locations, it will be possible to microsite these components to avoid directly impacting federal or state listed plant species occurrences; however, it may not be possible to avoid listed plants that are located along existing facilities (e.g., existing access roads that will be improved as part of the Project or removal of existing structures) or the reroute may impact other sensitive resources. For example, re-routing an existing road to avoid a T&E plant species could result in additional impacts to other sensitive resources due to the construction of a new roadbed as opposed to utilizing an existing roadbed. In many cases, T&E plant species located along existing access roads that need improvement may still be avoided during construction if the plant is located along the existing road's outer shoulder (e.g., the road bed could be shifted in order to avoid disturbing the outer shoulder). However, observations of Snake River goldenweed and Mulford's milkvetch were within existing proposed access roads. As such, complete avoidance of the individuals within the existing roadbed will likely not be possible, and thus the condition has been recommended to minimize the impacts. IPC requests that the Council adopt the following condition in the site certificate to reduce potential impacts to T&E plants:

> ***Threatened and Endangered Species Condition 2****: During construction, the certificate holder shall not conduct ground-disturbing activities within a 33-foot buffer around threatened or endangered plant species, subject to the following:*
> *a. If complete avoidance is not possible (for example, if the threatened or endangered plant species is located within 33 feet of an existing road where*

> *upgrades are needed), the certificate holder shall install temporary construction mats over soils where the threatened or endangered plant species have been observed and where construction vehicles will be operated; and*
> *b. If herbicides are used to control weeds, the certificate holder shall follow agency guidelines in establishing buffer areas around confirmed populations of threatened or endangered plant species and refrain from using herbicides within those buffers.*

Site-specific reclamation revegetation, reseeding, and soil stabilization plans will be developed for areas disturbed by construction or maintenance within 100 feet of mapped occurrences and reclamation monitoring will be conducted as described in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3). Fourteen occurrences are within 100 feet of the current disturbance footprint, including three Lawrence's milkvetch, one Mulford's milkvetch, six Cronquist's stickseed, three Snake River goldenweed, and one occurrence of Howell's spectacular thelypody. Additional micro adjustments will be made to avoid T&E plant species occurrences.

Salvaging topsoil can help increase reclamation success as it contains high concentrations of micro-organisms, nutrients, and seeds, all of which help with establishment and stabilization of plant cover (Rivera et al. 2012; Coppin and Richards 1990). Seed viability remains higher in shorter-term storage and within deeper layers of a soil stockpile because the seeds are farther from the sunlight, moisture, and temperature fluctuations, making them less likely to germinate and die before reclamation. Spreading salvaged topsoil as soon as possible following construction will help improve the seedbank from the stockpiled topsoil to survive (Rivera et al. 2012). Generally, the topsoil layer is considered the upper 6 to 12 inches of soil, but this can vary by soil type, and soils deeper than 12 inches may need to be considered as "topsoil" in certain agricultural areas. Furthermore, top soils in dry shrubland and desert-like environments may be much thinner than 6 inches in many instances. Specific measures will be developed to guide the salvage, storage, and replacement of topsoil (see Exhibit P1, Attachment P1-3, Reclamation and Revegetation Plan).

3.6 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)

The ODA establishes Protection and Conservation Programs for selected species listed as threatened or endangered under the OESA. Because no such programs apply to any species along this Project, no additional information is required under this provision (D), and OAR 345-022-0070(1)(q) is not applicable.

3.7 Potential Impacts to Plants, Including Mitigation Measures, 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-3 are currently covered by a conservation program. The potential Project impacts to each of the T&E plant species identified in this Exhibit are discussed in Section 3.4. This section addresses the potential impacts of the Project on the likelihood of survival or recovery of each T&E plant species when the avoidance and minimization measures discussed in Section 3.5 are also taken into consideration. The discussion of potential impacts below is divided into three subsections, based on the analysis area: species unlikely to occur, species that may occur, and species found or previously known to occur.

3.7.1 Species Unlikely to Occur

Species listed in Table Q-3 that are unlikely to occur within the analysis area include:

- Sterile milkvetch

Because no occurrences of these species were observed during field surveys, and all known occurrences are 4.9 or more miles away from the analysis area, impacts are not expected to occur as a result of the Project, and the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of this species.

3.7.2 Species That May Occur

Species listed in Table Q-3 that may occur within the analysis area include:

- Oregon semaphore grass
- Smooth mentzelia

These species were not observed during surveys, but known occurrences are approximately 0.2 mile from the analysis area and potential habitat exists within the analysis area. Therefore, the species may occur, but are not known to occur within the analysis area, Site Boundary, or disturbance footprint. Pre-construction surveys will include survey for these species. If found during pre-construction surveys, these species will be flagged and avoided, where possible, as discussed above in Section 3.5. Consequently, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of these species.

3.7.3 Species Found or Previously Known to Occur

Species listed in Table Q-3 that were found or are previously known to occur within the analysis area include:

- Cronquist's stickseed
- Howell's spectacular thelypody
- Lawrence's milkvetch
- Mulford's milkvetch
- Snake River goldenweed

Of these five species known to occur within the analysis area, four occur within the Site Boundary and three of those overlap the disturbance footprint. Howell's spectacular thelypody is known to occur within the analysis area, but not within the Site Boundary or disturbance footprint. Avoidance and minimization measures specific to Howell's spectacular thelypody, as described in Section 3.5.4, will also be implemented; thus, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of this species.

Three Lawrence's milkvetch occurrences are known within the analysis area (Table Q-11 above) and these three occurrences also overlap the Site Boundary. These occurrences are between 1 and 69 feet away from the disturbance footprint. The occurrence within 1 foot of the

disturbance footprint contains seven plants that are adjacent to a new primitive road. Implementation of the avoidance and minimization measures described in Section 3.5.4 will avoid direct disturbance to plants within this and all other occurrences. Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of this species.

Three plant species have potential to be adversely affected by the Project: Cronquist's stickseed, Mulford's milkvetch, and Snake River goldenweed. Potential impacts are presented below.

3.7.3.1 Cronquist's Stickseed

There are 50 known occurrences rangewide for Cronquist's stickseed and 11 of those are located within the analysis area in Malheur County. Nine of the 11 occurrences are within the Site Boundary and a small portion of two occurrences are located within the Project disturbance footprint. These two occurrences are located in the middle, but on or near the western edge, of Cronquist stickseed's known range. There are approximately 1,834 total acres of known occurrences between both Oregon and Idaho (Table Q-6 above), with 94 percent of those acres in Oregon. Less than 0.07 acre of known occurrences will be directly impacted and potential adverse effects will be avoided and/or minimized by the measures discussed in Section 3.5 above and summarized below.

Measures to avoid and/or minimize impacts will include survey of those areas not previously surveyed due to lack of access to private lands or updates to Project alignment and pre-construction surveys and flagging of Cronquist's stickseed plants to reduce impacts during construction. Additionally, if total avoidance is not practical, temporary construction mats will be installed over soils where Cronquist's stickseed individuals have been observed and flagged to protect seed banks and root structures where construction vehicles will be driving. Site-specific revegetation, reseeding, and soil stabilization plans will be developed for areas disturbed by construction or maintenance within 100 feet of mapped occurrences, as further described in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3). Finally, topsoil salvaging will be used to increase reclamation success. Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Cronquist's stickseed.

3.7.3.2 Mulford's Milkvetch

There are 37 known occurrences rangewide for Mulford's milkvetch, and two of those occurrences are known from within the analysis area. One of the two occurrences is within the Site Boundary and within the Project disturbance footprint. There are approximately 1,313 total acres of known occurrences between both Oregon and Idaho (Table Q-13 above), with 37 percent of those acres in Oregon. Approximately 0.1 acre of known occurrences would be directly impacted by the Project where an existing road will require substantial improvement, with an estimated direct loss of up to 52 individual plants. Avoidance and minimization measures will be implemented to reduce impacts; however, since this is an existing road, micrositing is not as practical. Field surveys in 2016 indicated that some plants were observed within the roadbed or immediately adjacent. Potential adverse effects will be avoided and/or minimized by the measures discussed in Section 3.5 above and summarized below.

Measures to avoid and/or minimize impacts will include survey of those areas not previously surveyed due to denial of ROE to private lands or updates to Project alignment and preconstruction surveys and flagging of Mulford's milkvetch plants to reduce impacts during construction. Additionally, to reduce impacts, temporary construction mats will be installed over soils where Mulford's milkvetch individuals have been observed and flagged to protect seed banks and root structures where construction vehicles will be driving. Site-specific revegetation, reseeding, and soil stabilization plans will be developed for areas disturbed by construction or maintenance within 100 feet of mapped occurrences, as further described in the Reclamation

and Revegetation Plan (Exhibit P1, Attachment P1-3). Finally, topsoil salvaging will be used to increase reclamation success. Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Mulford's milkvetch.

3.7.3.3 Snake River Goldenweed

There are 75 known occurrences rangewide for Snake River goldenweed, and 4 of those occurrences are known from within the analysis area within Baker and Malheur counties. Three occurrences are in the Site Boundary, 2 of which are located within the Project disturbance footprint. There are approximately 5,779 total acres of known occurrences in Oregon and Idaho (Table Q-16 above), with 64 percent of those acres in Oregon. Approximately 2.4 acres of known occurrences will be directly impacted, with an estimated direct loss of up to 1,131 individual plants.

Micrositing has taken place during the siting process to minimize impacts to Snake River goldenweed. Additional avoidance and minimization measures will be implemented to reduce impacts; impacts are anticipated due to the location of occurrences along existing roads that will need improvement. Potential adverse effects will be avoided and/or minimized by the measures discussed in Section 3.5 above and summarized below.

Measures to avoid and/or minimize impacts will include survey of those areas not previously surveyed and pre-construction surveys and flagging of Snake River goldenweed plants to reduce impacts during construction. Additionally, to reduce impacts, temporary construction mats will be installed over soils where Snake River goldenweed individuals have been observed and flagged to protect seed banks and root structures where construction vehicles will be driving. Site-specific revegetation, reseeding, and soil stabilization plans will be developed for areas disturbed by construction or maintenance within 100 feet of mapped occurrences, as further described in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3). Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Snake River goldenweed.

3.8 Potential Impacts to Animals

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.

This section describes the significant potential impacts of the Project on the continued existence and on the critical habitat of all animal species listed in Table Q-3, and provides evidence, taking into account avoidance, minimization, and mitigation measures, that the Project is not likely to cause a significant reduction in their likelihood of survival or recovery.

3.8.1 Wildlife

3.8.1.1 Wolverine

Wolverines could be present within the analysis area during construction and operation due to their large home ranges and dispersal distances, and the presence of potentially suitable habitat within the analysis area. However, habitat and disturbance effects are expected to be minor as described above, and mortality of individuals is not anticipated. Additionally, general avoidance and minimization measures will be implemented to limit the impact of the Project on wildlife and their habitats (see Section 3.5), and all habitat impacted by the Project, including potential wolverine habitat, will be mitigated for according to ODFW's Habitat Mitigation Policy, as

discussed in Exhibit P1 and the Fish and Wildlife Habitat Mitigation Plan (Attachment P1-6 to Exhibit P1). Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of the wolverine.

