Cross-Tie 500-kV Transmission Project

Plan of Development - DRAFT

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Submitted to:

United States Department of the Interior
Bureau of Land Management
Utah - West Desert District
Fillmore Field Office

and

Nevada - Ely District
Bristlecone Field Office
USDA Forest Service
Humboldt-Toiyabe National Forest
Ely Ranger District

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DISCLAIMER

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ACRONYMS

°F	Degrees Fahrenheit
ACEPM	Applicant Committed Environmental Protection Measure
ACSR	Aluminum core steel reinforced
AIS	Aquatic Invasive Species
APLIC	Avian Power Line Interaction Committee
ARMPA	Approved Resource Management Plan Amendment for Greater sage-grouse
BLM	Bureau of Land Management
CAISO	California Independent System Operator
CFR	Code of Federal Regulations
CIC	Construction, inspection, and compliance contractor
CWA	Clean Water Act
DEQ	Department of Environmental Quality
EIM	Energy Imbalance Market
EIS	Environmental Impact Statement
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Agency
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy Management Act
Forest Service	United States Department of Agriculture Forest Service
HMA	Herd Management Area
HPTP	Historic Properties Treatment Plan
HVAC	High Voltage Alternating Current
kcmil	Thousand circular mil
kV	kilovolt(s)
MOA	Military Operating Area
MW	megawatt(s)
NAC	Nevada Annotated Code

NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
OPGW	Optical ground wire
PLSS	Public Land Survey System
POD	Plan of Development
RI	Radio interference
ROD	Record of Decision
RPS	Renewable Portfolio Standards
SHPO	State Historic Preservation Office
SITLA	Utah School and Institutional Trust Lands Administration
SUP	Special Use Permit
TVI	Television interference
U.S.	United States
UAC	Utah Annotated Code
UDEQ	Utah Department of Environmental Quality
USACE	United States Army Corp of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
UTTR	Hill Air Force Base Utah Test and Training Range
WECC	Western Electric Coordinating Council

1 INTRODUCTION

The Bureau of Land Management (BLM), as lead federal agency and in accordance with Title 43 Code of Federal Regulations (CFR) 2804.25(b), requires that a Plan of Development (POD) be prepared in support of the Cross-Tie 500-kV Transmission Project (Cross-Tie or Project) that explains in detail how the Project will be developed through construction, operation, and maintenance. This POD has been developed by TransCanyon (the Company) in collaboration with other participating federal land management agencies.

The Company submitted an Application for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the BLM for a right-of-way (ROW) grant on lands administered by the BLM and to the U.S. Department of Agricultural Forest Service (Forest Service) for a special-use permit (SUP) for construction, operation, and maintenance in accordance with Title V of the Federal Land Policy and Management Act (FLPMA) of 1976, as amended.

The BLM and Forest Service are considering the application in accordance with 43 CFR 2800 (BLM) and Title 36, Subpart B, Section 251 (Forest Service), pursuant to Title V of FLPMA, and the Energy Policy Act of 2005, to issue a ROW grant (BLM) and an SUP (Forest Service). In doing so, the BLM and Forest Service are coordinating the preparation of the POD to ensure compliance with applicable environmental laws in association with other relevant projects.

This POD and application for permanent facility ROWs and an SUP includes details regarding the construction, operation, and maintenance of the Project, a proposed single-circuit 500 kilovolt (kV), high-voltage alternating current (HVAC) transmission line extending between the Clover Substation in Juab County, Utah to the Robinson Summit Substation in White Pine County, Nevada (Figure 1; a detailed set of route maps are also provided in Appendix A: Detailed Route Alignment Figures).

1.1 TransCanyon Background

Founded in 2014, TransCanyon was born from the desire to combine the strengths of two organizations: Pinnacle West Capital Corporation's subsidiary, Bright Canyon Energy, and Berkshire Hathaway Energy's subsidiary, BHE U.S. Transmission. Both organizations have tremendous experience developing transmission infrastructure across the western United States. The collaborative effort, upon which TransCanyon was formed, creates a balance between the needs of customers, stakeholders and the environment, while improving reliability, efficiency and sustainability of the western electric grid.

1.1.1 Expertise

TransCanyon and its affiliates own and operate approximately 36,000 miles of transmission lines and have successfully sited approximately 998 miles of new high voltage (230-kV and above) transmission line projects through the National Environmental Policy Act (NEPA) process. Recent projects include:

- Mona to Oquirrh Transmission Line
- Sigurd to Red Butte Transmission Line
- Latham SVS Project
- Mathington SVC Project
- Gateway West 500 kV transmission line

- Gateway South 500 kV transmission line
- Sun Valley to Morgan Transmission Line
- Palo Verde to Delaney to Morgan Transmission Line
- Hassayampa to North Gila #2 Transmission Line
- Mazatzal Substation
- North Gila Substation

1.1.2 Financial Strength

TransCanyon is backed by:

- $18.6 billion in assets from Pinnacle West Capital Corporation (as of December 31, 2019)
- $100.8 billion in assets from Berkshire Hathaway Energy (as of December 31, 2019)

1.1.3 Western Focus

By concentrating on the western United States, TransCanyon provides customers with unequaled experience and knowledge of the region to bring multi-million dollar electric transmission projects to completion.

Our proven success in navigating the unique political, geographical and technical issues of electrical systems in the western United States provides stakeholders assurance that we would successfully develop, build, own and operate safe and reliable electric transmission infrastructure.

Detailed environmental studies, engineering refinement studies, and field review/surveys are required for the proposed and alternative transmission line routes to be evaluated during the NEPA process. This POD will be updated as necessary to meet any stipulations of the BLM and Forest Service records of decision (RODs) and the BLM ROW grant and Forest Service SUP before issuance of the notices to proceed and commencement of construction.

The POD includes the following sections:

- Section 1 - Introduction
- Section 2 – Project Description
- Section 3 – Purpose and Need
- Section 4 – Right-of-Way
- Section 5 – Facility Design
- Section 6 – Project Construction
- Section 7 – Construction Plan and Program
- Section 8 – Operation and Maintenance
- Section 9 – Applicant Committed Environmental Protection Measures
- Section 10 – Literature Cited

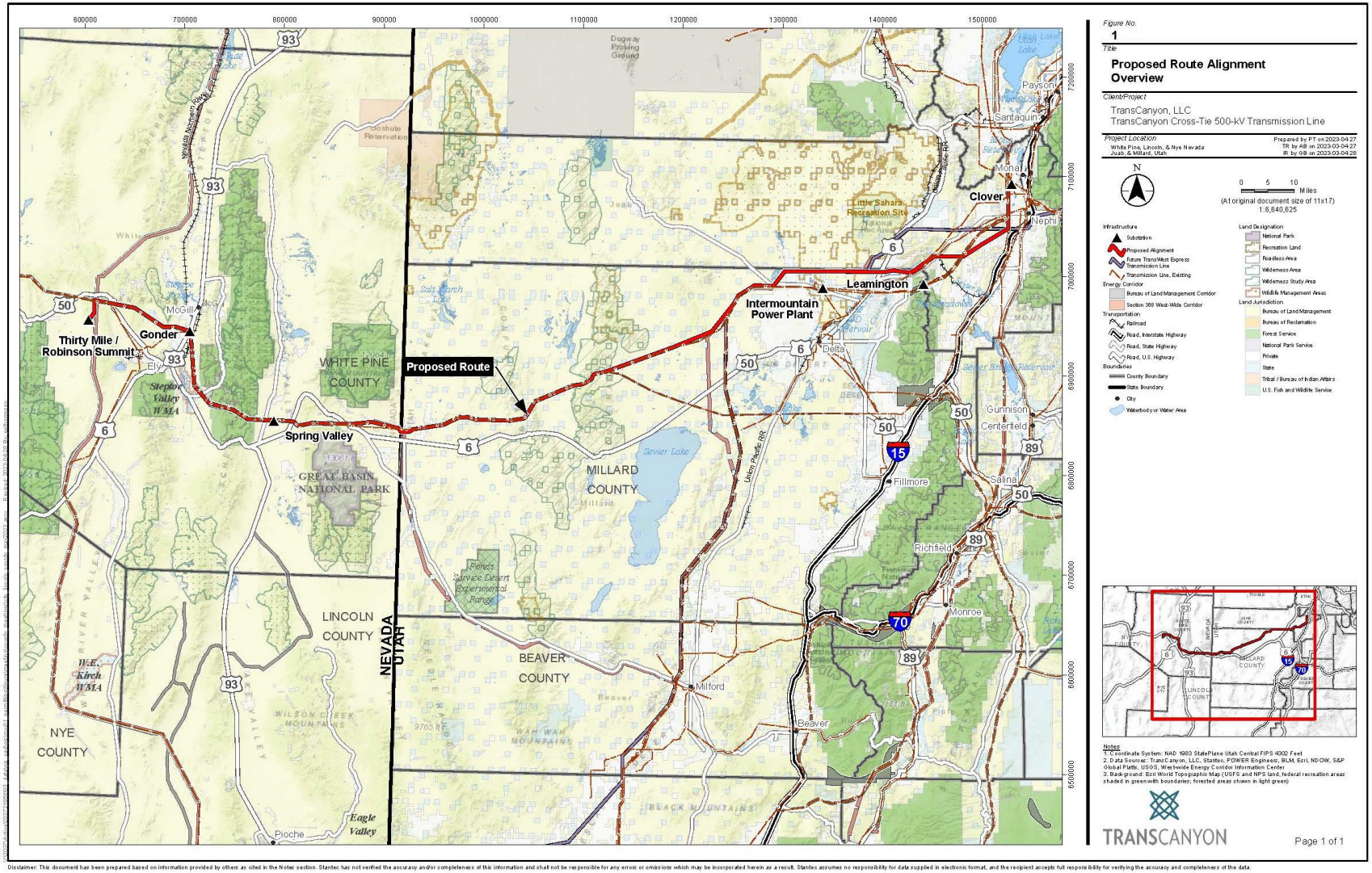

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Figure 1 Proposed Route Alignment

2 PROJECT DESCRIPTION

The Project is proposed as an approximately 214-mile, 1500-megawatt (MW), 500-kV HVAC overhead transmission project that would be constructed between central Utah and east-central Nevada (see Figure 1) generally within either the existing Section 368 corridors or existing BLM utility corridors. The Project would strengthen the electrical interconnection between the PacifiCorp and the NV Energy transmission systems while supporting interregional power transfers and increased transmission capacity and reliability within and through the NorthernGrid planning region.

The Project would connect PacifiCorp's existing Clover[1] 500-kV substation in central Utah (NorthernGrid planning region) with NV Energy's Robinson Summit 500-kV substation in east-central Nevada, which would link the Energy Gateway Projects (PacifiCorp) with the Desert Southwest by utilizing existing and planned transmission of NV Energy and the Eldorado – Harry Allen 500 kV line, (California Independent System Operator - CAISO). Preliminary economic analysis has shown that the addition of the Project would increase future transmission efficiencies within the Western Interconnection. The Project adds this missing pathway to the Western transmission system, and as discussed below provides additional benefits, including delivering remote renewable energy (including Wyoming wind) to the CAISO market, facilitating decarbonization efforts in the West, and supporting resilience and reliability, including providing new pathways and redundancy to mitigate the impact of extreme weather events on the Western grid.

While the Project would be routed near the Intermountain Power Plant in west central Utah, there currently are no plans to interconnect the Project. However, going forward, if economic or reliability analysis identifies a need for such an interconnection; a change in project scope would be considered at that time.

The Project can support development of other energy projects or interconnecting transmission lines along its route through the interconnection review process. Potential interconnecting requestors would submit an interconnection request that will be studied by TransCanyon and any facilities or upgrades necessary to facilitate the interconnection would be identified based on the specifics of the interconnection request. The interconnection requestor can then evaluate the identified requirements and either choose to sign an interconnection agreement or may withdraw the request. Interconnecting projects would be required to obtain the necessary permits and approvals specific to their project. Interconnecting projects are separate from the Project.

The Project has a proposed in-service date of December 31, 2026. To the maximum extent possible, the new transmission line generally would be located in association with federally designated utility corridors and/or parallel to existing transmission facilities and other linear facilities. The proposed permanent ROW being requested is 250 feet wide, maintaining a separation from other existing extra-high voltage transmission lines as required (separation distance from existing transmission lines is dependent upon location and voltage of existing line among other factors). The estimated length of the proposed transmission line route is approximately 214 miles after a recent routing and siting study (Stantec 2021) but would ultimately be determined through the NEPA process.

[1] The Clover 500 kV substation is the southern terminus of the Gateway South transmission project.

Potential alternative routes are being considered in the Environmental Impact Statement (EIS), but the siting and routing study completed in 2021 has identified a proposed route that would minimize environmental and private land impacts. Final specifications for the proposed transmission line and substation facilities will be determined upon further engineering and design studies.

A ROW (BLM) or SUP (Forest Service) would be required to construct, operate, and maintain the transmission line and structures (terms vary by federal agency). Specific acreages associated with permanent, for the life of the ROW, and temporary disturbed areas including access roads, work areas, etc. will be determined through future engineering and environmental studies. Once constructed, the Project would be in operation year-round and on a yearly basis, 24 hours a day transporting electrical power. Maintenance activities would be scheduled and coordinated with other facilities to avoid service interruptions to customers served by the transmission line.

The duration of construction activities is dependent partially on the timing of Project authorization, but in general, the entire construction period could be 24-30 months, of which up to 14 months is anticipated for heavy construction activities associated with the proposed transmission line and substation interconnections. Construction would consist of the following new or expanded facilities:

- Approximately 214 miles of single-circuit 500-kV HVAC overhead transmission line from the Clover Substation to the Robinson Summit Substation
- New substation equipment at the existing Clover Substation within the existing substation footprint
- Expansion of the existing Robinson Summit Substation by approximately 30 acres to accommodate additional equipment and facilities
- Construction and operation of new and/or improved, temporary and permanent roads to each structure along the 500-kV transmission line
- Temporary work areas associated with construction activities
- Regeneration Stations for the fiber optical ground wire (OPGW), spaced every 55 to 75 miles along the route, located near the proposed line

2.1 Federal, State, and Local Permits

Table 1 presents a list of the major federal, state, and local permits and approvals that could be required for the duration of the Project. Any other required permits, licenses, or approvals not identified below will be obtained prior to construction by the Company or Construction Contractor.

Table 1 Federal, State, and Local Permits for the Project

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
FEDERAL			
Locating Facilities on Land under Federal Management			
Preconstruction surveys; construction, operation, maintenance	BLM	ROW grant and temporary use permit (an approved POD would be a condition of approval to granting the ROW and a reclamation bond)	FLPMA (Public Law [PL] 94-579+); 43 United States Code (USC) 1761 et seq.; 43 CFR 2800
Preconstruction surveys; construction, operation, maintenance	Forest Service	Special-use authorization (an approved POD would be a condition of approval to granting the SUP and a reclamation bond)	FLPMA
Construction, operation, and maintenance of transmission line across or in highway ROWs	Federal Highway Administration	Permits to cross Federal-Aid Highway	Department of Transportation Act (23 CFR 1.23 and 1.27; 23 USC 109 and 315); 23 CFR 645 and 771
Biological Resources			
Protection of migratory birds	U.S. Fish and Wildlife Service (USFWS)	Compliance	Migratory Bird Treaty Act (16 USC 703 et seq.); 50 CFR 1; individual agency guidance; Memoranda of Understanding between federal land management agencies and USFWS
Protection of bald and golden eagles	USFWS	Compliance (may require permit for take of eagles)	Bald and Golden Eagle Protection Act of 1972 (16 USC 668), including the Final Eagle Permit Rule, or implementing regulations of September 11, 2009 (50 CFR 13 and 22)
Protection of special-status species	BLM and Forest Service	Compliance	BLM Policy Manual 6840; Forest Service Manual 2670; individual agency guidance
Protection of fish, wildlife, and aquatic resources	BLM and Forest Service	Compliance	BLM Policy Manuals 6500 and 6720; Forest Service Manuals 2600 and 2900

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Ground Disturbance and Water Quality Degradation			
Construction sites with greater than 1 acre of land disturbed	Environmental Protection Agency (EPA), Utah Department of Environmental Quality [UDEQ]), and Nevada Division of Environmental Protection (NDEP)	Section 402 National Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activities (in Utah, Utah Pollutant Discharge Elimination System and in Nevada, Nevada Construction Stormwater General Permit)	Clean Water Act of 1972 (CWA) (33 USC 1342)
Construction across water resources	U.S. Army Corps of Engineers (USACE)	General easement	10 USC 2668 et seq.
Crossing 100-year floodplain, streams, and rivers	USACE	Floodplain use permits	40 USC 961
Construction in, or modification of, floodplains	Federal lead agency	Compliance	42 USC 4321; Executive Order (EO) 11988 Floodplains
Construction in, or modification of, wetlands	Federal lead agency	Compliance	42 USC 4321; EO 11990 Wetlands
Potential discharge into waters of the state (including wetlands and washes)	EPA (in Utah, administered by UDEQ and in Nevada, administered by the NDEP)	Section 401 permit	CWA (33 USC 1344)
Discharge of dredge or fill material into waters of the United States, including wetlands	USACE (in Utah, Utah Division of Water Rights administers GP-40)	USACE 404 permit (individual or coverage under nationwide permit)	CWA (33 USC 1344); Utah Code Title 73-3-29
Placement of structures and construction work in navigable waters of the United States	USACE	Section 10 permit	Rivers and Harbors Act of 1899 (33 USC 403)

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Cultural Resources			
Disturbance of historic properties	Federal lead agency, State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation	Section 106 consultation	National Historic Preservation Act of 1966 (54 USC 306108; 36 CFR 800)
Potential conflicts with freedom to practice traditional American Indian religions	Federal lead agency, federal land management agency	Consultation with affected Native Americans	American Indian Religious Freedom Act of 1978 (42 USC 1996); Religious Freedom Restoration Act of 1993 (PL 101-141)
Disturbance of graves, associated funerary objects, sacred objects, and items of cultural patrimony	Federal land management agency	Consultation with affected Native American groups regarding treatment of remains and objects	Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001-3002); Utah Protection of Human Remains (Utah Code Annotated [UCA] 76- 9-704); Utah ancient human remains on nonfederal lands that are not state lands (UCA 9-8-309); Nevada Protection of Indian Burial Sites (Nevada Revised Statutes [NRS] 383.180
Investigation of cultural resources	Affected land management agency	State and federal permits for study of historical and archaeological resources	FLPMA; Utah Administrative Code, Title R694; UTA Sec. 9-8-305 and 9-8-404; Nevada NRS 383.435; Organic Act of 1916
Excavation of archaeological resources	Affected land management agency	Permits to excavate and remove archaeological resources; American Indian Tribes with interests in resources must be consulted prior to issuance of permits	Archaeological Resources Protection Act of 1979 (16 USC 470aa to 470ee); Utah Administrative Code, Title R694; UCA Sec. 9-8-305 and 9-8-404; Nevada NRS 381.195-.227 and NRS 383.435
Protection of segments, sites, and features related to National Trails	Affected land management agency	National Trails System Act compliance	National Trails System Act of 1968 (PL 90-543); 16 USC 1241 et seq.

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Paleontological Resources			
Ground disturbance on federal land or federal aid project	National Environmental Policy Act, BLM, and Forest Service	Compliance with BLM and Forest Service mitigation and planning standards for paleontological resources of public lands	40 CFR 1500-1508; FLPMA (43 USC 1701 et seq.); 36 CFR 291; BLM Handbook H-8270; BLM Manual 8270
Collection of paleontological resources from federal land	BLM and Forest Service	Permit to collect paleontological resources from federal lands	Paleontological Resources Preservation Act of 2009 (16 USC 470aaa.); FLPMA; BLM Handbooks H-8270 and 8270-1
Use of Pesticides			
Use of pesticides or herbicides on federal lands	Federal land management agencies	Incorporate into ROW and temporary-use permit (BLM) and SUP (Forest Service)	Carlson-Foley Act of 1968 (43 USC 1241); Federal Noxious Weed Act of 1974 (PL 93-629) (76 USC 2801 et seq.), BLM Manual 9015, Forest Service Manual 2150
Transportation			
Use of National Forest System roads	Forest Service	Road use permit	Sections 4 and 6, National Forest Roads and Trail Act of 1964; 16 USC 535 and 537
Air Traffic			
Location of towers and spans in relation to airport facilities and airspace	Federal Aviation Administration (FAA)	File Notice of Proposed Construction or Alteration; FAA to determine if structure is No Hazard	FAA Act of 1958 (PL 85-726); 14 CFR 77
Rate Regulation			
Rates for resale and transmission services	Federal Energy Regulatory Commission	Federal Power Act compliance by power seller	Federal Power Act of 1935 (16 USC 792)

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
STATE OF UTAH			
Noxious Weeds			
Construction and operation activities	Utah Department of Agriculture and Food	Compliance	Utah Administrative Code (UAC) Title R68-9
Permitting Process			
Proposed transmission line facility	Utah Resource Development Coordinating Committee	Expedites review of permitting process for all state agencies	UAC Title 63J-4-501 and 63J-4-504
Locating Facilities on State Land			
Encroachment on, through, or over state land	Utah School and Institutional Trust Lands Administration (SITLA)	Application approval; easement on state land (bond may be required)	Utah Code Title 53C and UAC Title R850 for SITLA
Project Need			
Project construction	Utah Public Service Commission	Certificate of Public Convenience and Necessity; approve construction contracts	Utah Code Title 54-4-25 and UAC Title R746-401
Cultural Resources			
Disturbance of historic properties	Utah SHPO, Utah Division of State History	Utah SHPO will comment on state-funded undertakings	Utah Code Title 9-8-404 and UAC Title R455
Discovery of graves, associated funerary objects, sacred objects, and items of cultural patrimony on nonfederal-, nonstate-administered land	Antiquities, Utah Division of State History	Consultation with state agency regarding treatment of human remains and funerary objects	Utah Code Title 76-9-704 and 9-9-403 to 9-9-405; UAC Title R203-1 and R455-4
Survey or excavation of archaeological resources on lands owned or controlled by the state	Utah Governor's Public Lands Policy Coordinating Office	Permit to survey or excavate	Utah Code Title 9-8-305; UAC Title R694-1; and Utah Rule R212-4
Impact on historical sites	Utah Division of State History	Notification of planning stage and before construction	Utah Code Title 9-8-404
Survey or excavation of archaeological resources on lands owned or controlled by the state	Utah Governor's Public Lands Policy Coordinating Office	Permit to survey or excavate	Utah Code Title 9-8-305; UAC Title R694-1

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Paleontological Resources			
Excavation and collection of paleontological resources from state lands	Utah Geological Survey, Utah Museum of Natural History, SITLA	Permit to excavate and collect paleontological resources from state land	Utah Code Title 79-3-501 and 79-3-502; Utah Code Title 63-73-11 through 63-73-19
Air Quality			
Construction and operation	Utah Air Quality Board	Notice of Construction	Utah Code Title 19-2-108 and UAC Title R317
Ground Disturbance and Water Quality Degradation			
Construction sites with greater than 1 acre of land disturbed	UDEQ	Utah Pollutant Discharge Elimination System Permit and a SWPPP	UAC Title R317
Construction and operation	Utah Water Quality Board	Discharge permit, spills	UAC Section 19-5-101 et. seq.
Potential discharge into waters of the state (including wetlands and washes)	UDEQ	Section 401 permit	UAC Title R317
STATE OF NEVADA			
Permitting			
Permit to Construct	Public Utilities Commission of Nevada	Provides that a person, other than a local government, constructing a utility facility in Nevada must obtain a Utility Environmental Protection Act permit from the Commission.	NRS 704.865
Locating Facilities on State Land			
Building Construction Approval	Nevada State Fire Marshall	Ensures new construction is properly protected from fire.	NAC Chapter 477
Cultural Resources			
Preservation and Protection of Historic Sites	Nevada SHPO	Protects historical, archaeological and paleontological resources on federal and state lands.	NRS 381.195-.227

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Protection of Indian Burial Sites	Nevada SHPO	Protects Native American graves on all public and private land in Nevada.	NRS 383.180
Protection of Historic and Prehistoric Sites	Nevada SHPO	To protect historic and prehistoric resources	NRS 383.435
Air Quality			
Class II Air Operating Permit	NDEP	Operating permit for minor sources	NAC 445B.138
Surface Area Disturbance – Class II Operating Permit (Dust Control Plan)	NDEP	Need to develop a dust control plan	NRS 445B.210
Water Resources			
Construction sites with greater than 1 acre of land disturbed	NDEP	General Permit and a SWPPP	NRS445A.475
401 Water Quality Certificate	NDEP	Section 401 permit	NRS 445A.620
Working in Waterways Temporary Permit	NDEP	Permit for discharges for less than 180 days	NRS 445A.475
Temporary Construction Water Permit (water rights)	NDEP	Permit for water rights	NRS 445A.485
Vegetation			
Survey/Removal of Native Cacti and Yucca	Nevada Department of Agriculture	Permit to remove cacti or yucca	NRS 527.050-.120
Conditional Permit for Disturbance or Destruction of Critically Endangered Plants	Nevada Division of Forestry	Permit to remove species	NRS 527.050-.120
Wildlife			
Permit to Capture, Kill, or Possess Protected Wildlife	NDOW	Permit to remove protected species	NRS 503.094
Disturbance of Wildlife and/or Wildlife Habitat (not specific to endangered species)	NDOW	Permit to remove unprotected species	NRS 503.380

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Transportation			
Occupancy Permit	Nevada Department of Transportation	Standard Occupancy permit	NAC 408.423
Traffic Barricade Plan Approval	Nevada Department of Transportation	Approval of any barricades	NRS 408.319
LOCAL			
State of Utah			
Construction and operation of transmission lines	Juab County	Permitted Use	Juab County Zoning Ordinance 2014 – Section 12-1-702 Use Regulation
Construction and operation of transmission lines	Millard County	Conditional Use	Title 10, Chapter 8 of the Millard County Zoning Ordinances
State of Nevada			
Construction and operation of transmission lines	White Pine County	Conditional use	Chapter 17.88 of the Code of Ordinances-White Pine County

3 PURPOSE AND NEED

The Project would allow access to both existing and planned renewable, including wind and solar, and other generation sources or energy storage projects in the future and would provide increased capacity to export energy in the event of energy surpluses. The purpose and need for the Project are summarized below.

The Project, when coupled with the PacifiCorp's Energy Gateway Projects, Nevada Energy's Greenlink Projects, and the Harry Allen – Eldorado 500 kV transmission project, would provide needed new transmission capacity between the Intermountain West (Utah/Wyoming) region of NorthernGrid and the Desert Southwest portion of WestConnect and CAISO. This additional transmission capacity would facilitate access between the significant existing and planned renewable resources, primarily wind in Wyoming and wind or solar resources in central Utah and eastern Nevada, to the diverse utility load profiles in the Desert Southwest/California. This intraregional project would result in lowering the cost of Renewable Portfolio Standards (RPS) compliance for the Desert Southwest/California while enhancing opportunities to balance renewable resource mix between the Desert Southwest/California and the Intermountain West. It is also anticipated that the Project would enable a significant reduction of solar curtailments along with some reduction in battery storage needs in California and other states in the Desert Southwest.

The Project would meet Regional Needs within the NorthernGrid planning area and support the CAISO future RPS requirements. The primary Regional Needs are "Public Policy" and "Economic" in each of the regions, as outlined below. While the Project would enhance the overall reliability of the Western Interconnection by strengthening the interconnection between two geographically diverse regions (east-central Nevada with central Utah, and, by extension, neighboring inter-connected regions, such as CAISO), "Reliability" benefits of such an interconnection would be considered a secondary benefit for the overall project. Additionally, the Project is expected to provide reduced congestion on other transmission paths throughout the region. The primary benefits of the Project are outlined below.

- The Public Policy Regional Needs that the Project would support include the state-mandated RPS in Utah, Nevada, and California. As a minimum, the following Public Policy Requirements should be considered:
  - California 100% carbon-free by 2045
  - Nevada 50% by 2030
  - Utah 20% by 2025
- The Economic Regional Needs that would be met by the Project are the delivery of cost-effective renewable energy resources. Additionally, the Project would support the following initiative:
  - November 1, 2014, PacifiCorp and the California Independent System Operator (CAISO) launched the western Energy Imbalance Market (EIM). The EIM uses a sophisticated system to automatically balance demand every five minutes with the lowest cost energy available across the initial six-state (California, Oregon, Washington, Idaho, Utah, Wyoming) combined grid, since expanded to also include (Arizona, Nevada, New Mexico, and Montana).

Reliability: The Project line would provide redundancy to the existing infrastructure and substantially improve reliable electrical service to customers. Near term forecasts indicate as early as 2022, load growth in the southwestern United States will exceed the capability of the existing system and new facilities must be constructed to provide reliable capacity for load service.

Regional Benefit: The 500-kV line would not only support future electrical load growth in southwestern United States, but due to the interconnected nature of its transmission system, this Project would benefit the system in a regional context.

Access to Renewables/Generation Sources: The 500-kV line would provide improved access to existing and new generation sources and provide options for development opportunities and access to energy resources, including renewables, such as wind and solar along with energy storage.

The BLM Utah West Desert District's Fillmore Field Office is responsible for management of the BLM-administered land crossed by the Project in Utah and the Nevada Ely District's Bristlecone Field Office is responsible for management of the BLM-administered land crossed by the Project in Nevada. The BLM needs to evaluate the Project for consistency with its Resource Management Plans and appropriate legislation such as NEPA, the Endangered Species Act (ESA), etc. The BLM Fillmore Field Office serves as the lead agency responsible for preparing the EIS for the Project. The BLM has a responsibility under

FLPMA to respond to a request for a ROW grant, while avoiding or minimizing adverse impacts to other resource values, and to allow for ROW uses in conformance with existing land use plans.

The Forest Service, represented by the Humboldt-Toiyabe National Forest Ely Ranger District, is responsible for management of the national forests crossed by the Project in Nevada, southeast of Ely, Nevada. The Forest Service needs to evaluate the Project for consistency with its Forest Plan, the National Historic Preservation Act, and other applicable laws and regulations. The Forest Service would make a decision and then could issue an SUP for the construction, operation, and maintenance of any new facilities that cross these lands.

4 RIGHT-OF-WAY

New permanent and temporary land rights would be required for the Project, such as the transmission line ROW, Robinson Summit Substation expansion, Regeneration Stations, access roads, and temporary work sites, and would be obtained by TransCanyon. A ROW grant with a width of 250 feet (for the portion of the transmission line that would cross public lands) has been requested. Non-public land necessary for the transmission line ROW generally would be obtained as easements or fee purchases. TransCanyon would purchase land rights on private lands through reasonable negotiations with the present owners. Eminent domain may be used if necessary to acquire the private land easement. Property owners would be reimbursed according to the fair market value of their properties. Federal agencies would receive rent payments for those portions of the Project located on public land.

Tables 2 and 3 shows the length and acreages of the 500-kV line by jurisdiction and county, respectively. Table 4 shows the total approximate acreages that would be needed for the ROW across administrative jurisdictions for the Project *(to be provided in a future revision of the POD)*.