3.8.1.2 Washington Ground Squirrel

IPC will continue to avoid direct impacts to Category 1 WAGS habitat as described in Section 3.5.

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. Other indirect impacts to WAGS include disturbance of suitable but unoccupied WAGS habitat (i.e., Category 2 WAGS habitat) that could result in decreased hiding cover and food availability should WAGS move into these areas. Table Q-19 provides more information regarding potential Project disturbances in Category 2 WAGS habitat for those areas of the site boundary that have been surveyed (see Table Q-1, describing areas that have been surveyed).

Table Q-19. Acres of Disturbance in Category 2 WAGS Habitat

Habitat Type	Project Feature	Acres of Disturbance			
		Proposed Route		West of Bombing Range Road Alternative 1 and Alternative 2	
		Temp	Perm	Temp	Perm
Introduced Upland Vegetation	Access Roads	0.7	1.6	0.1	0.2
	Work Areas	9.9	0.4	5.2	0.1
Native Grasslands	Access Roads	0.2	0.4	0.1	0.1
	Work Areas	8.9	0.4	0.9	0.0

Temp = temporary disturbance
Perm = permanent disturbance

Impacts to Category 2 WAGS habitat will be minimized through the revegetation and noxious weed control measures described in Section 3.5 and the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3) and the Noxious Weed Plan (Exhibit P1, Attachment P1-5), and mitigated for as described in the Fish and Wildlife Habitat Mitigation Plan (Exhibit P1, Attachment P1-6). Therefore, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of the WAGS.

3.8.2 Fish

T&E fish species do occur within some of the waterbodies that will be crossed by the Project (see Table Q-5). Potential impacts to these species may result from the clearing of riparian vegetation, soil disturbance adjacent to waterbodies, and the risk of hydrocarbons or toxins entering waterbodies. Currently, no road crossing of T&E fish-bearing streams will occur; therefore, no fish impedance from structure installation or modification or injury from fish salvage will occur.

Additionally, impacts to T&E fish species at transmission line stream crossings, road stream crossings, and locations where improvement occurs within 600 feet upstream of T&E fish-bearing streams will be avoided and minimized through the proposed conditions discussed herein. As a result, the Project is not likely to cause a significant reduction in the likelihood of survival or recovery of Snake River spring/summer Chinook salmon.

3.9 Monitoring Plan

OAR 345-021-0010(1)(q)(G): The applicant's proposed monitoring program, if any, for impacts to threatened and endangered species.

IPC is not proposing to conduct post-construction monitoring for impacts to T&E species. However, site-specific reclamation monitoring will be conducted as described in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3) and monitoring site selection priority will be given to T&E plant occurrence locations disturbed during construction. In addition, as described in Exhibit BB, Attachment BB-3 (Fish Passage Plans and Designs), any stream crossing modified or constructed associated with the Project will be inspected for status within a week of any high-flow event during its use throughout Project construction.

IPC will also monitor mitigation actions to determine if mitigation success criteria have been met. Monitoring plans for mitigation actions are included in the Fish and Wildlife Habitat Mitigation Plan (Exhibit P1, Attachment P1-6).

4.0 IDAHO POWER'S PROPOSED SITE CERTIFICATE CONDITIONS

IPC proposes the following site certificate conditions to ensure compliance with the Threatened and Endangered Species Standard, among other EFSC standards:

Prior to Construction

Fish and Wildlife Condition 1*: Prior to construction, the certificate holder shall conduct, as applicable, the following biological surveys on those portions of the site boundary that have not been surveyed at the time of issuance of the site certificate:*
a. Great Gray Owl;
b. Flammulated Owl;
c. Terrestrial Visual Encounter Surveys;
d. Wetlands; and
e. Fish Presence and Crossing Assessment Surveys.

Fish and Wildlife Condition 2*: Prior to construction, the certificate holder shall conduct, as applicable, the following biological surveys on all portions of the site boundary, regardless of whether those portions have been surveyed at the time of issuance of the site certificate:*
a. Washington ground squirrels;
b. Raptor Nests; and
c. State-Listed Threatened and Endangered Plants.

Fish and Wildlife Condition 4: *Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Reclamation and Revegetation Plan. The protective measures described in the draft Reclamation and Revegetation Plan in ASC Exhibit P1, Attachment P1-3, shall be included and implemented as part of the final Reclamation and Revegetation Plan, unless otherwise approved by the department.*

Fish and Wildlife Condition 5: *Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Vegetation Management Plan. The protective measures described in the draft Vegetation Management Plan in ASC Exhibit P1, Attachment P1-4, shall be included as part*

of the final Vegetation Management Plan, unless otherwise approved by the department.

***Fish and Wildlife Condition 6**: Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Noxious Weed Plan. The protective measures as described in the draft Noxious Weed Plan in ASC Exhibit P1, Attachment P1-5, shall be included and implemented as part of the final Noxious Weed Plan, unless otherwise approved by the department.*

***Fish and Wildlife Condition 7**: Prior to construction, the site certificate holder shall finalize, and submit to the department for its approval, a final Fish and Wildlife Habitat Mitigation Plan.*

a. The final Fish and Wildlife Habitat Mitigation Plan shall include the following, unless otherwise approved by the department:

i. The areas that were surveyed for biological resources;

ii. The location of all facility components and related and supporting facilities;

iii. The areas that will be permanently and temporarily disturbed during construction;

iv. The protective measures described in the draft Fish and Wildlife Habitat Mitigation Plan in ASC Exhibit P, Attachment P-6; and

v. The results of the biological surveys referenced in Fish and Wildlife Condition 1 and Fish and Wildlife Condition 2.

b. The final Fish and Wildlife Habitat Mitigation Plan shall address the potential habitat impacts through mitigation banking, an in-lieu fee program, development of mitigation projects by the certificate holder, or a combination of the same.

i. To the extent the certificate holder shall develop its own mitigation projects, the final Habitat Mitigation Plan shall:

1. Identify the location of each mitigation site, including a map of the same;

2. Identify the number of credit-acres that each mitigation site will provide for the certificate holder;

3. Include a site-specific mitigation management plan for each mitigation site that provides for:

A. A baseline ecological assessment;

B. Conservation actions to be implemented at the site;

C. An implementation schedule for the baseline ecological assessment and conservation actions;

D. Performance measures;

E. A reporting plan; and

F. A monitoring plan.

ii. To the extent the certificate holder shall utilize a mitigation bank or in-lieu fee program, the final Habitat Mitigation Plan shall:

1. Describe the nature, extent, and history of the mitigation bank or in-lieu fee program; and

2. Identify the number of credit-acres that each mitigation site will provide for the certificate holder.

c. Oregon's Elk Mitigation Framework shall be used to calculate the amount of elk habitat compensatory mitigation required for the facility.

d. The final Fish and Wildlife Habitat Mitigation Plan may be amended from time to time by agreement of the certificate holder and the department. Such amendments may be made without amendment to the site certificate. The

Council authorizes the department to agree to amendments of the plan and to mitigation actions that may be required under the plan; however, the Council retains the authority to approve, reject, or modify any amendment of the plan agreed to by the department.

***Fish and Wildlife Condition 9**: Prior to construction, the certificate holder shall train all construction personnel on the protection of cultural, paleontological, ecological, and other natural resources such as (a) federal and state laws regarding antiquities, paleontological resources, and plants and wildlife, including collection and removal; (b) the importance of these resources; (c) the purpose and necessity of protecting them; and (d) reporting and procedures for stop work.*

***Other Information Condition 1**: Prior to construction, the certificate holder shall finalize, and submit to the department for its approval, a final Fish Passage Plan. The protective measures described in the draft Fish Passage Plan in ASC Exhibit BB, Attachment BB-2, shall be included as part of the final Fish Passage Plan, unless otherwise approved by the department.*

During Construction

***Threatened and Endangered Species Condition 1:** During construction, the certificate holder shall not conduct ground-disturbing activities within Category 1 Washington ground squirrel (WAGS) habitat, subject to the following:*
a. The identification and categorization of WAGS habitat shall be based on the surveys referenced in Fish and Wildlife Condition 2 and the results of the surveys shall apply for up to three years.
b. The certificate holder may span Category 1 WAGS habitat and may work within Category 1 WAGS habitat, provided such work does not cause any ground disturbance.
c. If an occupied WAGS colony is encountered in non-Category 1 habitat (based on the surveys referenced in Fish and Wildlife Condition 2), the certificate holder shall submit to the department for its approval a notification addressing the following:

i. Location of the colony; and
ii. Any actions the certificate holder will take to avoid, minimize, or mitigate impacts to the colony.

***Threatened and Endangered Species Condition 2**: During construction, the certificate holder shall not conduct ground-disturbing activities within a 33-foot buffer around threatened or endangered plant species, subject to the following:*
a. If complete avoidance is not possible (for example, if the threatened or endangered plant species is located within 33 feet of an existing road where upgrades are needed), the certificate holder shall install temporary construction mats over soils where the threatened or endangered plant species have been observed and where construction vehicles will be operated; and
b. If herbicides are used to control weeds, the certificate holder shall follow agency guidelines in establishing buffer areas around confirmed populations of threatened or endangered plant species and refrain from using herbicides within those buffers.

***Fish and Wildlife Condition 15:** During construction, the certificate holder shall flag the following environmentally sensitive areas as restricted work zones:*
a. State protected plant species;

b. Wetlands and waterways that are not authorized for construction impacts;
c. Areas with active spatial and seasonal restrictions; and
d. Category 1 habitat.
The certificate holder shall submit a mapset showing the location of environmentally sensitive areas and restricted work zones to the department for its approval. The certificate holder shall make the mapset available to all construction personnel.

***Fish and Wildlife Condition 16**: During construction, the certificate holder shall employ a speed limit of 25 miles per hour on facility access roads, unless the applicable land-management agency or landowner has designated an alternative speed limit.*

***Fish and Wildlife Condition 17:** During construction, the certificate holder shall conduct all work in compliance with the final Reclamation and Revegetation Plan referenced in Fish and Wildlife Condition 4.*

***Fish and Wildlife Condition 18:** During construction, the certificate holder shall conduct all work in compliance with the final Vegetation Management Plan referenced in Fish and Wildlife Condition 5.*

***Fish and Wildlife Condition 19**: During construction, the certificate holder shall conduct all work in compliance with the final Noxious Weed Plan referenced in Fish and Wildlife Condition 6.*

***Fish and Wildlife Condition 20**: During construction, the site certificate holder shall commence implementation of the conservation actions set forth in the final Fish and Wildlife Habitat Mitigation Plan referenced in Fish and Wildlife Condition 7.*

***Other Information Condition 4**: During construction, the certificate holder shall conduct all work in compliance with the final Fish Passage Plan referenced in Other Information Condition 1.*

During Operation

***Fish and Wildlife Condition 26**: During operation, the certificate holder shall employ a speed limit of 25 miles per hour on facility access roads, unless the applicable land-management agency or landowner has designated an alternative speed limit.*

***Fish and Wildlife Condition 27**: During operation, the site certificate holder shall employ access control on facility access roads within elk habitat (i.e., elk summer range and elk winter range) and sage-grouse habitat (i.e., areas of high population richness, core area habitat, low density habitat, or general habitat), subject to approval by the applicable land-management agency or landowner.*

***Fish and Wildlife Condition 28:** During operation, the certificate holder shall conduct all work in compliance with the final Vegetation Management Plan referenced in Fish and Wildlife Condition 5.*

***Fish and Wildlife Condition 29**: During operation, the certificate holder shall conduct all work in compliance with the final Noxious Weed Plan referenced in Fish and Wildlife Condition 6.*

5.0 CONCLUSION

Exhibit Q includes the application information provided for in OAR 345-021-0010(1)(q). Further, Exhibit Q shows 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 ORS 564.105(3) for state-listed plant species (when applicable); (2) not likely to cause a significant reduction in the likelihood of survival or recovery of the state-listed fish and wildlife species; and (3) not likely to cause a significant reduction in state-listed plant species for which the ODA has not adopted a protection and conservation program, as required by the Threatened and Endangered Species Standard at OAR 345-022-0070.