Table 2 Proposed Route by Administrative Jurisdictions

Jurisdiction	Line Length (miles)	Percent of Project Length	Estimated Acreage*
Utah	—	—	—
BLM	97	45%	2,939
State Land	14	7%	424
Private	26	12%	788
Nevada	—	—	—
BLM	63	29%	1,909
Forest Service	8	4%	242
State	1	1%	30
Private	4	2%	120
Total [1]	**214**	**100%**	**6,485**

* Based on ROW width of 250 feet – includes transmission line only

[1] Due to rounding, numbers presented in this table may not add up precisely to the totals provided.

Table 3 Proposed Route by County

County	Line Length (miles)	Percent of Project Length	Estimated Acreage*
Utah	—	—	—
Juab County	28	13%	848
Millard County	109	51%	3,303
Nevada	—	—	—
White Pine County	77	36%	2,333
Total [1]	**214**	**100%**	**6,485**

* Based on ROW width of 250 feet – includes transmission line only
[1] Due to rounding, numbers presented in this table may not add up precisely to the totals provided.

Table 4 Right-of-Way Acreages across Administrative Jurisdictions

Jurisdiction	Right-of-Way Acres for Temporary Use	Right-of-Way Acres for Permanent Use	Total Right-of-Way Acres
STATE OF UTAH			
Juab County			
BLM	To be determined	To be determined	To be determined
State Land	To be determined	To be determined	To be determined
Private	To be determined	To be determined	To be determined
Millard County			
BLM	To be determined	To be determined	To be determined
State Land	To be determined	To be determined	To be determined
Private	To be determined	To be determined	To be determined
STATE OF NEVADA			
White Pine County			
BLM	To be determined	To be determined	To be determined
Forest Service	To be determined	To be determined	To be determined
State Land	To be determined	To be determined	To be determined
Private	To be determined	To be determined	To be determined
Total	**To be determined**	**To be determined**	**To be determined**

Depending upon the location of the proposed alternative, the Project may require crossing of other electrical transmission lines, railroads, canals, and U.S. and state highways. Applications for licenses or ROWs to permit these crossings would be submitted to the appropriate entities for approval prior to initiating construction. In these areas, safety precautions would be taken to ensure that there are no conflicts with continued use of these existing facilities. Table 5 shows the length of the proposed line that would be located in an energy corridor.

Table 5 Route Length in Energy Corridors

Energy Corridors	Nevada (Lengths in Miles)	Utah (Lengths in Miles)	Project (Lengths in Miles)
BLM Jurisdiction			
Length within Section 368 Corridor	61.5	23.2	84.7
Length within BLM Utility Corridor [1]	0.4	59.1	59.5
Length Outside of Any Utility Corridor	1.3	15.6	16.9
Forest Service Jurisdiction			
Length within Section 368 Corridor	7.7	0.0	7.7
Length within BLM Utility Corridor [1]	0.6	0.0	0.6
Length Outside of Any Utility Corridor	0.0	0.0	0.0
State Jurisdiction			
Length within Section 368 Corridor	0.0	0.0	0.0
Length within BLM Utility Corridor [1]	0.0	0.0	0.0
Length Outside of Any Utility Corridor	1.3	14.5	15.8
Private Jurisdiction			
Length within Section 368 Corridor	0.0	0.0	0.0
Length within BLM Utility Corridor [1]	0.0	0.0	0.0
Length Outside of Any Utility Corridor	3.9	25.8	29.7
Total Project Alignment Length within Section 368 Corridor	69.2	23.2	92.4
Total Project Alignment Length within BLM Utility Corridor	1.0	59.1	60.1
Total Project Alignment Length outside Energy Corridors	6.5	55.9	62.4

1. The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

5 FACILITY DESIGN

The design, construction, operation, and maintenance of the Project would meet or exceed the requirements of the National Electrical Safety Code (NESC), U.S. Department of Labor, Occupational Safety and Health Standards, and TransCanyon's requirements for safety and protection of landowners and their property. Typical design characteristics of the transmission line are summarized in Table 6 and described below and are detailed in POD Appendix B4: Project Construction Plan.

Table 6 Typical Design Characteristics of the 500-kV Transmission Line

Feature	Description Single-Circuit
Line length (approximate miles)	214
Type of structure	Guyed-V, Self-Supporting Lattice Structures (Tangent and Deadend), and H-frames
Structure height (feet)	100 to 200 feet
Span length (feet)	700 to 1,600 feet
Structures per mile	4 to 8
Right-of-way width (feet)	250
Land Temporarily Disturbed	
Structure work area	250 by 250 feet per structure
Wire-splicing sites	250 by 400 feet every 9,000 ft
Wire-pulling/tensioning sites	250 by 600 feet; two every 3 to 5 miles
Fly yards	5 to 7 acres every 5 miles
Multipurpose yards	Approximately one 12- to 20-acre site every 40 to 50 miles, typically located on private land (locations to be determined)
Access roads (improved existing and new)	Improved existing and new roads will have a minimum of a 14-foot-wide travel surface (in steeper terrain, the travel surface width could be a maximum of 22 feet to accommodate the radius of curves) plus disturbance for grading and drainage features. Turnout areas 100 feet long by 10 feet wide will be located at approximately every 1,000 feet of access road length.
Land Permanently Disturbed	
Area occupied by structures (pad) [1]	Guyed-V: guyed-v structures would include additional areas for the guy wires (area is dependent on the height of the structure). Tangent and deadends: 0.06 acre Reduced Height H-frame: 0.03 acre
Access roads (improved existing, spur, and new)	Improved existing, spur, and new roads will typically have a 14-foot-wide travel surface (in steeper terrain, the travel surface width could be a maximum of 22 feet to accommodate radius of curves) plus disturbance for grading and drainage features (total distance to include the area for intersections and the radius of curves).

Feature	Description Single-Circuit
Regeneration Stations	New communication signal regeneration sites will have a maximum permanent disturbed area of 75 by 75 feet and would be needed every 55 to 75 miles. The quantity of sites needed will be determined by future engineering and analysis.
Electrical Properties	
Nominal voltage	500-kV HVAC line-to-line
Capacity	Thermal capacity of 1500 MW
Circuit configuration	Single-circuit with three phases per structure, three sub-conductors per phase
Conductor size	1,272 kcmil ACSR 45/7 Bittern
Minimum ground clearance of conductor	30 feet minimum

Notes: HVAC = high voltage alternating current; MW = megawatts; kcmil = thousand circular mil; ACSR = aluminum conductor steel reinforced

1. Acres represents the area required for a transmission structure at any given location. In the case of guyed structures, the 0.06 acre would be distributed between the structure base and guy anchor; whereas, in the case of the self-supporting lattice structure, the 0.06 acre would be located around the base of the structure. Guyed structures may require less area; however, for estimating purposes, 0.06 acre was used to represent the largest potential area required for the transmission structures.

5.1 Structures

At this time, it is anticipated that the transmission line circuits would be supported typically by four types of structures: (1) single-circuit steel lattice Guyed V tangent structures; (2) single-circuit self-supporting steel lattice deadend structures at angle and turning points, (3) single-circuit self-supporting steel lattice tangent structures where Guyed V are not technically feasible and (4) reduced height tubular steel H-frame.

The Guyed V tangent structures, which would be predominantly used, would be 105 to 175 feet in height and spacing between structures would be between 1,200 and 1,600 feet (approximately 4 to 5 structures per mile). These towers utilize four total guys that are generally in-line with the conductor: two wires ahead online, and two wires back. The guys attach at the bridge of the tower and then travel away (either ahead or back) from the tower towards the guy anchor on the ground inside the ROW at a downward angle of 45 degrees. Therefore, the footprint of the guying assembly is directly proportional to the height of the tower. Since the structure height could vary between 105 and 175 feet, then an estimate of the range of distance from the tower base to a guy anchor attachment is roughly between 80 and 150 feet in either direction on the line. All guyed structures would be designed consistent with Avian Power Line Interaction Committee (APLIC) recommendations (APLIC 2012, 2018). In steep terrain there is a possibility that a guy wire could extend outside of the ROW. If this occurs, this would be addressed on a case-by-case basis and a variance request may be issued.

The self-supporting tangent and deadend steel lattice structures would generally be 100 to 200 feet and 100 to 160 feet in height, respectively.

In very limited locations, it may be necessary to use different structures such as a tubular steel H-frame, or a steel 3-pole deadend, where technical, topographic, and geographical or landownership concerns limit the use of the primary structure types. Overall height of alternate structures would vary from 69 to 175 feet.

A portion of the Project in Utah is located within the Sevier A and B military operating areas (MOA), low-level military instrument training routes managed by the Hill Air Force Base Utah Test and Training Range (UTTR). The MOAs encompass the airspace down to 100 feet above ground level. Reduced height tubular and/or lattice steel H-frame and lattice structures, below 100 feet tall, would be the primary towers used within the MOA. In limited locations it may be necessary to use a tubular and/or lattice steel 3-pole deadend structure in similar situations noted above. It is anticipated that within the MOAs there could be a couple of towers that would need to exceed 100 feet where the Project requires crossing existing transmission lines. As requested by the UTTR, these towers would be lit with infrared obstruction lights. TransCanyon would work with the UTTR during final engineering and design of the Project to notify them of any towers that exceed 100 feet within the MOAs and to determine the required light specifications. If possible approved lighting would also take into consideration minimizing impacts to migratory birds.

Typical drawings showing these structures are included in POD Appendix B1: Structure Types. Table 7 provides typical design characteristics of the structures.

The design of the structures may vary depending on engineering requirements and/or mitigation prescribed. The exact height of each structure will be governed by topography and safety requirements for conductor clearance.

Table 7 Typical Design Characteristics of Structures

Design Characteristics	Primary Towers					Other Towers	
	Tangent	**Deadend**	**Guyed-V**	**Reduced Height H-frame [1]**	**Reduced Height Tangent [1]**	**H-frame**	**3-Pole Deadend**
Typical height	100–200 feet	100–160 feet	105–175 feet	69–99 feet	69–99 feet	105–175 feet	69–99 feet
Average spacing between towers	1,200–1,600	NA [2]	1,200–1,600	700–900 feet	700–900 feet	1,200–1,600	NA [2]
Structures per mile	4–5	NA [2]	4–5	6–8	6–8	5–8	NA [2]
Number of Guy wires/spacing	NA [3]	NA [3]	4 wires per structure per 80–150 feet from base of tower	NA [3]	NA [3]	NA [3]	NA [3]

1. Would be the primary tower used in the MOAs. May need to use increased height structure(s) to cross existing transmission lines in limited number of circumstances.
2. Deadend towers would be used at angles and turning points along the route
3. Guy wires would only be used for the Guyed-V Towers

5.2 Foundations

The foundations would be primarily drilled pier foundations. Guyed V structures would utilize a single foundation for the main support with 4 additional drilled anchors for the guy wires support. For the self-supporting lattice and deadend towers four drilled pier foundations would be required typically 3.5 to 5 feet in diameter with variable depth based on geotechnical conditions. Table 8 provides structure type foundations.

Table 8 Typical Structure Foundations by Type

Structure Type	Number of Foundations/ Anchors	Foundation Diameter (feet)	Foundation Depth (feet)	Area of All Foundations (square feet)
Primary Towers				
Tangent	4	3.5	17.0	40.0
Guyed-V	1 / 4	5.0	15.0	20.0
Deadend	4	5.0	40.0	80.0
Reduced Height H-frame [1]	2	To Be Determined	To Be Determined	To Be Determined
Reduced Height Tangent [1]	4	To Be Determined	To Be Determined	To Be Determined
Optional Towers				
H-frame	2	6.0	24.0	40.0
3-Pole Deadend	3	7.0	30.0	120.0

1. Would be the primary tower used in the MOAs

In locations where drilled pier foundations are impractical (as determined through geotechnical studies) or cannot be constructed due to cost, soil, environmental, access, or permitting considerations, alternate foundation types may be designed. Alternative foundation types include helical screw piles, socketed anchors, rock anchors, grouted anchors, grouped piles with pile cap, micro-piles, spread or block footings, vibratory caissons, etc.

5.3 Conductors

The Project conductors will include a 1,272 thousand circular mil (kcmil) aluminum-conductor steel reinforced triple-bundled Bittern. Each phase of the three-phase circuit will be composed of three sub-conductors in a triple-bundle configuration. The triple-bundle configuration provides adequate current carrying capacity and provides for a reduction in audible noise and radio interference as compared to a single large-diameter conductor. Each sub-conductor will have a 45/7 aluminum/steel stranding with an overall conductor diameter of 1.345 inches, a weight of 1.432 pounds per foot, and a non-specular finish.

Minimum conductor height above the ground for the 500-kV line would be based on the NESC, TransCanyon's and industry standards. Based on APLIC recommendations (APLIC 2012, 2018), adequate spacing between conductors would be implemented.

5.4 Insulators and Associated Hardware

Design for the insulators and associated hardware would be determined from engineering and design studies.

5.5 Overhead Ground Wire and Optical Ground Wire

Reliable and secure communications for system control and monitoring of the Project are important for maintaining the operational integrity of the Project and the overall interconnected system. Primary communications for relaying and control will be provided via the OPGW, for use by and for the Company's operation of the transmission system, which will be installed on the transmission lines. Each structure will have two lightning protection shield wires installed on the peaks of each of the 500-kV single-circuit steel lattice structures. On H-frame structures, these lightning protection shield wires will be installed at the top of each pole. One of the shield wires will be composed of extra-high-strength steel wire and the other shield wire will be an OPGW constructed of aluminum and steel, which carries multiple glass fibers or more in its core. The glass fibers inside the OPGW shield wire will provide optical data transfer capability among the Company's facilities along the fiber path for the Company's operation of the Project. The data transferred are required for system control and monitoring. All 500-kV line elements of the Project will be designed to carry an OPGW.

The OPGW cable will require the installation of regeneration stations, spaced approximately every 55 to 75 miles along the route described below, which may be located on or off the ROW in proximity to existing power sources or at existing substations in the vicinity of the new line.

5.6 Grounding

The grounding system will consist of bonding the structure to the foundation. If the resistance at the structure measures at or below 15 ohms, nothing else will be added. If the resistance is greater than 15 ohms, ground rods will be bonded to the structure and the resistance measured again. This process will continue until the resistance measures at or below 15 ohms. If ground rods are found to be too numerous or onerous to install, a counterpoise system may be considered. Counterpoise consists of a bare copper-clad or galvanized-steel cable buried a minimum of 12 inches deep and extending from structures (from one or more legs of the structure) for approximately 200 feet within the ROW. During the final design of the Project, appropriate electrical studies will be conducted to identify the issues associated with paralleling other facilities and the types of equipment that will need to be installed (if any) to mitigate the effects of the induced currents. In extremely rare situations, where the soil conditions are highly resistant, the buried copper lead may need to be extended outside of the ROW.

5.7 Regeneration Station

As the data signal is passed through the OPGW, the signal degrades with distance. Consequently, signal regeneration stations are required to amplify the signals if the distance between substations or regeneration stations exceeds 55 to 75 miles. The exact locations cannot be determined at this time but would be sited to avoid sensitive environmental resources to the extent practicable by implementing the Applicant Committed Environmental Protection Measures (ACEPMs) and through micrositing. A typical site would be 100 feet by 100 feet, required during construction, with a fenced area of 75 feet by 75 feet. A 12-foot- by 32-foot- by 9-foot-tall building or equipment shelter (metal or concrete) would be placed on

the site, and access roads to the site and power from the local electric distribution circuits would be required as shown below in Figure 2. An emergency generator with a liquid-petroleum-gas-fuel tank would be installed, in compliance with current regulations, at the site inside the fenced area. Two diverse communication cable routes (aerial and/or buried) from the Project ROW to the equipment shelter will be required.

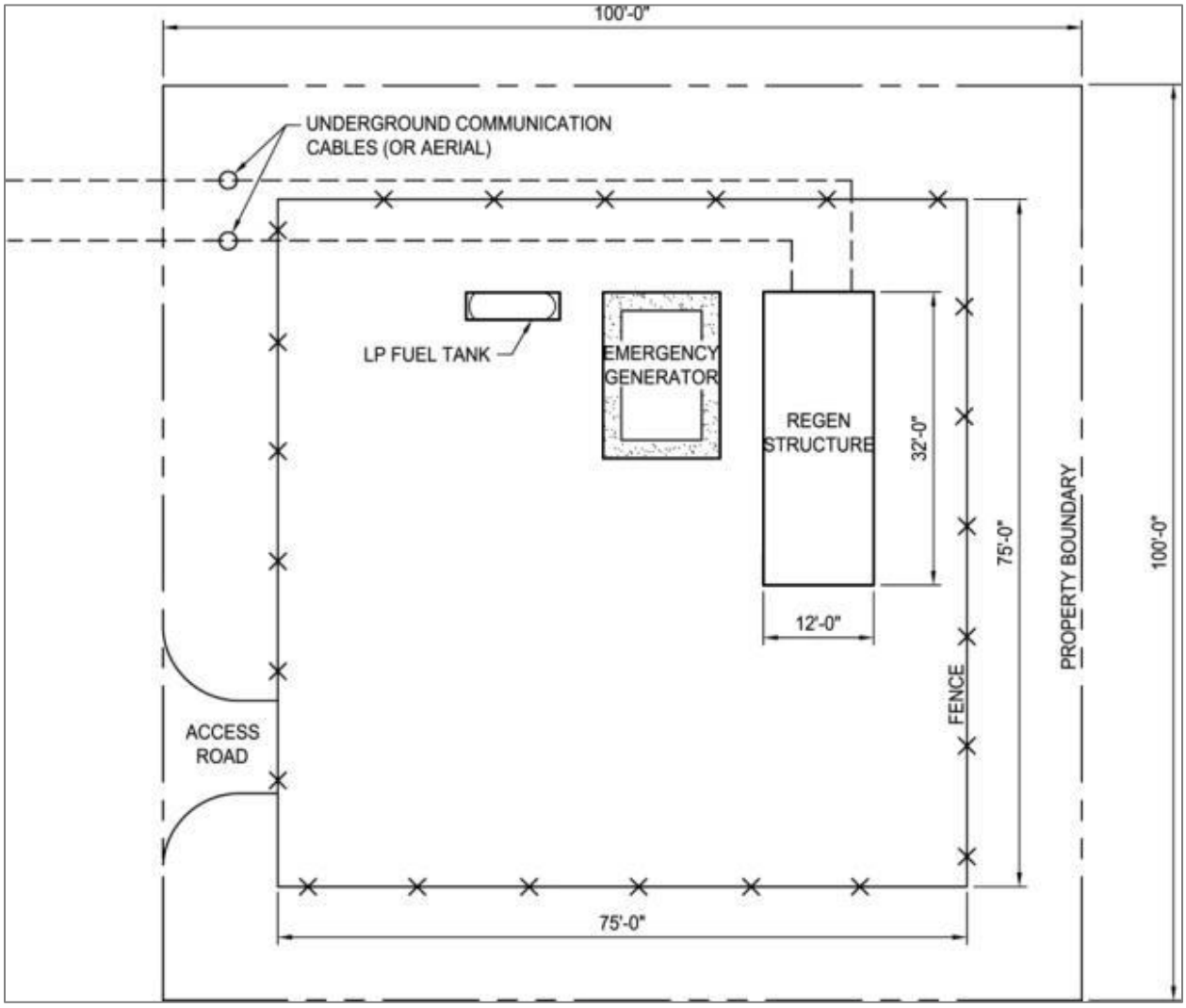

Figure 2 Typical Regeneration Station Layout

5.8 Access Roads

Construction of the transmission line would require vehicle, truck, and crane access to each new structure site for construction crews, materials, and equipment. Similarly, construction of other Project facilities (e.g., multipurpose yards, regeneration stations) would require vehicle access. Four types of access may be used for this transmission line: use of existing paved roads, gravel or dirt roads that would not require improvements, use of existing dirt roads that may require improvements, new bladed access roads, and overland access. Access to the ROW would be via existing roads to the extent practicable. Usually, these

existing roads would be used in their present condition without improvements. Routine maintenance would be required which would be determined through coordination with the landowners and counties. In areas where improvements are required or are deemed to be in the best interest of the Project for future use, they would be graded to provide a smooth travel surface. Access on the ROW would require a road, graded to a minimum width of 14 feet with a maximum of 22 feet depending on site conditions. These roads typically go directly from structure to structure, except on hillsides, ridgebacks, rock outcrop areas, wash crossings, or in treed areas, where the road would meander from structure to structure. In these locations the road would be built in areas that generally cause the least amount of overall disturbance.

5.9 Substations

The line would connect with two existing substations: the Clover Substation, located northwest of the town of Nephi, Utah, and the Robinson Summit Substation, located to the west of Ely, Nevada. Interconnections into each of these substations would include the following equipment additions and modifications: 500 kV circuit breaker, shunt reactors, and series capacitor. Design for the substations, including any potential additions, would be determined from engineering and design studies. Expansion to the existing footprint of the Clover Substation is not anticipated to be required by the Project and all new equipment would be installed within the existing fence lines.

The Robinson Summit Substation will be expanded by approximately 30 acres in order to accommodate additional equipment and facilities required to support the Project.

6 PROJECT CONSTRUCTION

This section describes the construction of the Project and includes an overview of the construction sequence, the construction workforce, environmental safety training, deviations during construction, and project compliance. Specific details are included in POD Appendix B4: Project Construction Plan**.**

The proposed route is within the town of Eskdale's culinary water system's water source protection area. Prior to construction, TransCanyon would work with the appropriate town representatives to identify necessary mitigation measures that would be implemented during construction and operations and maintenance to comply with the town's water source protection plan.

6.1 Construction Sequence and Workforce

6.1.1 Construction Sequence

Construction of the transmission line would include the following sequence of activities:

- Surveying the transmission centerline, other project features, and temporary work areas
- Upgrading or construction of temporary and permanent access roads
- Clearing and grading activities for the ROW, structure sites, temporary work areas, regeneration stations, and substation expansion
- Excavating and installing foundations
- Assembling and erecting structures with temporary and permanent pad sites
- Stringing conductors and ground wires
- Installing counterpoise (structure grounds) where needed

- Installing equipment at regeneration stations and substations
- Cleanup and reclamation of affected areas
- Monitoring of reclamation efforts

These activities are described in more detail in Section 7 – Construction Plan and Program, which also includes information regarding construction of temporary areas which include:

- Multipurpose yards including storage yards, staging areas, refueling areas, and concrete batch plants
- Structure work area
- Wire-splicing sites
- Wire-pulling/tensioning sites
- Helicopter fly yards and refueling
- Access roads (improved existing, spur and new)

6.1.2 Construction Workforce

The estimated number of workers and types of equipment required to construct the Project is shown in Table 9. A detailed equipment list including estimated hours and workforce estimates are included in POD Appendix B4: Project Construction Plan. Various phases of construction would occur at different locations throughout the construction process and in some cases at the same time at different locations. Regular field meetings would be held with the construction, inspection and compliance contractor (CIC) and biological monitors to review the process and its implementation.

Table 9 Project Construction – Estimated Personnel and Equipment

Activity	People	Quantity of Equipment
Project Management/Inspection	16	15 Trucks
Project Supervision - Contractor	10	10 Trucks
Maintenance - Contractor	25	8 Trucks
Survey	9	2 Trucks
Multi-Purpose Yards/Road Building	9	1 Backhoe 2 Dozers 1 Grader 4 Loaders 1 Roller 2 Trailers 1 Generator 3 Telehandlers 1 Trailer 12 Trucks

Activity	People	Quantity of Equipment
Foundations	35	1 Backhoe 1 Crane 1 Dozer 3 Excavators 3 Generators 2 Loaders 2 Telehandlers 1 Trailer 26 Trucks
Material Hauling	7	1 Telehandler 6 Trailers 4 Trucks
Steel Assembly	68	3 Generators 6 Telehandlers 1 Trailer 28 Trucks
Steel Erection	34	6 Cranes 1 Dozer 6 Generators 11 Trucks
Wire Installation	54	1 Backhoe 7 Cranes 3 Dozers 2 Generators 1 Helicopter 6 Press Motors 5 Pullers 2 Tensioners 19 Trailers 24 Trucks
Restoration	8	1 Backhoe 1 Dozer 1 Grader 2 Loaders 1 Trailer 11 Trucks
Total	**275**	**263 Pieces of Equipment**

Note: Depending on schedule requirements, multiple crews for many of these activities may be required thereby increasing the maximum total personnel required.

6.2 Environmental and Safety Training

Participation in an environmental education training would be required for anyone prior to gaining access to the ROW. As detailed in POD Appendix B5: Environmental and Safety Plan, this program would be developed by TransCanyon prior to the start of construction and would be submitted to the Authorized Officer(s) for review and approval prior to implementation. At a minimum, the program would include the following topics: biological, cultural, paleontological, and other environmental requirements and protection measures. After completion of construction, TransCanyon would provide environmental education to all maintenance and operation personnel who would be accessing the ROW.

After participating in the training program each trained worker would receive a card and hard hat sticker, indicating they are cleared for access to the ROW. The construction contractor(s) would provide the CIC with an updated list of those workers who have received the training. The construction contractor(s) would be responsible for ensuring that all construction personnel have received the required training. A non-compliance violation would be issued if a worker is found working on the ROW without the required training.

In addition, the construction contractor(s) would be responsible for providing safety training, as required. Specific health and safety information would be included in the revised POD, including a description of the safety requirements specifically associated with construction activities (construction of access roads, blasting, fire protection, etc.) All construction, operation, and maintenance activities would be required to comply with Occupational Safety and Health Administration regulations. The CIC would be notified by the construction contractor(s) of any accidents that occur on public land during construction of the Project. Notification procedures for emergencies would be described in POD Appendix C13: Emergency Preparedness and Response Plan Guidelines.

6.3 Project Compliance

POD Appendix B6: Environmental Compliance Inspection Plan provides specific details on oversight and management of Project compliance. TransCanyon would contact the Authorized Officer(s) or designee(s) prior to commencing construction and/or any ground-disturbing activities. A pre-construction conference would be scheduled with BLM, Forest Service, other cooperating agencies (as appropriate), and TransCanyon prior to commencing construction and/or ground-disturbing activities on the ROW. TransCanyon personnel and contractors' representatives involved with construction and/or any ground-disturbing activities associated with this ROW would attend this conference to review the stipulations of the grant, including the POD and other documents, as determined by BLM and/or Forest Service.

TransCanyon would not initiate any construction or other ground-disturbing activities on the public land portion of the ROW until after issuance of the federal Notice to Proceed (Form 2800-15) issued by the Authorized Officer(s) or designee(s).

All activities associated with the construction, operation, maintenance, and termination of the ROW would be conducted within the authorized limits of the ROW. TransCanyon would construct, operate, and maintain the facilities, improvements, and structures within this ROW in strict conformity with the approved POD that would be made part of the ROW grant and SUP. Any relocation, additional construction, or use that is not in accordance with the approved POD would not be initiated without the prior written approval of the Authorized Officer(s) or designee(s) as detailed in POD Appendix B6:

Environmental Compliance Inspection Plan. A copy of the complete ROW grant and SUP, including all stipulations and approved POD, would be made available on the ROW area during construction. Noncompliance with the above would be grounds for an immediate temporary suspension of activities.

6.4 Variances During Construction

Modifications or variances are likely to be needed for the approved Project in order to accommodate or mitigate on-site circumstances. Refer to POD Appendix B6: Environmental Compliance Inspection Plan for details.

7 CONSTRUCTION PLAN AND PROGRAM

The activities associated with the construction of the major and ancillary facilities of the Project are described in the sequence in which they would occur. These activities include the following:

- Conduct pre-construction resource surveys
- Surveying the transmission centerline, other project features, and temporary work areas
- Upgrading or construction of temporary and permanent access roads
- Clearing and grading activities of structure sites, temporary work areas, regeneration stations, and substation expansion
- Excavating and installing foundations
- Assembling and erecting structures with temporary and permanent pad sites
- Stringing conductors and ground wires
- Installing counterpoise (structure grounds) where needed
- Installing equipment at the substations and regeneration stations
- Cleanup and reclamation of affected areas
- Monitoring of reclamation efforts

7.1 Surveying the Right-of-Way Centerline, Other Project Features, and Temporary Work Areas

Ground survey and staking would be performed to locate structure centers, ROW boundaries, property boundaries, new access roads, roads to structure sites, overland access, multipurpose yards and other temporary work areas, regeneration stations, and substation expansion. Specific flagging and staking procedures are described in detail in POD Appendix B2: Flagging, Fencing and Signage Plan.

7.2 Upgrading or Construction of Temporary and Permanent Access Roads

Roads would be upgraded or constructed in accordance with agency requirements and the applicable mitigation measures. The locations of proposed new and existing access roads are shown on figures in POD Appendix A: Detailed Route Alignment Figures and are detailed in Table 10 *(the access roads shown on the figures and the table will be included in a future submittal of the POD)*. More detailed information describing access roads is contained in POD Appendix B3: Traffic and Transportation Management Plan, POD Appendix B4: Project Construction Plan, and POD Appendix C9: Reclamation, Revegetation and Monitoring Plan.

Where possible, existing paved and unpaved roads would be used for the transportation of materials and equipment from the staging and storage areas to locations where they would be needed along the transmission line ROW. If necessary, existing roads would be upgraded, and all roads used would be left in a condition equal to or better than their condition prior to construction. Where possible, existing access roads would be used and as required, new roads to structure sites would be constructed and located to minimize impacts. The number of new roads would be held to a minimum, consistent with their intended use (e.g., structure construction or conductor stringing and tensioning). New bladed roads and improved access roads would be built to the minimum width of 14 feet – maximum of 22 feet for the travel surface. For areas that do not require new access roads on the ROW, overland access may be used, examples could include short segments to construction areas where topography and existing vegetation does not require blading.

Due to rough terrain conditions, new roads that must be graded for access along steep slopes (side-hill roads) could likely exceed a 14-foot width, with the total disturbed width varying depending on the amount of displaced soil, not to exceed 32 feet. In addition, meandering roads may be required in specific areas due to geologic conditions or to avoid sensitive resources. As-built drawings showing these and other necessary deviations would be submitted to BLM and Forest Service on completion of construction of the Project. To the maximum extent possible, drainages would be crossed at grade. Where such crossings are not feasible, culverts would be constructed (may be temporary).

During construction, dust-control measures would be implemented on all roads as determined by the Authorized Officer(s). Methods to minimize dust and erosion control associated with existing and new access are provided in POD Appendix C7: Erosion, Dust Control and Air Quality Plan.

At the appropriate time, the BLM or Forest Service, in coordination with TransCanyon, the applicable county, and other potential users of the utility corridor, would determine which of the newly constructed access roads would be closed, reclaimed, or retained for operation and maintenance activity. New access roads not required for operation and maintenance of the projects and/or other planned facilities may be closed using the most effective and least environmentally damaging methods appropriate to that area. Where access is to be reclaimed, the practices identified in POD Appendix C9: Reclamation, Revegetation and Monitoring Plan would be implemented accordingly.

7.3 Clearing and Grading Activities for the Right-of-Way, Structure Sites, Temporary Work Areas, Regeneration Stations, and Substation Expansion

Clearing of natural vegetation would be required for construction purposes (access roads, structure sites, wire-splicing sites, wire pulling and tensioning areas, fly yards, multipurpose yards, regeneration stations and substation expansion), clearances for electrical safety, long-term maintenance, and reliability of the transmission line. Within the ROW, mature vegetation would be selectively removed under or near the conductors to provide adequate electrical clearance as required by NESC and is described in POD Appendix C4: Vegetation Management Plan. Trees that could fall onto the transmission line, affect the transmission line during wind-induced conductor swing or otherwise present an immediate hazard to the transmission line, or have the potential to encroach beyond a safe distance to the conductor as a result of bending, growing, swinging, or falling toward the conductor, would be removed. These trees, referred to as “danger trees,” also may occur adjacent to the ROW. If this is the case, any clearing of “danger trees”

outside of the approved ROW would require the approval of the CIC and Authorized Officer(s) in accordance with the clearing practices outlined in POD Appendix C4: Vegetation Management Plan. Where required in selective areas, planned removals and selective clearing plans would be submitted to the CIC for review and the Authorized Officer(s) for approval.