6.0 COMPLIANCE CROSS-REFERENCES

Table Q-20 identifies the location within the application for site certificate of the information responsive to the application submittal requirements in OAR 345-021-0010(1)(q), the Threatened and Endangered Species Standard at OAR 345-022-0070, and the relevant Second Amended Project Order provisions.

Table Q-20. Compliance Requirements and Relevant Cross-References

Requirement	Location
OAR 345-021-0010(1)(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:	
(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) that may be affected by the proposed facility	Exhibit Q, Section 3.2 and Section 3.3
(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	Exhibit Q, Section 3.4
(C) For each species identified under (A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact	Exhibit Q, Section 3.5
(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)	Exhibit Q, Section 3.6
(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	Exhibit Q, Section 3.7

Requirement	Location
(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	Exhibit Q, Section 3.8
(G) The applicant's proposed monitoring program, if any, for impacts to threatened and endangered species	Exhibit Q, Section 3.9
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;	Exhibit Q, Section 3.6 and Section 3.7
(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.	Exhibit Q, Section 3.8
Second Amended Project Order	
OAR Chapter 635, Division 100 (Wildlife Diversity Plan) and ODFW's website contain the State list of threatened and endangered fish and wildlife species. Threatened and endangered plant species are protected by the Oregon Department of Agriculture. The applicant shall include in its application for a site certificate state-listed threatened and endangered fish, wildlife, and plant species that have potential to occur in the analysis area. As a result of Council rulemaking in 2017, it is not necessary for the applicant to include in Exhibit Q information related to species that are listed only by the federal government, though the applicant may choose to do so at its own discretion. The applicant shall identify the species based on a review of literature, consultation with knowledgeable individuals, ODFW, and reference to the list of species published by the Biodiversity Information Center (formerly called the Oregon Natural Heritage Information Center).	Exhibit Q, Section 3.2 and Section 3.3; Exhibit P1; and Exhibit P2

Requirement	Location
The applicant has proposed a "phased survey" approach for data collection during the site certificate review process, and the Department understands that the entirety of the site boundary for the proposed facility may not yet been surveyed due to limited site access. On April 24, 2018 the Department issued a memo titled; "Energy Facility Siting Council Decisions for Linear Facilities with Restricted Access within a Site Boundary: Boardman to Hemingway Transmission Line". This memo outlines how the Department will review applications and make recommendations to Council for Threatened and Endangered Species that have been evaluated in the pASC and ASC. For linear facilities, such as transmission lines, there may be situations where the applicant is able to conduct field surveys on several parcels within the site boundary but may not have access on adjacent parcels. In such circumstances, it may be possible that the combination of on-site field surveys plus a desktop evaluation of existing data, aerial photography, and "over the fence" surveys may meet the information requirements of Exhibits Q. If the field survey coverage is sufficient for ODOE and ODFW to consider that the information provided is representative of the threatened and endangered plant and animal species occurrence or habitat, it is possible that this information could be sufficient to be evaluated for compliance with the Council's Threatened and Endangered Species standard. Exhibit Q shall 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 in the analysis area. The schedule for future surveys, and the estimated date that results will be available, shall also be incorporated into Exhibit Q.	Exhibit Q, Section 3.2
As for other biological resources, the application shall include information detailing 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, Section 3.2
The applicant shall 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 shall 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.	Exhibit Q, Section 4.0; Exhibit P1, Exhibit P2, and Exhibit P3
Footnote 4: OAR 345-022-0070 applies only to state-listed plant and animal species. Note also that OAR 345-022-0070 applies to all lands affected by a proposed facility including state, federal and private lands.	Exhibit Q, Section 3.2 and Section 3.3

7.0 RESPONSE TO NOTICE OF INTENT AND SCOPING MEETING COMMENTS

ODOE received over 450 comments based on the NOI and the related scoping meetings. ODOE summarized those comments in the First Amended Project Order (December 2014) and then removed the summaries from the Second Amended Project Order "to reduce the risk of

misinterpreting the intention of the individual comment."[6] Although ODOE eliminated the requirement that IPC address the comment summaries, IPC nonetheless voluntarily addresses those summaries here in Table Q-21, identifying the location within the ASC of the information responsive to the comments summarized in the First Amended Project Order.

Table Q-21. Response to Comment Summaries

Comments	Location
Exhibit Q must address impacts and proposed mitigation measures for threatened and endangered species.	Exhibit Q, Section 3.4 through Section 3.8
Noise impacts, both from construction and operation of the proposed transmission line. Applicant shall address noise impacts and compliance with state noise standards in Exhibit X. Potential noise impacts to wildlife shall be addressed in Exhibits P and Q.	Exhibit Q, Section 3.4
Commenters expressed concern about numerous state- and federally-listed threatened or endangered species, including sage grouse, bull trout, steelhead, Washington ground squirrel, western burrowing owl, and the grasshopper sparrow. Exhibit Q shall address impacts and proposed mitigation measures for threatened and endangered species.	Exhibit Q, Section 3.4 through Section 3.8; Exhibit P1 and Attachment P1-7B (bull trout and steelhead); Exhibit P1 (grasshopper sparrow and western burrowing owl); and Exhibit P2 (sage-grouse)

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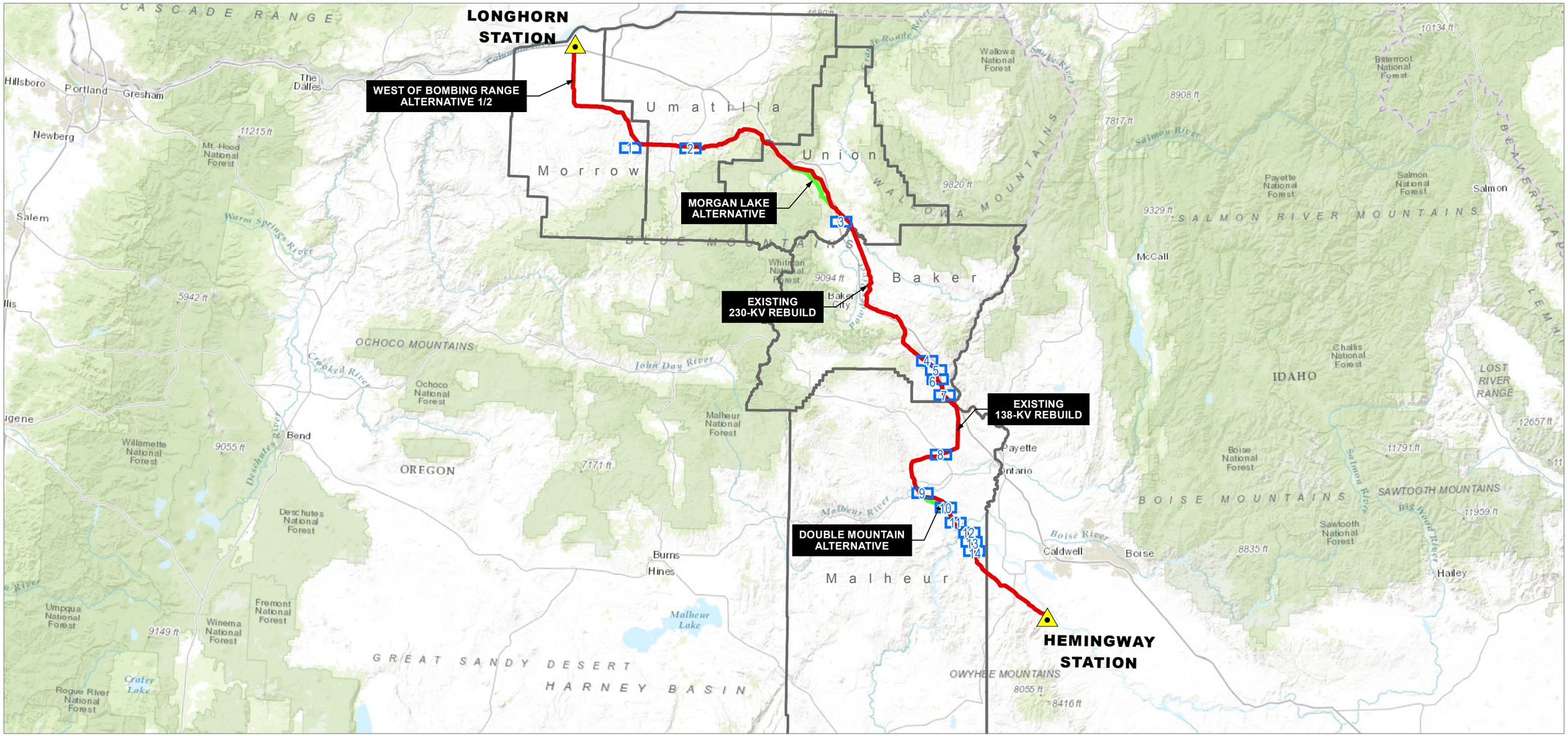
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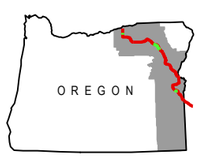
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ATTACHMENT Q-1
THREATENED AND ENDANGERED PLANTS IN THE ANALYSIS AREA