7.4 Excavating and Installing Foundations

Vertical excavations for foundations would be made with power drilling equipment. Where soils permit, a vehicle-mounted power auger or backhoe would be used. In rocky areas, the foundation holes would be excavated by drilling or blasting methods or installing special rock anchors. Foundation holes left open or unguarded would be covered to protect the public and wildlife. If practical, fencing may be used. All safeguards associated with using explosives (e.g., blasting mats) would be employed. Blasting activities would be coordinated with the appropriate agencies, particularly for purposes of safety and protection of sensitive areas and biological resources as detailed in POD Appendix C14: Blasting Management Plan. Preconstruction surveys would be completed and appropriate buffers adhered to as detailed in POD Appendix C1: Biological Resources Conservation Plan**.** In extremely sandy areas, water or a gelling agent approved by the Authorized Officer(s) would be used to stabilize the soil before excavation.

In areas where self-supported steel-lattice structures and tubular steel structures would be used, cast-in-place concrete foundations would be installed by placing reinforcing steel and a structure stub or anchor bolt cage into the foundation hole, positioning the stub, and encasing it in concrete. Spoil material (excavated subsoil) would be used for fill where suitable and the remainder would be spread at the structure site or along graded access roads or in locations previously agreed upon by TransCanyon and the Authorized Officer(s). In areas where Guyed V structures are being used precast or cast-in-place footings would be installed. Cast-in-place foundations are installed by placing reinforcing steel and an engineered steel connection into the excavation, and then encasing in concrete. Spoils would be distributed in the same manner as the self-supported structures. For the guy wire anchors, various types of anchors may be used based on the soil type and depth to bedrock. For all foundation and anchor excavations, the topsoil would be salvaged and set aside to be placed over the subsoil material during reclamation. These locations would be mitigated on a case-by-case basis and tracked by the CIC. The foundation and anchor excavation and installation would require access to the site by power augers or drills, cranes, material trucks, and ready-mix concrete trucks.

7.5 Assembling and Erecting Structures with Temporary and Permanent Pad Sites

The towers include two primary options for construction:

- Bundles of steel members and associated hardware (and often times insulators, hardware and stringing sheaves) are transported to each structure site by truck. The steel bundles are opened and laid out for assembly by sections and assembled into subsections of convenient size and weight. The assembled subsections are then hoisted into place by means of a crane and fastened together to form a complete structure. A follow-up crew then tightens all the bolts in the required joints.

- The components for each tower can be pre-assembled into subsections in a material storage yard and then either trucked to the structure site and assembled using a crane or flown via helicopter and installed.

7.6 Stringing Conductors, Ground Wires, and Optical Ground Wire

Insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position.

Guard structures would be erected over highways, railroads, power lines, structures, and other overhead obstructions. Guard structures would consist of H-frame wood poles placed on either side of the obstructions or by using boom trucks raising a guard cross beam. These structures would prevent ground wires, conductors, or equipment from falling across obstructions. Equipment for erecting guard structures would include augers, backhoes, line trucks, boom trucks, pole trailers, and cranes. Following stringing and tensioning of all conductors, the guard structures would be removed, and the area reclaimed.

Pilot lines would be pulled (strung) from structure to structure by either a helicopter or land operated equipment and threaded through the stringing sheaves at each structure. Following pilot lines, a stronger, larger diameter line would be attached to conductors to pull them onto structures. This process would be repeated until the ground wire or conductor is pulled through all sheaves.

Ground wires, OPGW, and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor or ground wire/OPGW segment. Sites for tensioning equipment and pulling equipment would be approximately 3 to 5 miles apart. The tensioning and pulling sites would be an area approximately 250 feet by 600 feet depending on the site's purpose (e.g., mid-span or deadend). Tensioners, pullers, line trucks, wire trailers, dozers, pickups, and tractors needed for stringing and anchoring the ground wire or conductor would be located at these sites. The tensioner, in concert with the puller, would maintain tension on the ground wire/OPGW or conductor while they are fastened to the structures.

Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution also would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.

7.7 Installing Counterpoise (Tower Grounds) Where Needed

Part of standard construction practices prior to conductor installation would involve measuring the resistance of the ground to electrical current near the structures. If the measurements indicate a high resistance, counterpoise would be installed, which would consist of trenching in-ground wire to a depth of 12 inches in non-cultivated land and 18 inches in cultivated land, with a ground rod driven at the end. The counterpoise would be contained within the limits of the ROW and may be altered or doubled back-and-forth to meet the requirements of the projects. Typical equipment used for installing ground rods includes line trucks, backhoes and trenchers, etc.

7.8 Regeneration Station Construction

Fiber-optic system regeneration stations would be installed approximately every 55 to 75 miles along the ROW. The station's area will be graded, vegetation removed, and a layer of crushed rock installed. The regeneration station site during construction would disturb an area 100 feet by 100 feet. The permanent disturbance would consist of a fenced area 75 feet by 75 feet typically located within the ROW with an access road leading to a designated gate. A 12-foot by 24-foot by 9-foot-tall, prefabricated building or equipment shelter, either metal or concrete, housing electronics and a generator would be constructed on the site. Distribution power would connect to the site and an emergency generator with a liquid-petroleum-gas-fuel tank would be installed, in accordance with current regulations, inside the fenced area. Two diverse communication cable routes to the equipment shelter would be installed overhead and/or underground.

7.9 Substation Construction

The Project includes interconnections to the existing Clover and Robinson Summit Substations. New substation equipment would be needed at the terminus points (substations) in order to interconnect the transmission line with the existing Clover and Robinson Summit Substations. At the Clover Substation all new equipment would be installed within the existing fence line. The Robinson Summit Substation existing footprint will be expanded by approximately 30 acres to accommodate additional equipment and facilities needed to support the Project. The design for the substation facilities is underway and will be determined from engineering and design studies.

7.10 Additional Construction Components

The following are additional components for the construction of the Project that would be used in conjunction with the general construction activities discussed previously.

7.10.1 Multipurpose Yards

Previously disturbed public land and/or private property would be used to the maximum extent practicable for construction staging, material storage, concrete batch plants and personnel reporting. If undisturbed areas are required for a multipurpose yard, they will be sited to avoid to the extent practicable any sensitive resource through implementation of the ACEPMs and micrositing. It is estimated that there would be up to ten of these areas for the Project. These areas would be used as material storage yards during construction, ranging in size from 12 to 20 acres each. These temporary yards would be used throughout the construction of the Project for receiving, storing, and transferring required materials.

To the extent that commercial concrete batch plants are not located within reasonable driving distance, concrete for use in the structure foundations would be dispensed from portable concrete batch plants located at approximately 40 to 50-mile intervals along the ROW. It is estimated that there would be approximately eight portable batch plant locations required for the Project, typically located in the multi-purpose areas. Equipment typically required at a batch plant site includes generators, concrete trucks, front end loaders, Bobcat loaders, dump trucks, transport trucks and trailers, water tanks, concrete storage tanks, scales, and job site trailers. Rubber-tired trucks and flatbed trailers would be used to assist in

relocating the portable plant along the ROW. Commercial ready-mix concrete may be used when access to structure construction sites is economically feasible.

The multipurpose yards also may serve as field offices, reporting locations for workers, parking areas for vehicles and equipment, structure subsection assembly, and locations for equipment maintenance. All required permits and approvals needed for additional multipurpose yards not previously identified would be obtained by the construction contractor(s).

7.10.2 Equipment Staging

Staging of equipment would be located at multipurpose yards or pulling and tensioning sites. These areas would be used to temporarily lay out equipment to be used for work on specific Project activities at nearby locations.

7.10.3 Equipment Refueling

The contractor would implement standard refueling procedures for heavy equipment that is left on the ROW for long periods of time, such as cranes, blades, dozers, drill rigs, etc. This equipment would be refueled in place. As a rule, no personal or light-duty vehicles would be allowed to refuel on the ROW. Fueling procedures and precautions are outlined in POD Appendix C12: Hazardous Materials Management Plan and POD Appendix C11: Spill Prevention, Control, and Countermeasures (SPCC) Management Plan.

7.10.4 Helicopter Use and Refueling

A helicopter may be used for construction activities (e.g., moving personnel and equipment and conductor stringing). Helicopters would set down in fly yards, multi-purpose area, pulling and tensioning sites or other work areas previously described. Fly yards would be approximately 5- to 7-acres in size spaced every 5 miles along the ROW. Spill protection measures, as outlined in POD Appendix C11: Spill Prevention, Control, and Countermeasures (SPCC) Management Plan, would be in place and all Federal Aviation Administration regulations would be followed. Notification would be made to coordinate the air space with Clover Control for the Utah Test and Training Range military operating areas and with other possible helicopters or aircraft in the area (i.e., seeding operations, fire support). Preconstruction surveys and appropriate nest buffers, as detailed in POD Appendix C1: Biological Resources Conservation Plan, would be followed prior to helicopter of drone usage.

7.11 Cleanup and Reclamation of Affected Areas

Construction sites, including multipurpose yards and all other work sites, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner (e.g., in an approved landfill). In remote areas, trash and refuse could be removed to a multipurpose yard and contained temporarily until such time as it could be hauled to an approved site. No open burning of construction trash would occur. Contaminants such as oils, hydraulic fluids, antifreeze, and fuels would not be dumped on the ground, and all spills would be cleaned up.

Reclamation will occur as outlined in POD Appendix C9: Reclamation, Revegetation and Monitoring Plan**.** This plan outlines site-specific methods, such as topsoil stripping and storage, timing of reclamation

activities, seed mixes, monitoring methods, standards for reclamation success, and bond release criteria, to promote success of revegetation efforts.

8 OPERATION AND MAINTENANCE

The Company has prepared an operation and maintenance plan, POD Appendix B7: Operation and Maintenance Plan, that will be implemented for the Project on BLM and National Forest System lands as well as other lands on the Project upon construction completion. This document provides specific details regarding ongoing and long-term activities that would occur along the ROW. The document describes other compatible uses, routine inspection and maintenance activities and frequency including vegetation removal, as well as major and emergency situations. Agency coordination that will occur prior to initiating scheduled inspection, maintenance (including vegetation management), and/or repair activities are detailed as well as reporting procedures.

8.1 Termination and Reclamation

Should the ROW and facilities no longer be needed, a termination and reclamation plan would be developed by TransCanyon. One year prior to termination of the ROW, TransCanyon shall contact the Authorized Officer(s) to arrange a joint inspection of the ROW. This inspection would be held in order to agree to an acceptable termination and reclamation plan. The Authorized Officer(s) must approve the plan in writing prior to commencement of any termination activities.

Termination and reclamation procedures would attempt to reclaim the landscape as near to original conditions as possible. The termination and reclamation plan would be reviewed and approved by the Authorized Officer(s) and would include the following information:

- What facilities and access routes are to be removed, and/or reclaimed
- How facilities and access routes would be removed, and the disturbed areas reclaimed
- The time of year the facilities and access routes would be removed
- Stabilization and reclamation techniques to be used

9 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

This section of the POD provides environmental protection measures committed to by TransCanyon associated with the construction, operation, and maintenance of the Project.

Table 10 provides a list of ACEPMs included as part of the Project identified to reduce impacts on environmental resources. These measures have been categorized as they apply to three specific phases of the projects, including (1) engineering and design, (2) construction, and (3) maintenance and operation of facilities. In addition, TransCanyon has developed numerous management plans (appendices to this POD) that provide additional details and specific information for applying each of these ACEPMs. Table 10 identifies the applicable management plan(s) for each ACEPM.

The construction contractor(s) would adhere to the measures identified during the engineering/design phase, as well as those measures to address construction and reclamation activities. The CIC would be responsible for the oversight of the implementation of these measures to ensure that TransCanyon and the construction contractor(s) adhere to the measures (identified below).

Table 10. Applicant Committed Environmental Protection Measures

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
General Measures				
1. The areal limits of construction activities would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction activity limits. Avoidance areas would be flagged as described in POD Appendix B2: Flagging, Fencing, and Signage Plan, to alert construction personnel to avoid areas.	B2	Yes	Yes	—
2. Transmission line structures would comply with FAA guidelines to minimize aircraft hazards (Federal Aviation 77), and towers and ground wire would be marked with high-visibility devices where required by governmental agencies (FAA).	B1, B2	Yes	Yes	Yes
3. In designated areas, structures would be placed so as to avoid sensitive features, where practical, such as, but not limited to, riparian areas, water courses, agricultural lands, residential areas, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard structure design. Avoidance may be accomplished by spanning sensitive features, implementing the ACEPMs and micrositing.	C3	Yes	Yes	—
4. TransCanyon would identify and protect evidence of the Public Land Survey System (PLSS) and related federal property boundaries prior to commencement of any ground-disturbing activity. The AO would contact BLM Cadastral Survey to coordinate data research, evidence examination and evaluation, and locating, referencing, or protecting monuments of the PLSS and related land boundary markers from destruction. In the event of obliteration or disturbance of the federal boundary evidence, the responsible party would immediately report the incident in writing to the AO. BLM Cadastral Survey would determine how the marker would be restored. In rehabilitating or replacing the evidence, the responsible party would reimburse the BLM for the costs or, if instructed to use the services of a Certified Federal Surveyor, procurement would be per qualification-based selection. All surveying activities would conform to the Manual of Surveying Instructions and appropriate state laws and regulations. BLM Cadastral Survey would review local surveys before being finalized or filed in the appropriate state or county office. The responsible party would pay for all survey, investigation, penalties, and administrative costs.	B2, B6	—	—	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
5. All personnel involved in the Project would receive environmental training prior to commencing work. Training would emphasize compliance with all environmental laws including the stipulations in the ROW grant and final POD. Project-specific requirements and local issues would be addressed, as necessary. Roles of onsite monitors, civil survey flagging methodology, specific landowner issues, mitigationguidelines and procedures for cultural resources, paleontological, and biological resources, protection of natural resources, and approved areas of disturbance would be some of the major topics covered in the training. A master list of all personnel that have completed the training would be maintained and provided immediately to the Proponent or their designee upon request. Hard hat stickers demonstrating attendance of the training would be issued to attendees. In addition, if applicable, a professional paleontologist and/or biologist would explain the role of onsite monitors and paleontological and/or biological and water resources mitigation guidelines and procedures to the workers.	B5, B6	—	Yes	—
Roads/Transportation				
6. To avoid disturbance to sensitive features (e.g., perennial streams, recreation trails, irrigation canals), access roads would not be constructed in those areas. Rather, construction and maintenance traffic would use existing roads or cross-country access (including the ROW). To minimize ground disturbance, construction traffic routes must be clearly marked with temporary markers such as easily visible flagging. The construction routes or other means of avoidance must be approved in advance of use by the Authorized Officer(s). Sensitive habitats would be avoided to the extent possible through implementation of the ACEPMs and micrositing.	B3, C3	Yes	Yes	Yes
7. Construction equipment would be restricted to the ROW, pre-designated access roads, and public roads.	B3, B4	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
8. Roads would be built as near as possible at right angles to the streams and washes. Culverts would be installed where needed. All construction and maintenance activities would be conducted in a manner that would avoid drainage channels, and intermittent or perennial stream banks, as practicable, and minimize disturbance to vegetation. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to, or better than, their condition prior to the construction of the transmission line. Roads on National Forest System lands will be constructed in accordance with the National Core BMP Technical Guide (Forest Service 2012).	B3, B4, C7	Yes	Yes	Yes
9. Any new access roads requiring cut and fill would be designed to minimize surface disturbance and take into account the character of the landform, natural contours, cut material, depth of cut, where the fill material would be deposited, resource concerns, and visual contrast. Access roads construction on steep hillsides and near watercourses where alternate routes provide adequate access would be avoided.	B3, B4	Yes	Yes	—
10. To limit new or improved accessibility into an area, all new access roads, not required for maintenance or requested by the land management agency or landowner to remain open, would be permanently closed and recontoured and reclaimed using the most effective and least environmentally damaging methods appropriate to that area with concurrence of the landowner or land manager.	B3, C9	Yes	Yes	—
11. Where adverse impacts or safety considerations warrant, public access would be limited or temporarily prohibited within the ROW or along existing roads.	B3	—	Yes	—
12. Any road maintenance activities would be conducted and comply with all applicable county or BLM and Forest Service road maintenance standards and requirements.	B3	—		—
13. Canal and/or ditch crossings would require placement of temporary bridges orimprovement of existing crossings. Bridges would be designed as to not impede fish movement.	C3	Yes	Yes	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
Vegetation Management				
14. In construction areas where re-contouring is not required, vegetation would be left in place wherever possible and original contour would be maintained to avoid excessive root damage and allow for re-sprouting.	C4	Yes	Yes	—
15. On agricultural land, the ROW would be aligned, in so far as practical, to reduce the impact on farm operations and agricultural production.	B4, C9	Yes	—	—
16. Where seeding is required, appropriate seed mixture and seeding techniques would be used and approved by the Authorized Officer or landowner.	C9	—	Yes	Yes
17. Vegetation removal and disturbance would be kept to a minimum through construction site management (e.g., using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites, etc.). Vegetation not consistent with minimum clearance distances between trees and transmission lines must be removed to ensure line safety and reliability (required by North American Electric Reliability Council Transmission Vegetation Management Program [2016]).	C4	—	Yes	Yes
18. Reclamation would generally be conducted with native seeds that are representative of the indigenous species present in the adjacent habitat. Document rationale for potential seeding with selected nonnative species. Possible exceptions would include use of nonnative species for a temporary cover crop to out-compete weeds. In all cases, seed mixes would be approved by the Authorized Officer(s) or landowner prior to planting. Reclaimed areas will be monitored as discussed in POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.	C9	—	Yes	—
19. All interim and final seed mixes, hay, straw, and hay/straw products would be certified free of plant species listed on the Nevada and Utah noxious weed list.	C9	—	Yes	—
20. An area would be considered satisfactorily reclaimed, per the established reclamation standards in the POD Appendix C9: Reclamation, Revegetation and Monitoring Plan, when all disturbed areas have been recontoured to blend with the natural topography, erosion has been stabilized, and an acceptable vegetative cover has been established.	C9	—	Yes	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
21. Reclamation bond release criteria would include the following: The perennial plant cover of the reclaimed area would equal or exceed perennial cover of selected comparison areas (normally adjacent habitat). If the adjacent habitat is severely disturbed, an ecological site description may be used as a cover standard. Cover is normally crown cover as estimated by the point intercept method. Selected cover can be determined using a method as described in Sampling Vegetation Attributes, Interagency Technical Reference, 1996, BLM/RS/ST-96/002+1730. The approved Reclamation Plan would identify the site-specific release criteria and associated statistical methods in the reclamation plan or permit.	C9	—	Yes	—
22. Weed-free vegetation removed from the ROW would be respread where appropriate through coordination with the land management agencies or landowner to provide protection, nutrient recycling, and seed source.	C9	—	Yes	Yes
23. During operation of the transmission line, the ROW would be maintained free of construction-related non-biodegradable debris. Slash would be treated (chipped) and left in place and used for soil stabilization or would be hauled off for offsite disposed in accordance with requirements of the land-management agency.	C4, B7	—	Yes	Yes
24. In construction areas (e.g., structure sites, temporary work areas, etc.) where re-contouring is required, surface reclamation would occur as required by the landowner or land-management agency. The method of reclamation normally would consist of returning disturbed areas back to their natural contour, reseeding, cross drains installed for erosion control, placing water bars in the road, filling ditches, and removing any barriers installed.	C9	Yes	Yes	—
Recreation				
25. Ground disturbing activities would not occur within 100 meters of cave entrances, drainage areas, subsurface passages, and developed recreation sites. These areas would be marked on POD Appendix A: Detailed Route Alignment Figures as avoidance areas. If during construction activities any sinkholes or cave openings are discovered, construction activities would cease in the immediate area and the Authorized Officer(s) notified.	B5	Yes	Yes	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
Water Resources				
26. Water would be procured by the Construction Contractor(s) from municipal, commercial, or previously allocated sources or under a temporary water use agreement with landowners holding existing water rights. All procured water would require written approval, which would include how much water would be used and a map and shapefile showing the location of the procurement site. Written approval would be provided to the CIC and the Company prior to procuring the water. Procurement of water would also follow all other applicable ACEPMs; such as those protecting sensitive wildlife species.	B4	—	Yes	—
27. Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) would be mapped and avoided where feasible. If they are damaged or destroyed by activities, they would be repaired or replaced to their pre-disturbed condition as required by the landowner or land-management agency.	C3	Yes	Yes	Yes
28. A containment barrier would be constructed around all pumps and fuel containers utilized within 100 feet (30.5 meters) of a stream channel. The containment barrier would be of sufficient size to contain all fuel being stored or used on site.	C3	Yes	Yes	Yes
29. Access roads and fords that cross stream channels would be constructed according to the Company's published standards for road construction or per private landowner agreements (refer to POD Appendix B4: Project Construction Plan). In the event that the Company's published standards for road construction conflict with BLM, Forest Service, state, or local requirements, the Company/Construction Contractor(s) would coordinate with the CIC (or appropriate land management agency representative in areas where the CIC does not have authority) to resolve the conflicting standards.	B3, B4, C3	Yes	Yes	Yes
30. Stream crossings would be limited on gravel routes to the minimal number necessary to minimize sedimentation and compaction.	C3	Yes	Yes	Yes
31. Mixing of herbicides, rinsing of herbicide containers, and spraying equipment would only be conducted in areas that are a safe distance from environmentally sensitive areas and points of entry to bodies of water (storm drains, irrigation ditches, streams, lakes, or wells).	C2, C3	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
32. The Construction Contractor would prepare and adhere to a stormwater pollution prevention plan in accordance with state requirements and would implement spill prevention and containment measures to minimize potential for adverse effects on surface water.	C3, C10, C11	—	Yes	Yes
33. The introduction of aquatic invasive species (AIS), including plants and animals, is of particular management concern for protecting water resources in the western United States. Preventing the introduction of AIS would be accomplished by adhering to interagency developed methods of avoidance, inspection, and sanitization as described in the Operational Guidelines for AIS Prevention and Equipment Cleaning (Forest Service 2009). If control of fugitive dust near sensitive water bodies is necessary, water would be obtained from treated municipal sources or drafted from sources known to contain no AIS. Support vehicles, drill rigs, water trucks, and drafting equipment would be inspected and sanitized, as necessary, following interagency-approved operational guidelines.	C2	—	Yes	—
34. Activities would not be allowed in or within 100 meters of riparian areas, springs, or other wetland habitats. Access through riparian areas and other wetland habitats would be avoided by either driving around them, within the ROW, or using an existing or newly-approved and constructed crossing.	C3	Yes	Yes	Yes
Cultural and Paleontological Resources				
35. The primary focus of paleontological mitigation efforts would be within areas likely to have paleontological resources, as indicated by a PFYC rank of moderate (3) or higher. Preconstruction surveys of such areas may be conducted as agreed on by the land-management agency.	C6	Yes	Yes	—
36. Prior to construction, all personnel would be instructed on the protection of cultural, paleontological and ecological resources. To assist in this effort, the construction contract would address: (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; (b) the importance of these resources and the purpose and necessity of protecting them.	B5, C1, C5, C6	—	Yes	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
37. Cultural resources would be considered during Project implementation (in accordance with a programmatic agreement developed for the Project). This would involve intensive surveys to inventory and evaluate cultural resources within the selected corridor and any appurtenant impact zones beyond the corridor, such as access roads and construction equipment yards. In consultation with appropriate land-management agencies and state historic preservation officers, specific mitigation measures would be developed and implemented to mitigate any identified adverse impacts. These may include project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies.	C5	Yes	Yes	—
38. All activities would be halted, associated with the undertaking, within 100 meters of a discovery, until the discovery is appropriately protected and until the Authorized Officer issues a Notice to Proceed. A Notice to Proceed may be issued by the BLM or Forest Service under any of the following conditions: • Evaluation of potentially eligible resource(s) results in a determination that the resource(s) are not eligible; • The fieldwork phase of the treatment option has been completed; and • The BLM or Forest Service has accepted a summary description of the fieldwork performed and a reporting schedule for that work.	C5	—	Yes	Yes
39. TransCanyon would inform all persons associated with the Project that knowingly disturbing cultural resources (historic or archaeological) or collecting artifacts is illegal.	C5, B5	—	Yes	Yes
40. When fossils of potential scientific interest (i.e., paleontological resources) are encountered (such as vertebrate fossils and uncommon invertebrate or plant fossils), ground-disturbing work would be halted in a safe radius of the find and the Authorized Officer, or other appropriate agency contact, immediately notified to coordinate next steps.	C6, B5	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
41. Monitoring Ground Disturbance: If required, a professional paleontologist under permit from the BLM, Forest Service, State of Utah, or State of Nevada, or a permitted paleontological monitor working under the supervision of the paleontologist, would be on-site during all ground-disturbing activities conducted in geological units that have been determined to have unknown or moderate or higher paleontological potential. The professional paleontologist and paleontological monitor would be equipped to efficiently salvage fossils as they are unearthed in order to avoid unnecessary delays. The monitor would be empowered to temporarily halt or divert ground-disturbing activities to allow assessment and, if the fossils are potentially of scientific interest, coordination with the appropriate agency.	C6	—	Yes	—
Health and Safety				
42. TransCanyon would respond to complaints of line-generated radio interference (RI) or television interference (TVI) by investigating the complaints and implementing appropriate industry standard mitigation measures. The transmission line would be patrolled on a regular basis so that damaged insulators or other line materials that could cause interference are repaired or replaced.	B7	—	—	Yes
43. The proposed hardware and conductor would limit the audible noise, RI, and TVI due to corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.	B7	Yes	Yes	—
44. If blasting activities are required, powder magazines would be located at least 0.25 mile from traveled roads. Loaded shot holes and charges would be attended at all times. Explosives would be used according to applicable federal and state regulations.	C14	Yes	Yes	—
45. TransCanyon would apply necessary mitigation to eliminate problems of induced currents and voltages onto conductive objects (i.e., pipelines, railroad tracks, fences) sharing the ROW, to the mutual satisfaction of the parties involved.	B7	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
46. TransCanyon would continue to monitor studies performed on electric magnetic field research. TransCanyon relies on the findings of public health specialists and international scientific organizations for guidelines regarding electric magnetic fields	B7	Yes	Yes	Yes
Hazardous Materials and Wastes				
47. Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.	C12	—	Yes	Yes
48. Any deleterious or hazardous wastes or substances would be properly labeled in accordance with 40 CFR Part 262 and disposed at a disposal facility authorized to accept such materials. Measures would be taken to isolate, control, and properly dispose of toxic and hazardous materials. A list of hazardous materials expected to be used will be included in POD Appendix C12, Hazardous Materials Management Plan.	C12	—	Yes	Yes
49. All trash, garbage, debris, and foreign matter would be removed and properly disposed.	B5	—	Yes	Yes
50. Oil or lubricants would not be drained onto the ground surface. Any spills under 25 gallons would be immediately cleaned up and reported to the Authorized Officer(s) and the Utah Department of Environmental Quality/the Nevada Division of Environmental Protection as appropriate.	C12	—	Yes	Yes
51. Petroleum products such as gasoline, diesel fuel, helicopter fuel, and lubricants would be containerized in approved containers in accordance with Title 40 of the CFR Part 262. Hazardous materials would be properly stored in separate containers to prevent mixing, drainage, or accidents.	C12	—	Yes	Yes
52. Materials, such as fuels, other petroleum products, chemicals, and hazardous materials, including wastes, would be stored in upland areas at least 100 meters away from streams and/or 200 feet from private wells (400 feet from public wells).	C3, C12	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
53. If an upland spill occurs, berms would be constructed with available equipment to physically contain the spill. Absorbent materials would be applied to the spill area. Contaminated materials would be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 328 feet (100 meters) away from any wetland or water body, until proper disposal is arranged (United States Environmental Protection Agency 2023). Such spills would be reported immediately to the Authorized Officer(s), depending on jurisdiction. A shovel and spill kit would be maintained on site at all times to respond to spills.	C12	—	Yes	Yes
54. If a spill occurs that is beyond the scope of on-site equipment and personnel, an Emergency Response Contractor would be identified to contain and clean up the spill.	C12	—	Yes	Yes
55. For spills in standing water, floating booms, skimmer pumps, and holding tanks would be used as appropriate to recover and contain released materials on the surface of thewater.	C12	—	Yes	Yes
56. If pre-existing contamination is encountered during construction, work would be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination; the responsible party; and local, state, and federal regulations would determine the appropriate cleanup method(s) for these areas.	C12	—	Yes	—
57. Construction vehicles would be maintained in accordance with the manufacturers' recommendations. Vehicles would be inspected for leaks prior to entering the jobsite. Newly discovered leaks would be contained with a bucket or absorbent materials until repairs can be made.	B3, C12	—	Yes	—
58. Sanitary wastes would be collected in portable, self-contained toilets at construction staging areas and other construction operation areas and managed in accordance with local requirements.	B4	—	Yes	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
Air Quality				
59. All requirements of those entities having jurisdiction over air quality matters would be adhered to and any necessary permits for construction activities would be obtained. Open burning of trash would not be allowed unless authorized by appropriate authorities.	C7	—	Yes	—
60. Dust abatement techniques would be used on unpaved, unvegetated surfaces to minimize airborne dust.	C7	—	Yes	Yes
61. Speed limits (e.g., 15 miles per hour) would be posted and enforced to reduce airborne fugitive dust and collisions with wildlife.	B3, C7	—	Yes	Yes
62. Construction materials and stockpiled soils would be covered if they are a source of fugitive dust to minimize emissions.	C7	—	Yes	—
63. Dust abatement techniques would be used before and during surface clearing, excavation, or blasting activities, if applicable.	C7	—	Yes	—
Soil Resources				
64. If travel is required during wet periods with saturated soil conditions, vehicles would not be allowed to travel when soils are moist enough for deep rutting (4 or more inches deep) to occur unless prefabricated equipment pads are installed over the saturated areas or other measures were implemented to prevent rutting. Equipment with low-ground-pressure tires, wide tracks, or balloon tires would be used when possible.	B3	—	Yes	Yes
65. When preparing the site for reclamation, include contour furrowing, terracing, reduction of steep cut and fill slopes, and the installation of water bars, as determined appropriate for site-specific conditions.	C9	—	Yes	—
66. Reclamation efforts would include reshaping, re-contouring, and/or resurfacing with topsoil, installation of water bars, and seeding on the contour. Additional erosion control measures (e.g., fiber matting and barriers) to discourage road travel may be required.	C9	—	Yes	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
67. In areas where soil is disturbed, surface restoration would normally consist of, but would not be limited to, returning disturbed areas back to rounded contours, scarifying, reseeding, and mulching by hand (at a rate of 1 ton per acre) or hydromulching, as needed or as specified by the agencies. All areas on BLM and Forest Service lands disturbed by Project activities would be seeded with a seed mixture appropriate for those areas and approved by the Authorized Officer(s) or landowner. Seeding would be conducted in the fall unless timing and seed germination requirements suggest otherwise, to maximize the chance of success or as directed by the Authorized Officer(s).	C9	—	—	Yes
68. In temporary work areas, the soil would be segregated and stockpiled and distributed and contoured evenly over the surface of the disturbed area after completing construction. The soil surface would be left rough and covered with surface litter and large woody debris, when possible, to minimize the potential for wind erosion.	C9	—	Yes	Yes
69. During wet road conditions, the Authorized Officer(s) would be notified if Project activities create any ruts deeper than 4 inches on existing roads. Such ruts would be repaired by the Proponent at the Authorized Officer(s) discretion. In addition, the Forest Supervisor would stipulate in the special use permit when ruts would be repaired.	B3	—	Yes	—
70. Public streets would be swept if visible soil material is tracked onto them by construction vehicles per the SWPPP, in coordination with the applicable county.	B3	—	Yes	—
Grazing				
71. Fences, gates, and walls would be replaced, repaired, or reclaimed to their original condition, or when directed by the land management agency fences could be replaced using wildlife friendly specifications, as required by the landowner or the land-management agency in the event they are removed, damaged, or destroyed by construction activities. Fences would be braced before cutting. Temporary gates or enclosures would be installed only with the permission of the landowner or the land-management agency and would be removed/reclaimed following construction. Cattle guards with access gates or access gates would be installed where permanent access roads cross fence lines as required by the BLM, Forest Service, or landowner. Cattle guards on BLM-administered lands would be all steel with no cleanout, 14 feet by 8 feet by 8 feet painted yellow, set on rough sawn pressure treated timbers (No. 2 or better grade) 12 inches by 12 inches by 196 feet.	B2	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
72. All gates would be closed immediately following entry and exit of personnel and equipment or left open if found in that condition.	B2	—	Yes	Yes
Plant and Wildlife Resources				
73. Mitigation measures that may be developed during the consultation period with USFWS and/or BLM/Forest Service under Section 7 of the ESA would be adhered to. Also, mitigation developed in conjunction with state authorities would be adhered to.	C1	Yes	Yes	Yes
74. Special status species, threatened and endangered species, or other species of particular concern would be considered in accordance with management policies set forth by appropriate land-management or wildlife-management agencies (e.g., BLM, USFWS, state wildlife agencies, etc.). This would entail conducting surveys for plant and wildlife species of concern along the transmission line route selected for construction and associated facilities (e.g., access and spur roads, staging areas, etc.) as agreed on by the agencies. Survey protocols must be accepted or recommended by the affected federal land management agency, USFWS, and state wildlife agencies, as appropriate. In cases for which such species are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat, which may include altering the placement of roads or towers, where practicable, as approved by the landowner and CIC, as well as monitoring activities.	C1	Yes	Yes	—
75. With the exception of emergency repair situations, ROW construction, reclamation, maintenance, and termination activities in designated areas would be modified or discontinued during sensitive periods (e.g., nesting and breeding periods) for candidate, proposed threatened and endangered, or other sensitive animal species. Sensitive periods, species affected, and areas of concern would be approved in advance of construction or maintenance by the Authorized Officer(s).	C1	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
76. Disturbance to nesting raptors within the Project area would be avoided or minimized in accordance with USFWS Utah Field Office *Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck 2002), *Best Management Practices for Raptors and their Habitats in Utah* (BLM 2006), and Ely District Office guidelines. This includes the assumption that all nests are considered active unless documented otherwise and the establishment of appropriate spatial and temporal "no activity" buffers that are to remain in place until determined by a biological monitor that the nest is no longer active, failed, or juveniles have fledged at which time the buffers may be lifted. Modification of the buffers may be considered if evidence suggest (in coordinated with and approved by the appropriate agency) the potential for impact is not present. Preconstruction raptor surveys would be conducted if work is planned between January 1 and August 31.	C1	Yes	Yes	Yes
77. Use current science, guidelines, and methodologies (APLIC 2012, 2018) for all new and existing powerlines to minimize raptor and other bird electrocution and collision potential. Future APLIC guidance would be assessed and applied as applicable.	C1	Yes	Yes	Yes
78. Flight diverters, markers, deterrents, etc. would be placed where necessary along the line and guy wires in accordance with APLIC recommendations and through coordination with the agencies.	C1	—	Yes	Yes
79. When managing the spread of noxious or invasive species in areas of special status species, the impacts of the treatment on such species would be considered. Wherever possible, hand spraying of herbicides is preferred over other methods.	C1, C2, C4	—	Yes	Yes
80. Noxious and invasive weed control would not occur within 0.5 mile of nesting and brood rearing areas for special status species during the nesting and brood rearing season.	C1, C2, C4	—	Yes	Yes
81. For streams currently occupied by any special status species, extraction of water from ponds or pools would not occur.	C1, C3	Yes	Yes	Yes
82. To protect cacti, training would be provided to crews with the intent and instruction to avoid all cacti to the extent practicable. To further protect special status species, pre-construction plant surveys would geo-reference the location of special status species and avoidance and monitoring applied as necessary.	C1	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
83. To avoid or minimize effects on special status plant species, including BLM and Forest Service sensitive species, all known special status plant populations either identified during pre-disturbance surveys or locations provided by the agencies, would be flagged and avoided. On-site monitors would be present during construction activities at known locations of sensitive plant populations to ensure avoidance. For safety purposes and to avoid unnecessary resource damage, no crossing of playas or playa edges would occur unless first being fully inspected and appropriate surveys are conducted. Playas should be avoided after periods of precipitation.	C1, C4	—	Yes	Yes
84. The primary nesting season for migratory birds (March 1 through August 31) would be avoided to the extent practicable. If activities could not be avoided in the primary breeding season, an approved biological surveyor with appropriate expertise would conduct migratory bird nest surveys no more than 7-days prior to any ground disturbing activity. If an active nest is discovered (i.e., adults incubating, eggs visible, or chicks observed) the biological monitor would establish the appropriate buffer around the nest (Appendix C.1). The buffer is to remain in place until the biological monitor has determined that the nest is no longer active (i.e., no activity, failed, or young have fledged) at which time the buffers may be lifted. If nesting material is discovered and there is no evidence of active nesting occurring, the nest material would be removed to deter any further nest development for the period that activities are occurring.	C1	Yes	Yes	Yes
85. On-site biological monitors (qualified for the resource requiring monitoring) would be present during activities occurring near identified locations of sensitive plant populations and sensitive wildlife resources (i.e., occupied burrows). Biological monitors would be trained to recognize special status wildlife species potentially occurring in the Project area during seasonal migrations and of special status plant species during appropriate flowering periods. If newly identified listed species were observed in the Project area, work would be halted pending consultation with BLM or Forest Service, depending on jurisdiction.	B6, C1	—	Yes	—
86. Project-related personnel would not be permitted to have firearms or pets in their possession while on the project site. The rules on firearms and pets would be explained to all personnel involved with the project.	B5	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
87. Off-road travel, surface use, or other disruptive activity would not be allowed in crucial big game winter ranges during species-specific range closure dates. This notice could be waived, accepted, or modified by the Authorized Officer(s) if either the resource values change, or the Proponent demonstrates that potential impacts could be mitigated. Request for any exception to the seasonal would be completed via the process established in POD Appendix B6: Environmental Compliance Inspection Plan.	C1, B6	—	Yes	Yes
88. All activities would be consistent with the currently implemented Approved Resource Management Plan Amendment for Greater sage-grouse (ARMPA; BLM 2015). To avoid potential impacts on the Greater sage-grouse, the geotechnical drilling would be avoided during sensitive seasons as defined in the ARMPA. Those include: In breeding habitat within 4 miles of active and pending Greater sage-grouse leks from March 1 through June 30: • **Lek—March 1 to May 15** Lek hourly restrictions—6 p.m. to 9 a.m. Nesting—April 1 to June 30 • **Brood-rearing habitat from May 15 to September 15** Early—May 15 to June 15 Late—June 15 to September 15 • Winter habitat from November 1 to February 28 However, seasonal dates may be modified due to documented local variations (e.g., higher/lower elevations) or annual climatic fluctuations (e.g., early/late spring, long/heavy winter), in coordination with NDOW.	C1	Yes	Yes	Yes
89. All required design features from the ARMPA (BLM 2015) would be adhered to per POD Appendix C1: Biological Resources Conservation Plan.	C1	Yes	Yes	Yes
90. Noise would be limited to not exceed 10 decibels above ambient sound levels at least 0.25 mile from active and pending leks, from 2 hours before to 2 hours after sunrise and sunset during the breeding season, per Appendix M, Greater sage-grouse Noise Protocol. (2015 ARMPA NVCA; Page 2-9).	C1	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
91. Prior to construction activities occurring in suitable habitat, an experienced biologist would conduct a special status wildlife species survey, searching for signs of special status species to determine if activities are likely to impact those species. During those surveys, the biologist(s) would document sign or occurrence of special status species within or immediately adjacent to the Project area and expand their search as they deem necessary to locate burrows within 0.25 miles. Should burrows of pygmy rabbit and/or kit fox are located during surveys, a biological monitor familiar with the species would be assigned to conduct more thorough monitoring effort per the appropriate species and geographical survey methodology to ensure active burrows within up to 0.25 miles of disturbances are documented and that work does not result in a discernible negative impact to potential occupants.	C1	—	Yes	Yes
92. Burrows are to be avoided, if possible, to protect wildlife potentially occupying the burrow. To prevent and avoid entrapment of wildlife, all pipes (or similar hazards) that would not allow an individual to exit are to be appropriately capped or blocked. If machinery or equipment is left in the field overnight, before moving the equipment and machinery, it should be inspected for nests, burrows, or trapped wildlife.	C1	—	Yes	Yes
93. To avoid potential impacts to the monarch butterfly and its host plants, the presence of milkweed species (Asclepias spp.) would be evaluated during special status plant species surveys prior construction. Milkweed species should be noted and georeferenced if observed during special status plant species surveys. If milkweed is found, the plant would be avoided and not disturbed during activities.	C1	—	Yes	Yes
94. Prior to construction, habitat suitability surveys would be conducted to determine if disturbance areas (plus a 300-foot buffer) contain suitable habitat for Ute-ladies' tresses. Construction should not occur within suitable habitat without prior approval, which would likely require multiple years of survey.	C1	—	Yes	—
95. If work takes place between June 1 and August 31within suitable habitat (within 0.5 mile of the Project area) for the yellow-billed cuckoo, a noise analysis would be performed to determine appropriate work-buffer distances.	C1	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
96. To protect the monarch butterfly, applicable measures found in Western Monarch Butterfly Conservation Recommendations (USFWS 2023) would be followed to the extent practicable. These measures include, among other recommendations, avoiding pesticide application during plant blooming periods when monarchs may be present.	C1	—	Yes	Yes
97. Blasting would not occur within spatial and temporal buffers around sensitive species, raptors, and migratory birds to the extent practicable. A smaller buffer may be reasonable if noise analysis demonstrates that sound levels produced from the blasting activities are unlikely to result in take.	C1	—	Yes	—
Weed Management				
98. A Noxious Weed Management Plan has been developed in accordance with agency standards. Included in the Noxious Weed Management Plan are requirements regarding construction, reclamation and operation (use of weed free materials, washing of equipment, preconstruction treatment, and post construction monitoring and treatment, etc.). The plan is based on the principles and procedures outlines in the BLM Integrated Weed Management Manual 9015 and Forest Service Noxious Weed Management Manual 2080. On private land, the Plan would be approved by a county weed-management offices. A Pesticide Use Proposal would be required.	C2	Yes	Yes	Yes
99. Prior to commencing any chemical control program, and on a daily basis for the duration of the program, the certified applicator will provide a suitable safety briefing to all personnel working with or in the vicinity of the herbicide application. This briefing will include safe handling, spill prevention, cleanup, and first aid procedures.	C2	—	Yes	Yes
100. All pesticides would be stored in areas where access can be controlled to prevent unauthorized/untrained people from gaining access to the chemicals.	C2	—	Yes	Yes
101. Pesticides would not be applied within 440 yards (0.25 mile) of residences without prior notification of the resident.	C2	—	Yes	Yes
102. Areas treated with pesticides would be adequately posted to notify the public of the activity and of safe re- entry dates, if a public notification requirement is specified on the label of the product applied. The public notice signs would be at least 8 ½” x 11” in size and would contain the date of application and the date of safe re-entry.	C2	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
103. All applications of approved pesticides would be conducted only by certified pesticide applicators or by personnel under the direct supervision of a certified applicator.	C2	—	Yes	Yes
104. When maintaining unpaved roads on BLM or Forest Service administered lands, the unnecessary disturbance of adjacent native vegetation would be avoided. Grade road shoulders or barrow ditches only when necessary to provide for adequate drainage. Minimize the width of grading operations. The Authorized Officer would meet with equipment operators to ensure that they understand this objective.	C2, C4	—	Yes	Yes
105. To eliminate the spread of noxious or invasive weeds, equipment and vehicles, including the undercarriage (axles, frame cross-members, motor mounts, and underneath steps, running boards and front bumper/brush guard assemblies) would be cleaned with a high-pressure washer capable of 2,000-psi at wash stations before accessing Project locations.	C2	—	Yes	—
106. To the extent possible, noxious weed infestations identified during the pre-activity survey and through agency coordination within the Project area would be avoided during activities associated with the Project (e.g., maneuvering contractor vehicles and equipment around isolated weed communities within the authorized ROW). Specific areas with noxious weed infestations that cannot be avoided would be treated prior to construction by either hand methods (e.g., hand pulling or shoveling) or application of agency-approved herbicides.	C2	—	Yes	—
Wild Horses				
107. To protect wild horses and wildlife, all new fences would be flagged every 16 feet with white flagging that is at least 1 inch wide and has at least 12 inches hanging free from the top wire of the fence.	C1	—	Yes	Yes
108. If the Project involves heavy or sustained traffic, road signs for safety and protection of wild horses and wildlife would be required.	B3, C1	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
109. Off-road travel, surface use, or other disruptive activity would not be allowed in Wild Horse Herd Management Areas (HMA) from March 1 through June 1 for foaling season. This notice could be waived, accepted, or modified by the Authorized Officer if either their source values change, or the Proponent demonstrates that potential impacts could be mitigated. Request for any exception to the seasonal restriction could be made prior to initiation of any field activities, after initial consultation with the BLM. The process for requesting and granting exceptions described in the relevant land use plans(s) or established field office policy would be followed. A BLM specialist for wild horses would review the request to determine current conditions and potential impacts on wild horses and foals within the HMA.	B6	—	Yes	Yes
Fire Management				
110. Wildfires would be reported immediately to 911 and to the appropriate Fire Dispatch Center (Richfield Interagency Fire Center, or Ely Interagency Communication Center) first, then the CIC, the appropriate federal agency Authorized Officer(s) or their designated representative(s), and the Company.	C8	—	Yes	Yes
111. All internal and external combustion engines used on federally managed lands would be operated per 36 CFR 261.52 and 43 CFR 8343.1, which requires all such engines to be equipped with aqualified spark arrester that is maintained and not modified.	C8	—	Yes	Yes
112. Shovels, water, and fire extinguishers would be carried on all equipment and vehicles. The rating of the fire extinguishers would be determined by vehicle type as detailed by the Fire Precaution and Response Plan. If a fire spreads beyond the suppression capability of workers with these tools, all workers would cease fire suppression action and leave the area immediately using identified escape routes.	C8	—	Yes	Yes
113. Fire suppression actions in the work area would be initiated to prevent fire spread on or to federally administered lands.	C8	—	Yes	Yes
114. Crews would ensure that no risk of ignition or re-ignition remains when crews leave work sites.	C8	—	Yes	Yes