0 30
Miles



Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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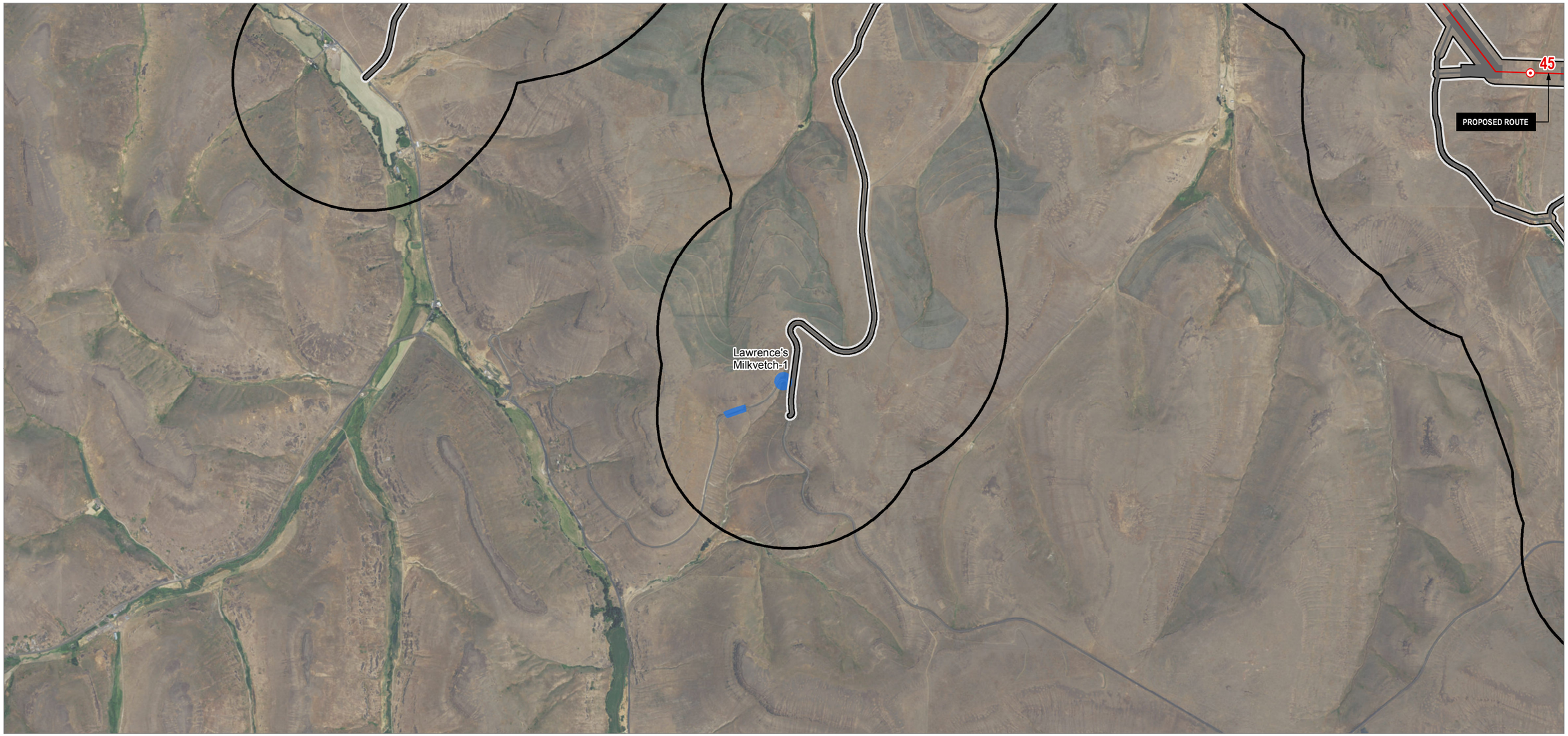
Project Feature
- Proposed Route
- Alternative

Map Index
- Location Map (Map #)

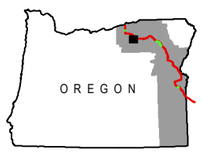
IDAHO POWER An IDACORP Company

Boardman to Hemingway Transmission Line Project

Attachment Q-1
Threatened and Endangered Plant Location Map



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Lawrence's Milkvetch

Land Status
- Private

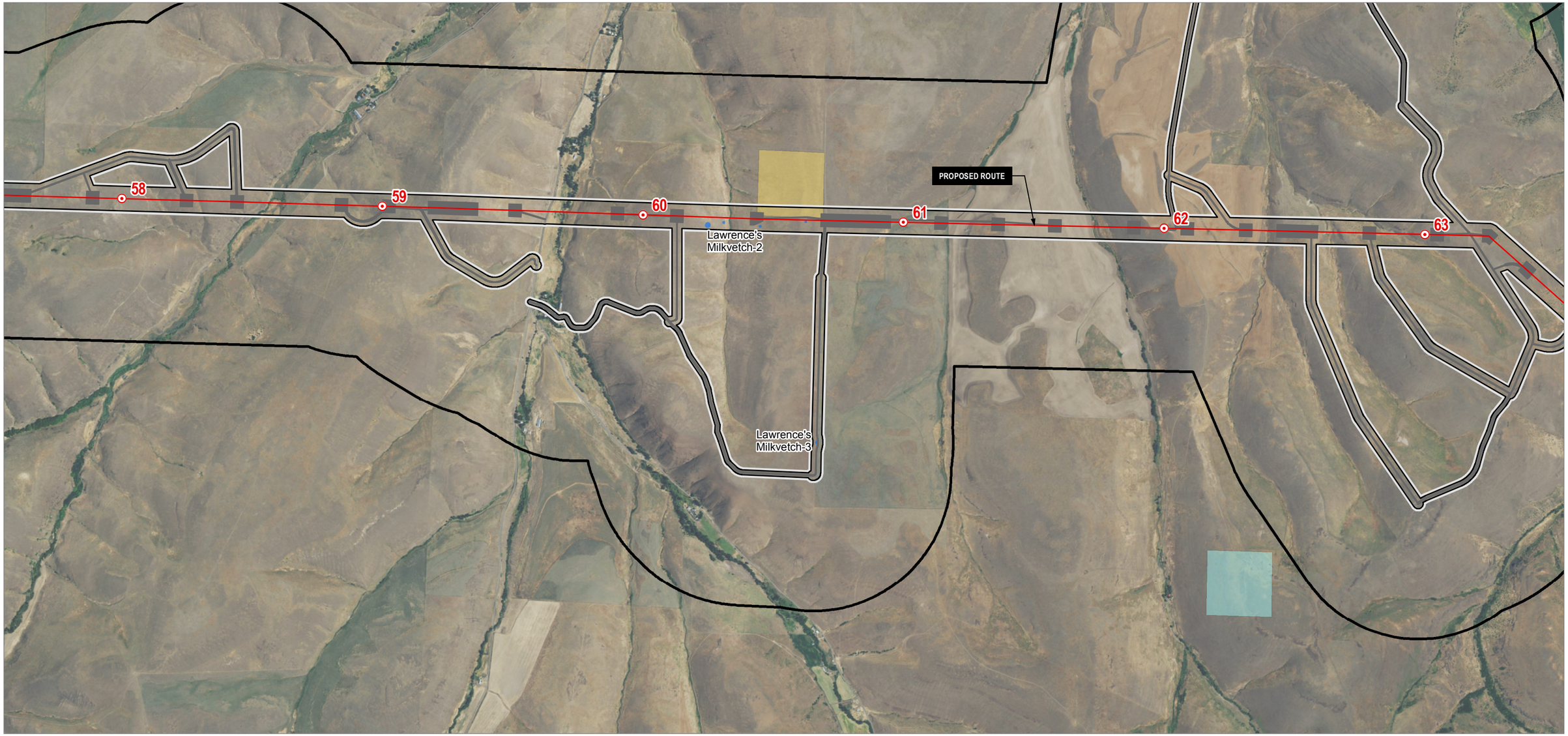
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Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Morrow County

Map 1



0 2,000
Feet

OREGON

Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Lawrence's Milkvetch

Land Status
- Bureau of Land Management
- Private
- State or Local

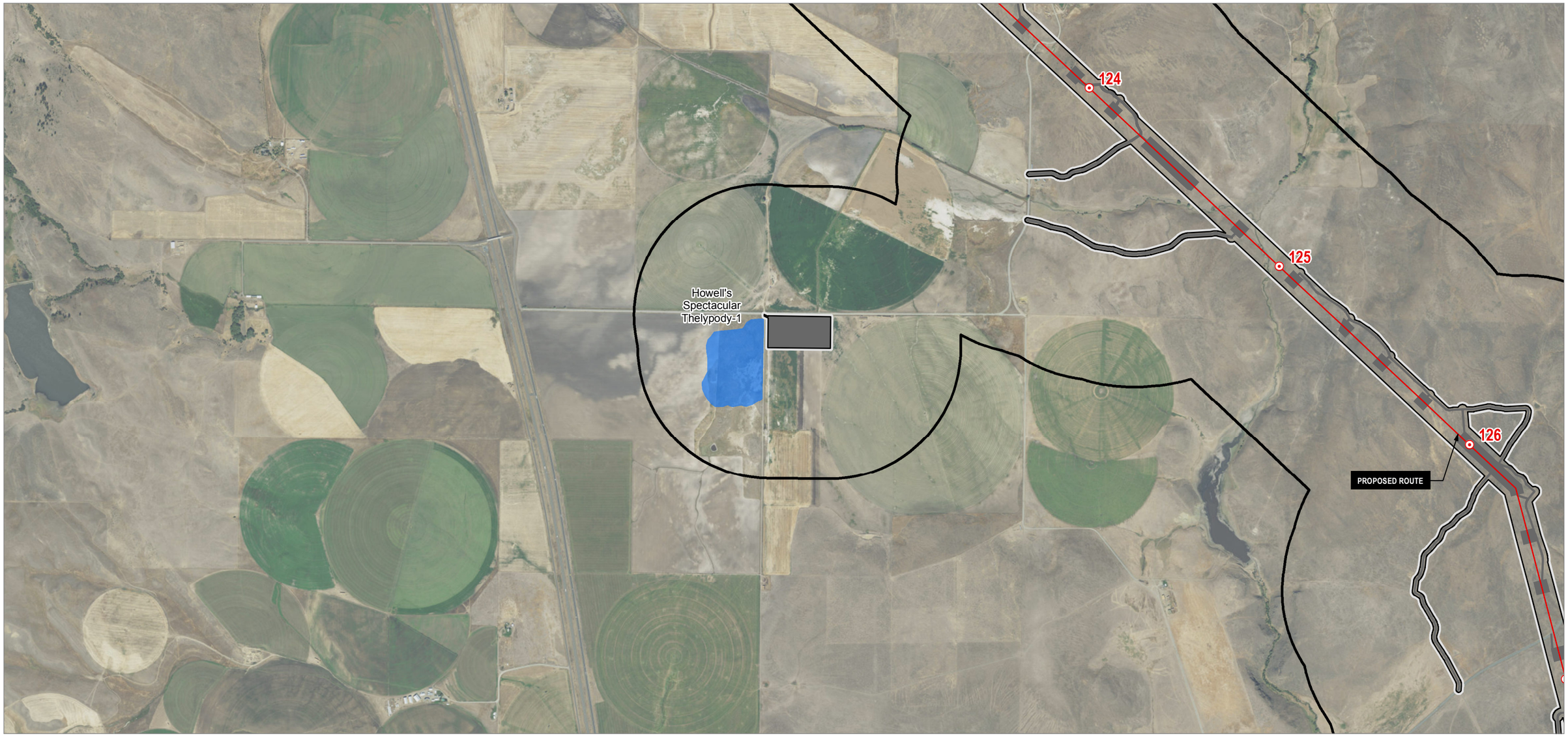
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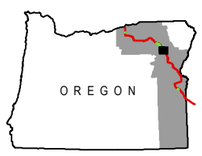
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Umatilla County

Map 2



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Howell's Spectacular Thelypody