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
115. Prior to any operation involving potential sources of fire ignition from vehicles, equipment, or other means, weather forecasts and potential fire danger (i.e., fire danger ratings, red flag warnings, etc.) would be reviewed. Prevention measures to be taken each workday would be included in the onsite briefing of Project personnel. Consideration for additional mitigation or discontinuing the operation must be given in periods of extreme wind and dryness.	C8	—	Yes	Yes
116. Welding, grinding, or cutting activities would be conducted in areas cleared of vegetation within range of the sparks for that particular action. A spotter is required to watch for ignitions.	C8	—	Yes	Yes
117. The Fire Precaution Plan would be implemented during construction activities to prevent and suppress fire. All applicable year-round and seasonal fire restrictions will be adhered to including federal, state, county and local restrictions. TransCanyon and their contract fire marshal would participate in an on-site briefing with the BLM and Forest Service fire management representative prior to initiation of work. Helicopter flight paths to the pole locations would be part of the permit requirements. If blasting becomes necessary, a Blasting Plan would be developed (POD Appendix C14: Blasting Management Plan).	C8, C14	—	Yes	Yes
118. Compliance with fire prevention orders and fire restrictions is mandatory while fire restrictions are in effect (43 CFR 9212 and 36 CFR 261.52). Fire prevention and restriction orders are available for review at BLM field offices, Forest Service Ranger Districts, BLM and Forest Service websites, and utahfireinfo.gov.	C8	—	Yes	Yes
Visual Resources				
119. To reduce visual impacts, potential impacts on recreation values and safety at highway, canyon, and trail crossings, structures are to be placed at the maximum feasible distance from the crossing within limits of standard tower design.	B4	Yes	—	—
120. Nonspecular conductors would be used, where specified by the Authorized Officer(s), to reduce visual impacts.	B4	Yes	—	—
121. “Dulled” metal finish structures (steel poles and lattice members) and self-weathering steel (steel poles) would be used to reduce visual impacts.	B4	Yes	—	—