Land Status
- Private

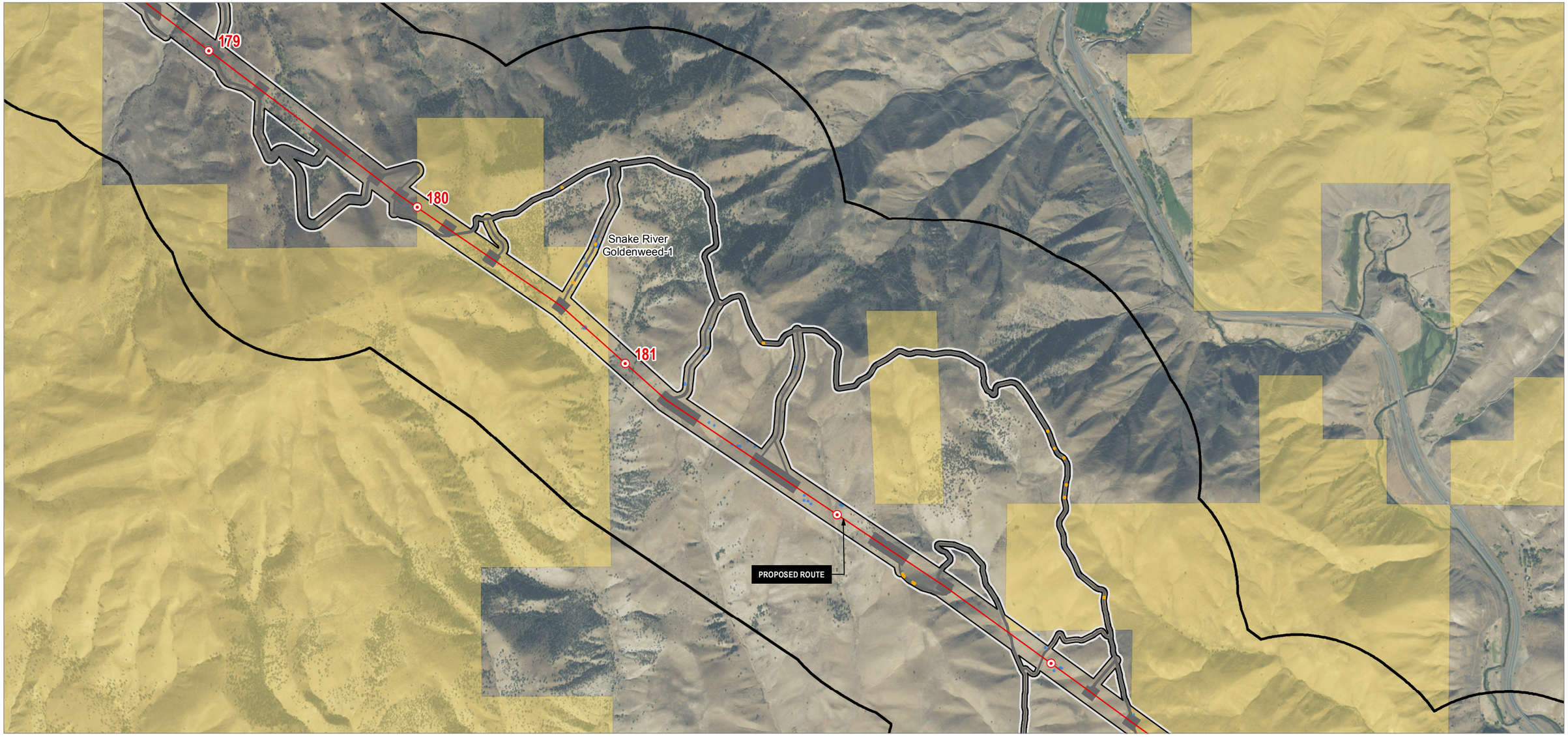
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Boardman to Hemingway Transmission Line Project

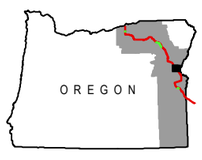
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Union County

Map 3



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Snake River Goldenweed
- Disturbance Impact

Land Status
- Bureau of Land Management
- Private

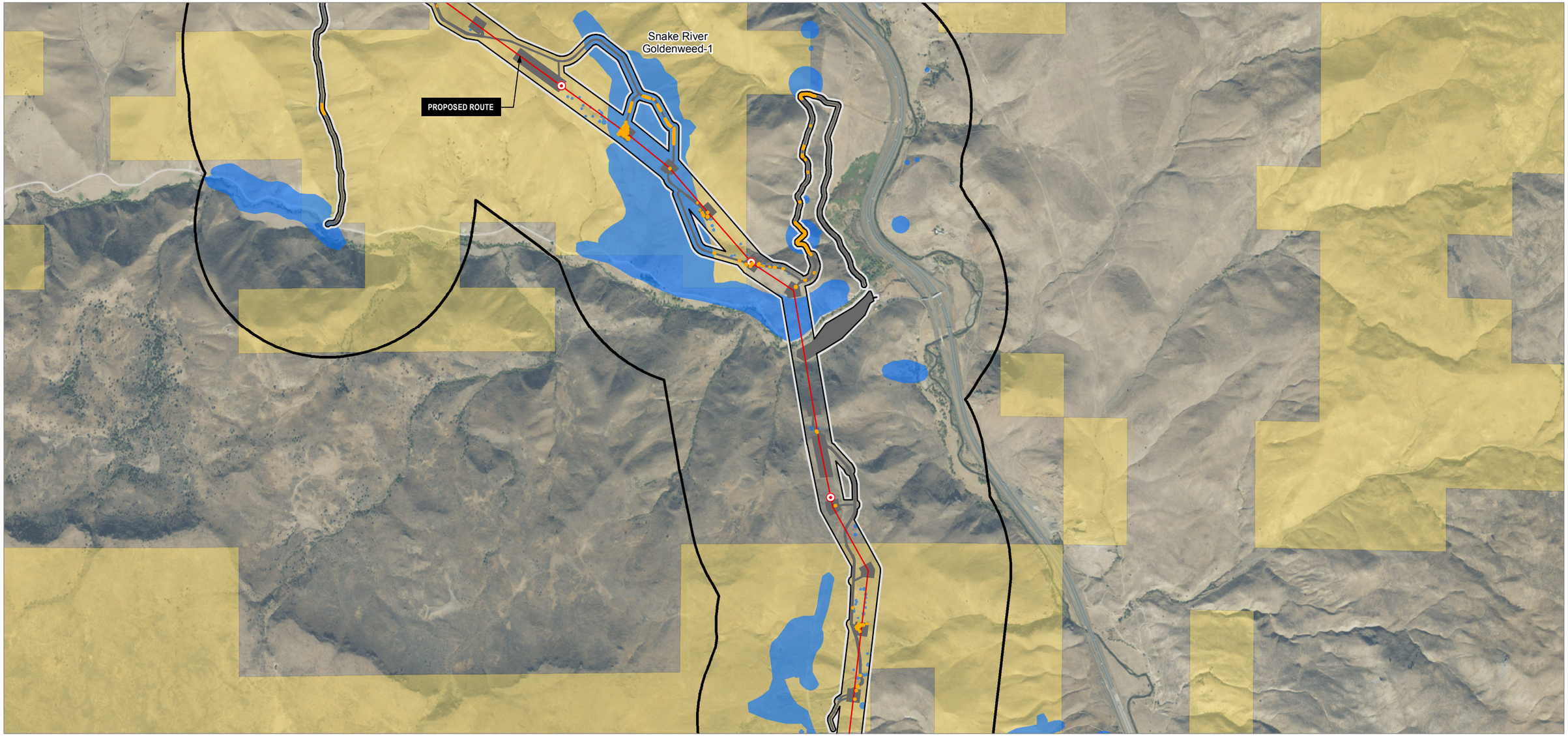
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Boardman to Hemingway Transmission Line Project

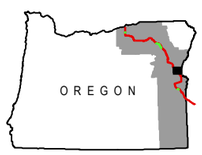
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Baker County

Map 4



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Snake River Goldenweed
- Disturbance Impact

Land Status
- Bureau of Land Management
- Private

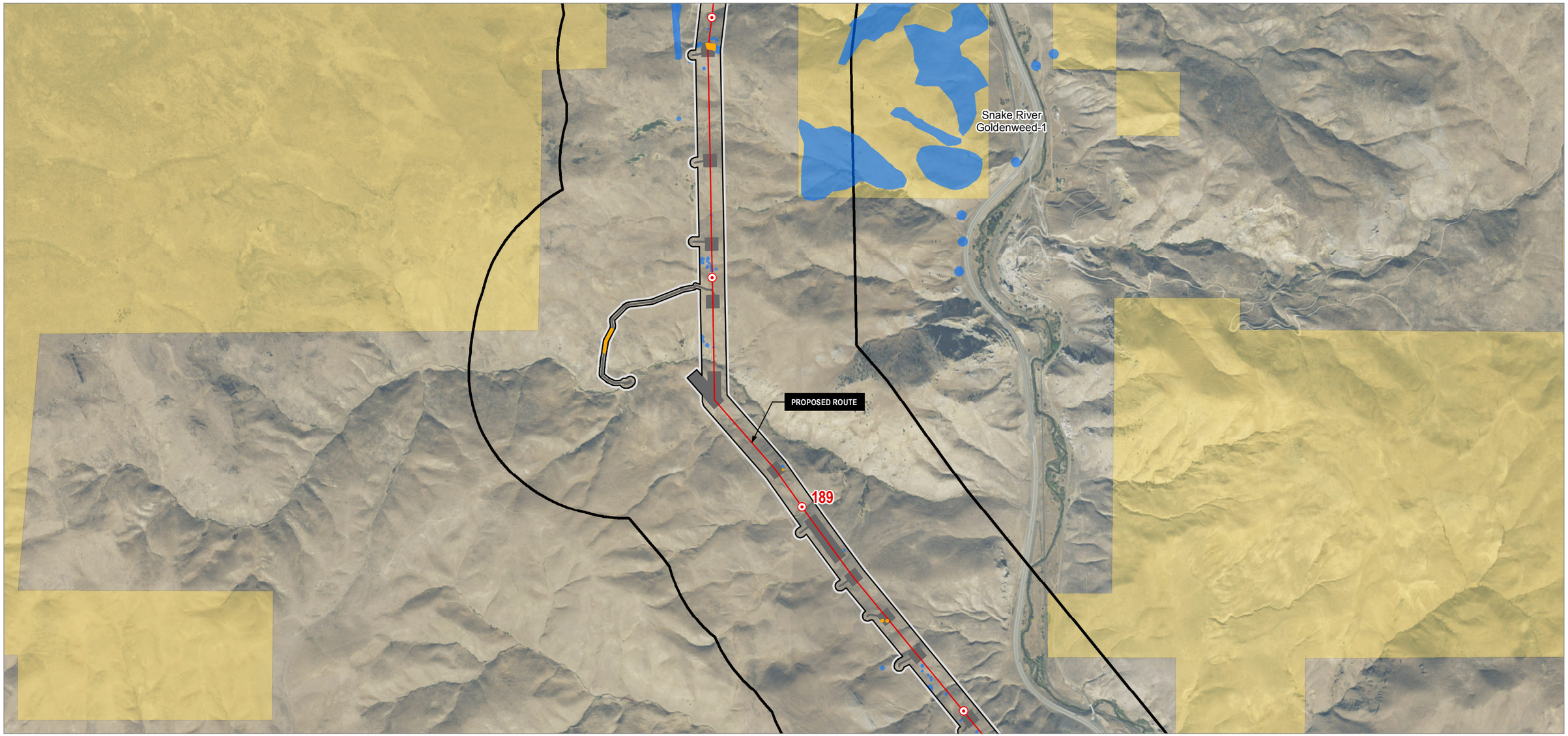
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Boardman to Hemingway Transmission Line Project

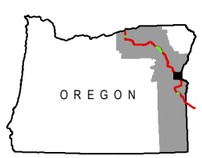
Attachment Q-1 Threatened and Endangered Plants within Analysis Area

Baker County

Map 5



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Snake River Goldenweed
- Disturbance Impact

Land Status
- Bureau of Land Management
- Private

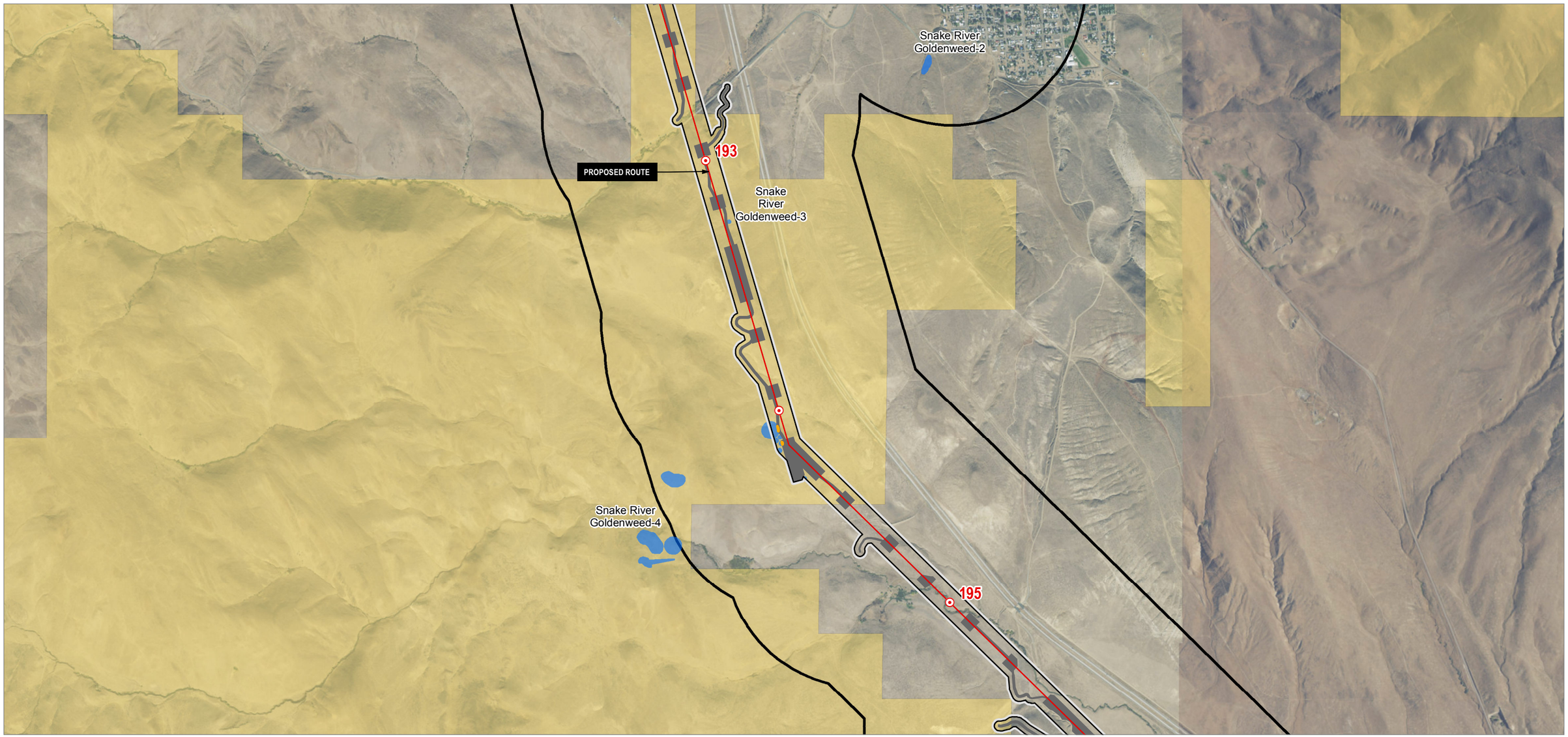
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Boardman to Hemingway Transmission Line Project

Attachment Q-1 Threatened and Endangered Plants within Analysis Area

Baker County

Map 6



0 2,000
Feet

Map Area

OREGON

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Snake River Goldenweed
- Disturbance Impact

Land Status
- Bureau of Land Management
- Private

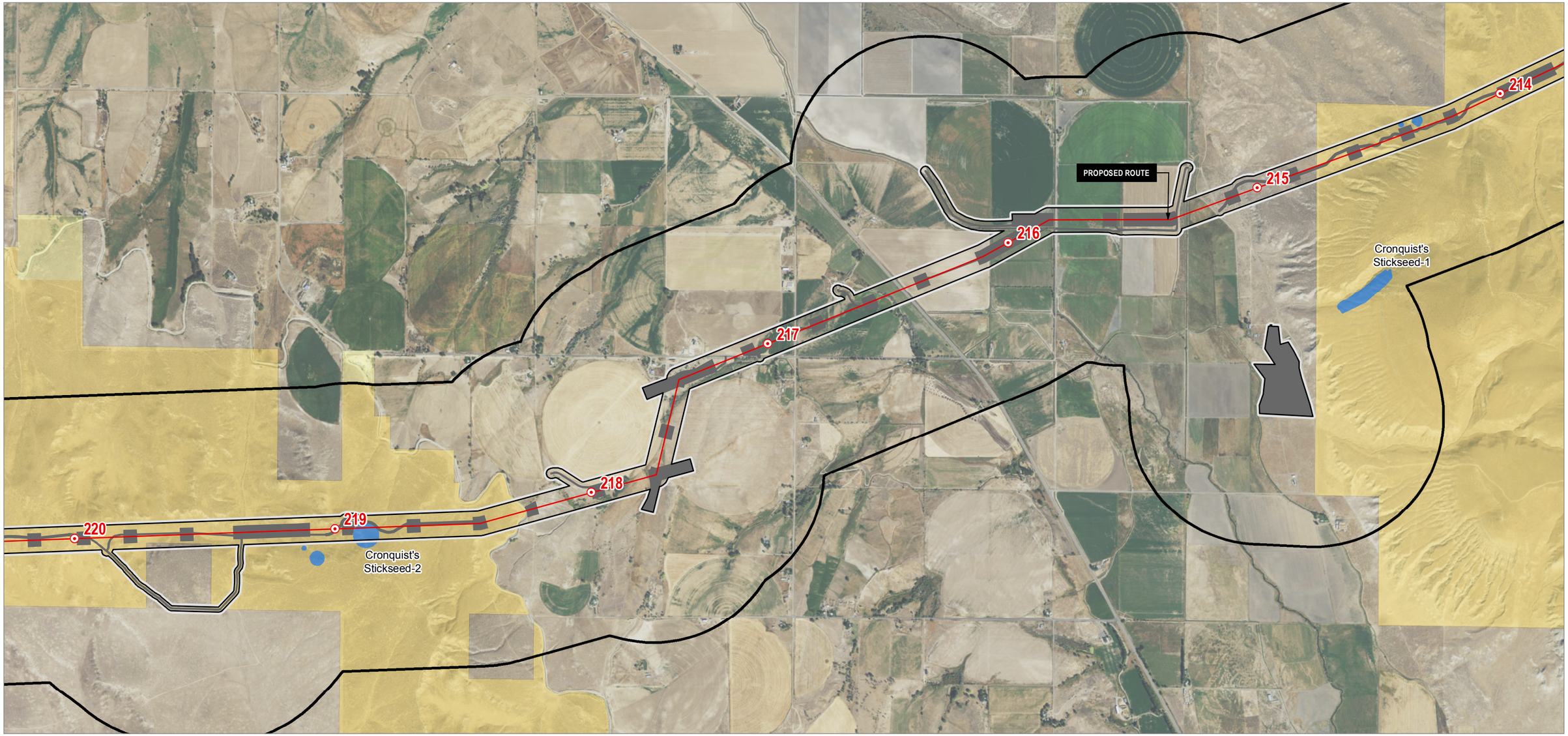
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Boardman to Hemingway Transmission Line Project

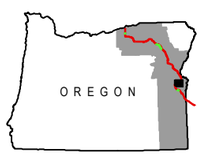
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Baker County

Map 7



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Cronquist's Stickseed

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Private

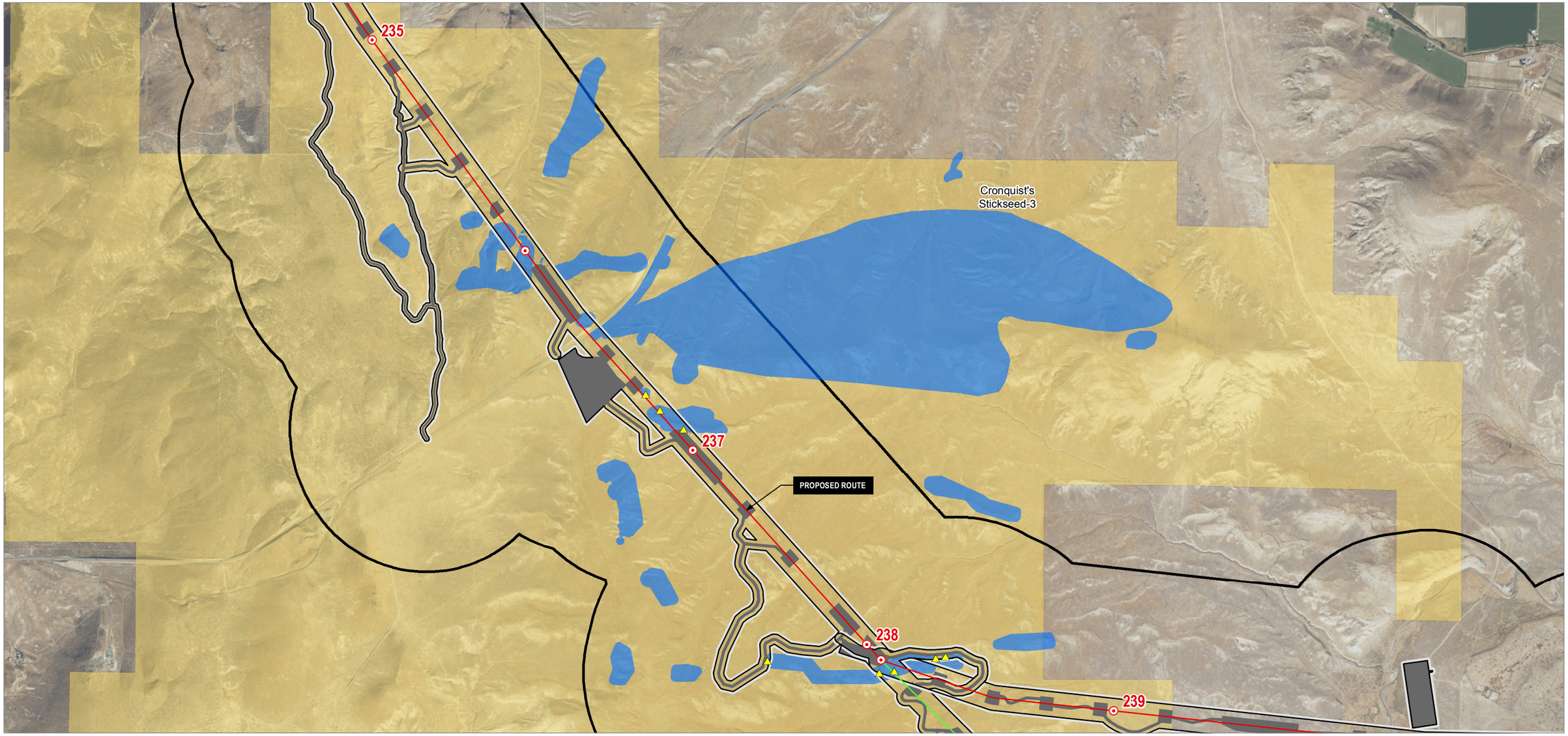
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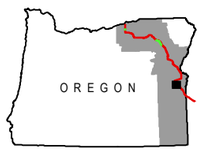
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Malheur County

Map 8



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Alternative
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Cronquist's Stickseed
- Known Cronquist's Stickseed Occurrence, None Observed during 2016 Surveys

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Private

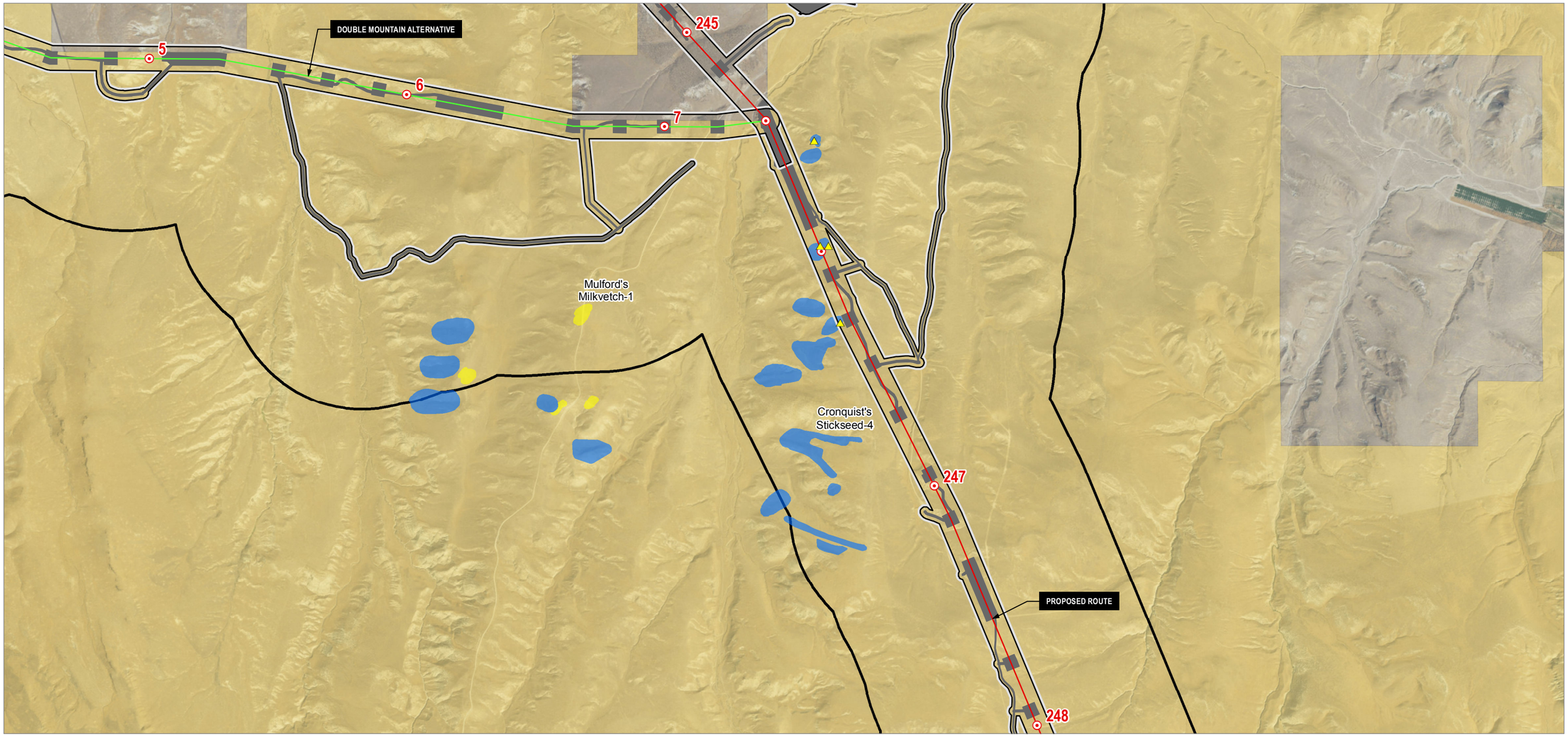
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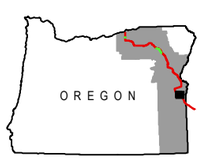
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Malheur County

Map 9



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Alternative
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Cronquist's Stickseed
- Mulford's Milkvetch
- Known Cronquist's Stickseed Occurrence, None Observed during 2016 Surveys

Land Status
- Bureau of Land Management
- Private

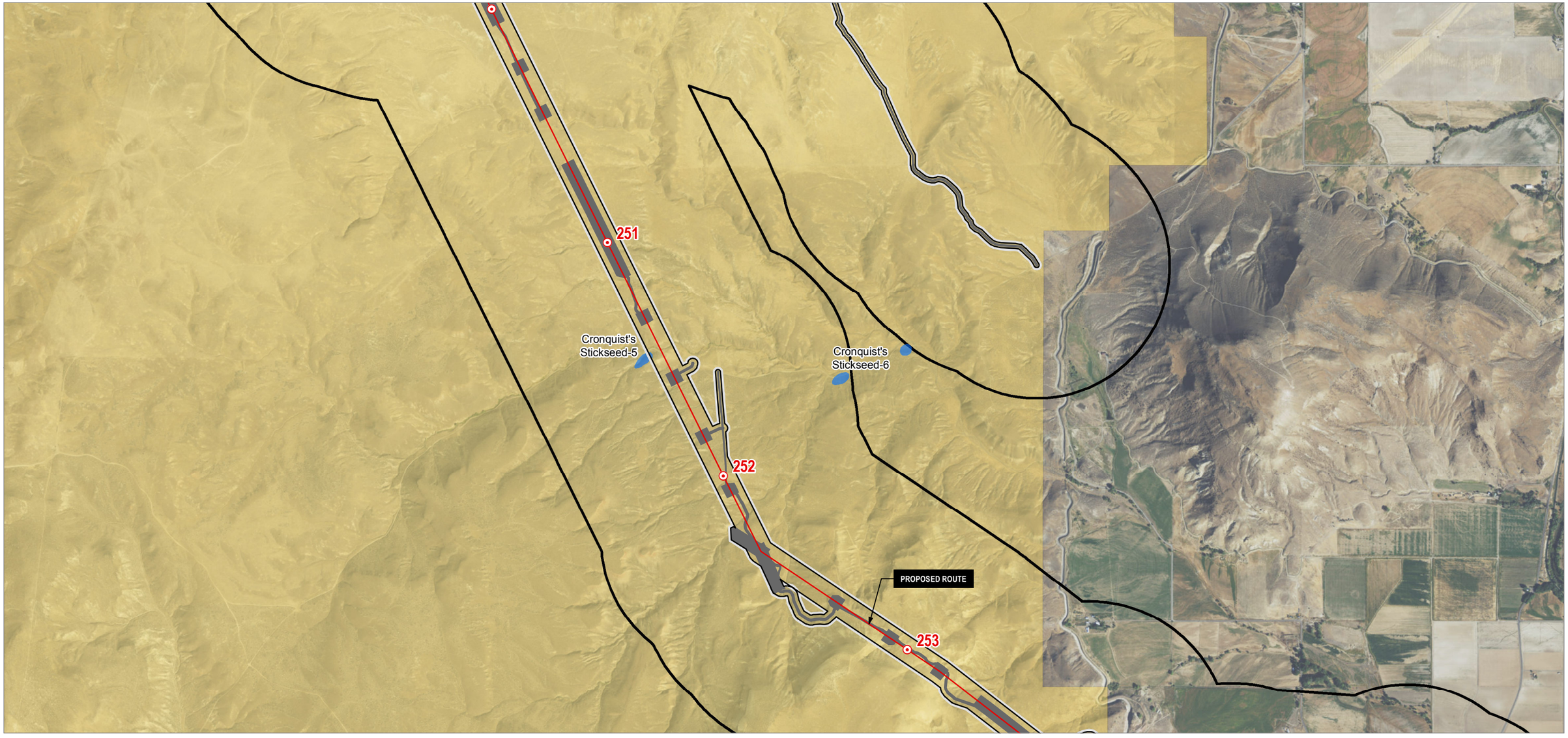
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Boardman to Hemingway Transmission Line Project

Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Malheur County

Map 10



0 2,000
Feet

OREGON

Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Cronquist's Stickseed

Land Status
- Bureau of Land Management
- Private

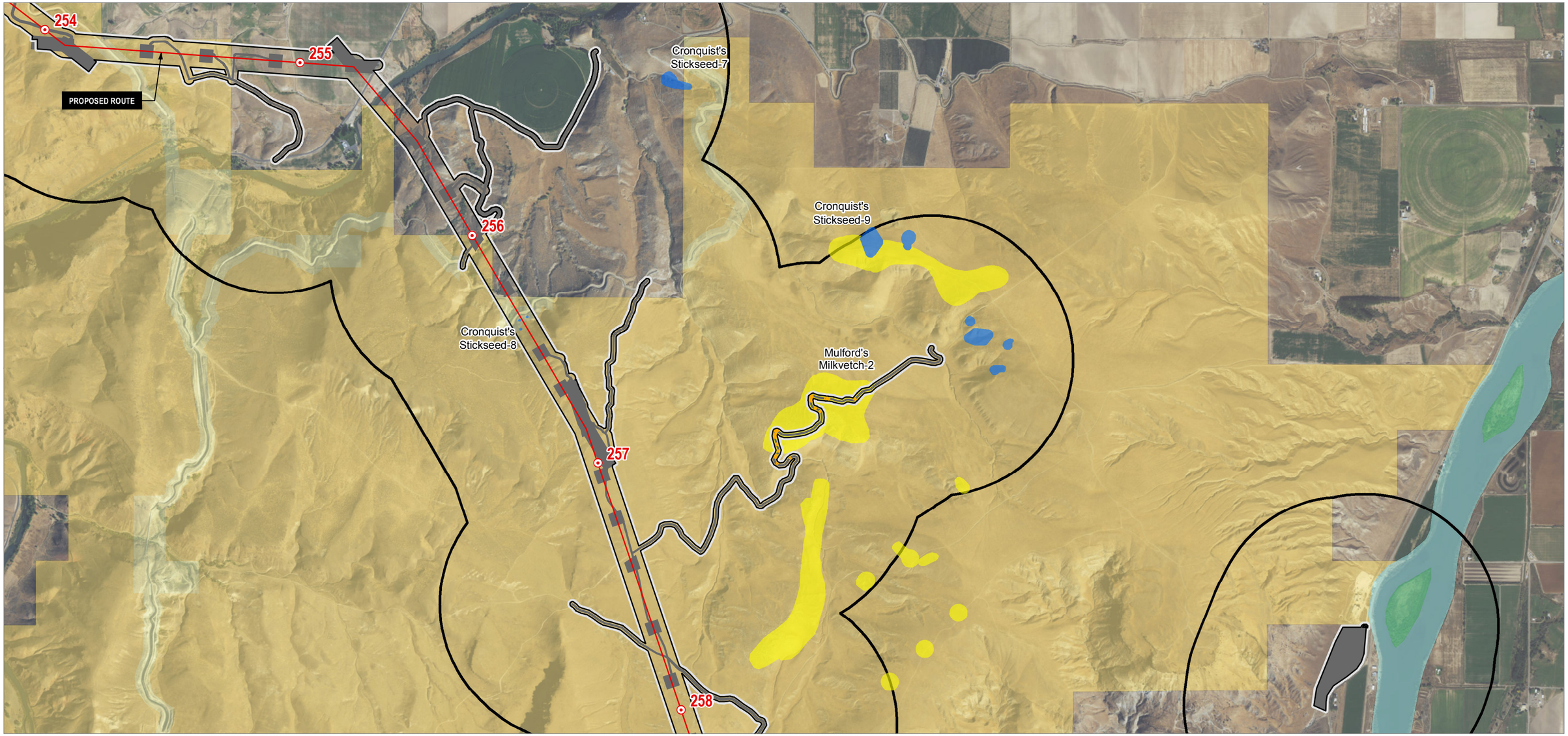
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Boardman to Hemingway Transmission Line Project

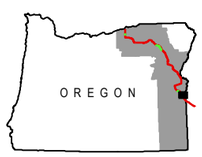
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Malheur County

Map 11



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Cronquist's Stickseed
- Mulford's Milkvetch
- Disturbance Impact

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Private
- State or Local
- US Fish and Wildlife Nat'l Wildlife Refuge

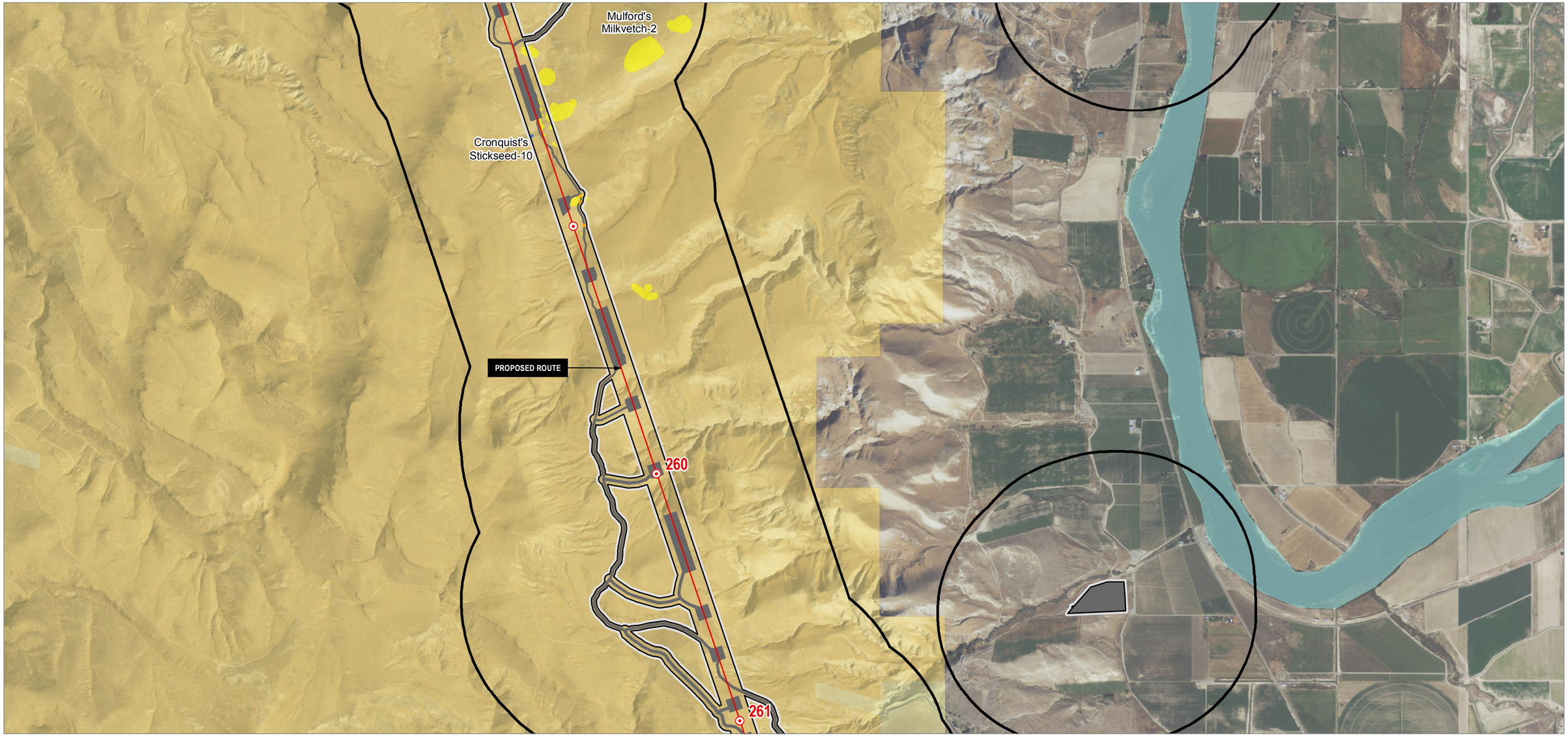
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Boardman to Hemingway Transmission Line Project

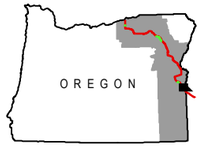
Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Malheur County

Map 12



0 2,000
Feet



Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Cronquist's Stickseed
- Mulford's Milkvetch
- Disturbance Impact

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Private
- State or Local

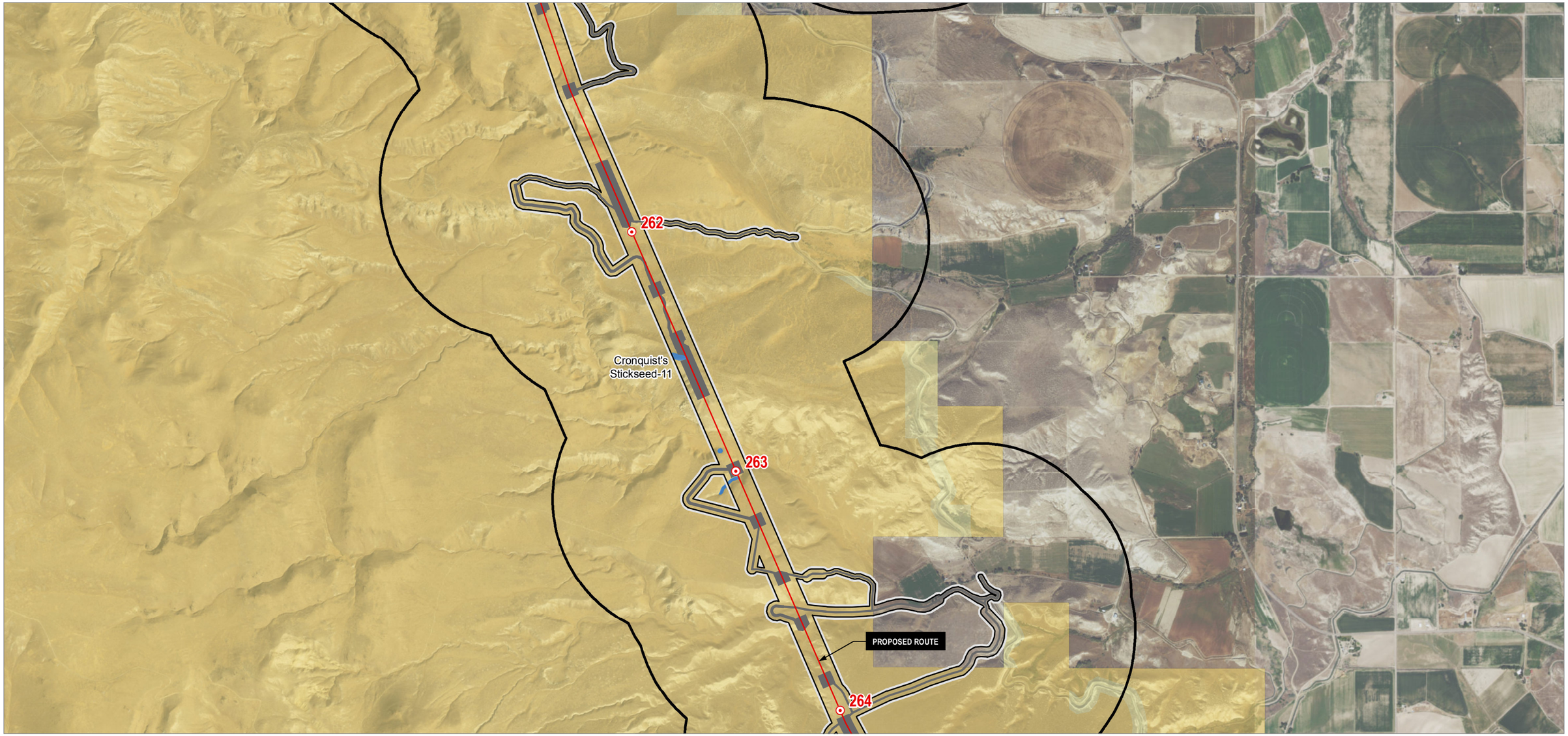
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An IDACORP Company

Boardman to Hemingway Transmission Line Project

Attachment Q-1
Threatened and Endangered Plants within Analysis Area

Malheur County

Map 13



0 2,000
Feet

OREGON

Map Area

Source(s): BLM, IPC, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx, Esri, DigitalGlobe, GeoEys, Earthstar Geographics, CNES/Airbus DS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

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Project Features
- Site Boundary
- Proposed Route
- Disturbance Footprint
- Analysis Area
- Mile

T&E Occurrences Overlapping Analysis Area / Name-Occurrence #
- Cronquist's Stickseed

Land Status
- Bureau of Land Management
- Bureau of Reclamation
- Private

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Boardman to Hemingway Transmission Line Project

Attachment Q-1 Threatened and Endangered Plants within Analysis Area

Malheur County

Map 14