Environmental Protection Measure	Applicable POD Appendix	Application Phase		
		Design and Engineering	Construction	Operation and Maintenance
122. The alignment of any new access roads or overland routes would follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resources. This would minimize ground disturbance and/or reduce scarring (visual contrast).	B4	Yes	Yes	—
123. To reduce visual contrast or avoid features (such as, but not limited to, land uses, jurisdiction, biological or cultural resources sites), clearing of the ROW would be minimized or in limited instances the ROW may be reduced (within the limits of conductor-clearance requirements and standard tower design).	B4	Yes	Yes	—
124. To minimize disturbance to timber resources and reduce visual contrast, clearing of trees in and adjacent to the ROW would be minimized to the extent practicable to satisfy conductor-clearance requirements (National Electrical Safety Code and 10 years of timber growth). Trees and other vegetation would be selectively removed (e.g., edge feathering) to blend the edge of the ROW into adjacent vegetation patterns, as practicable and appropriate.	B4, C4	—	Yes	—

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Appendix A. Detailed Route Alignment Figures

Figure No.

A-1

Title

Proposed Route Alignment
Map Sheet Index

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 10 20 Miles
(At original document size of 11x17)
1:1,050,000

- Map Sheet Boundary with Page Number
- Substation
- Proposed Route Alignment
- County Boundary
- State Boundary

Land Designation

- National Park
- Recreation Land
- Roadless Area
- Wilderness Area
- Wilderness Study Area
- State Park

Notes
1. Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 Feet
2. Data Sources: TransCanyon, LLC, POWER Engineers, Stantec, BLM, Esri, FEMA, S&P Global Platts, USGS, West-wide Energy Corridor Information Center
3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON

Map Index

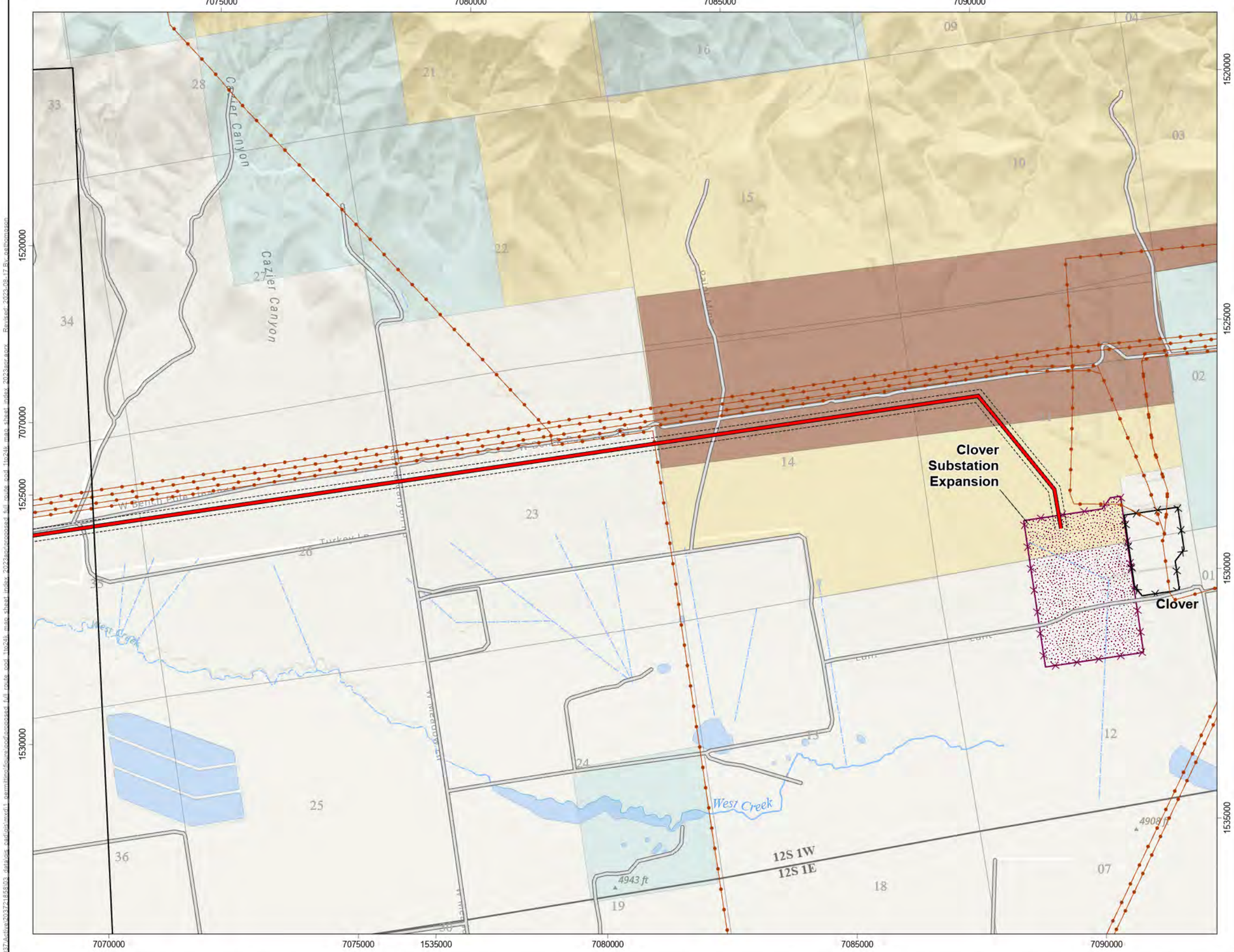

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing
- Substation
- Substation Expansion (approved under UTU-82829)

Energy Corridor

- Section 368 Corridor, Not Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

Notes
1. Coordinate System: NAD 1983 StatePlane Utah Central FIPS 4302 Feet
2. Data Sources: TransCanyon, LLC, POWER Engineers, Stantec, BLM, Esri, FEMA, S&P Global Platts, USGS, West-wide Energy Corridor Information Center
3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON

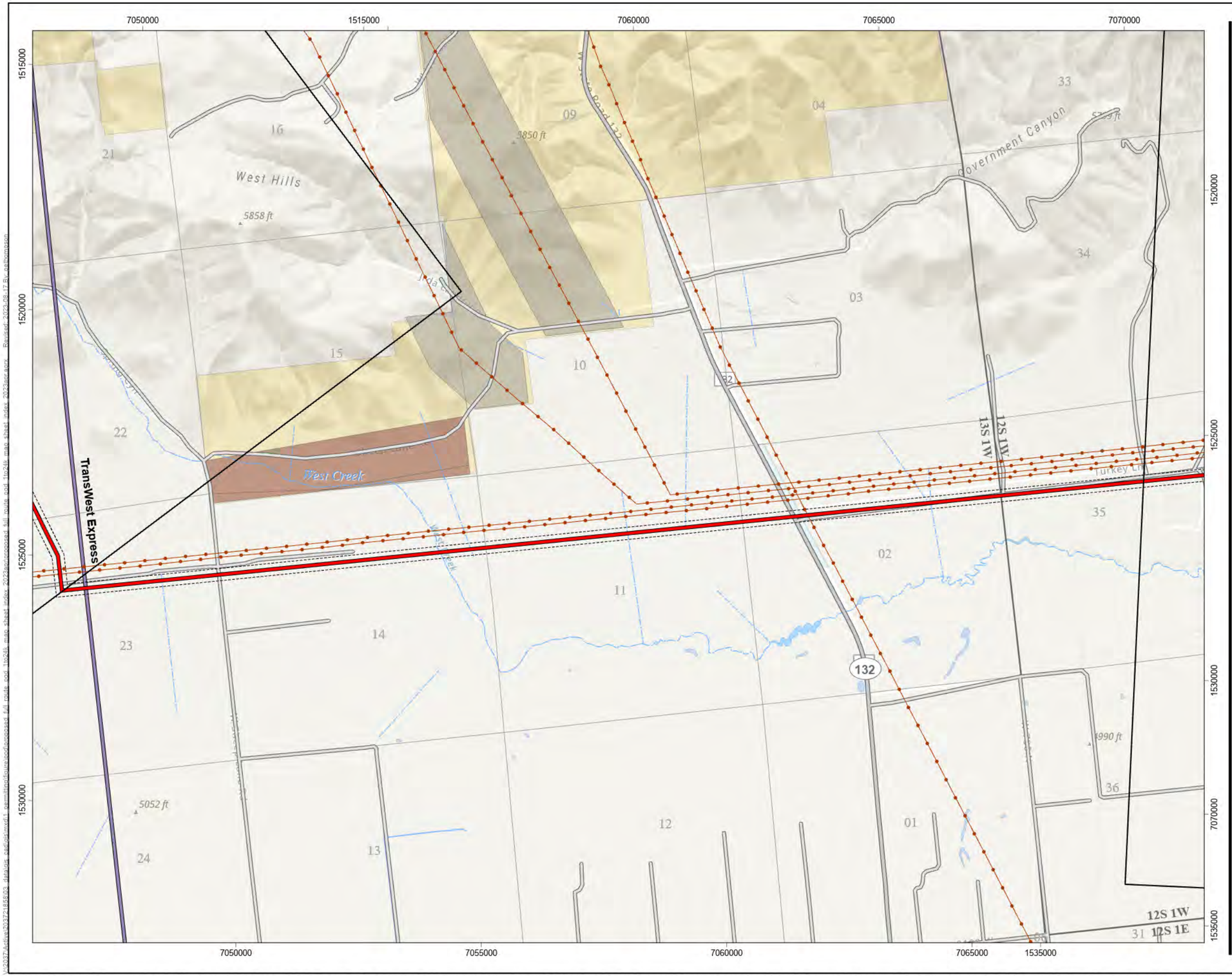

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Not Designated
- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

Notes
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3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON

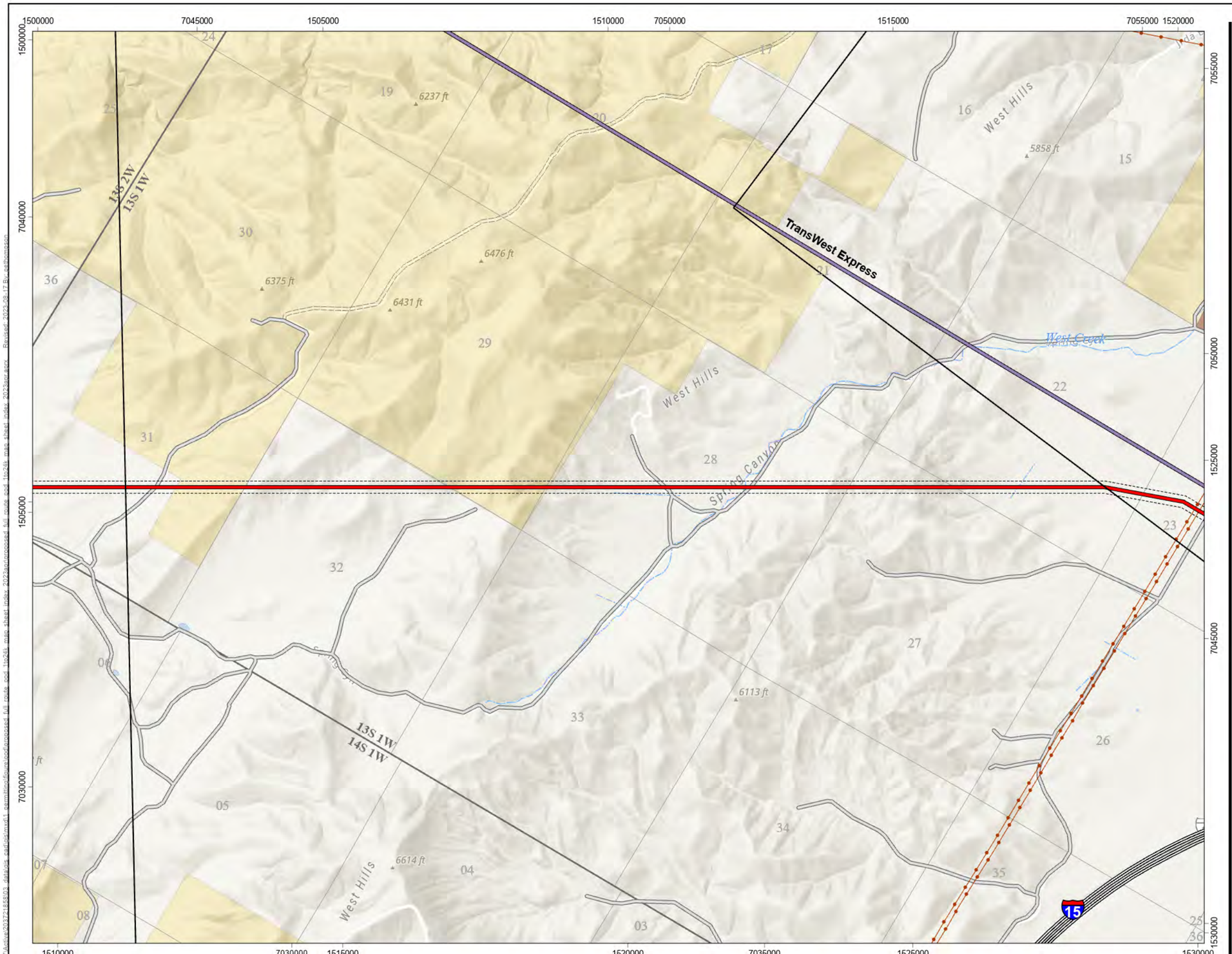


Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line
- Transmission Line, Existing

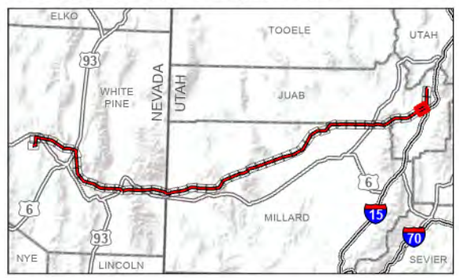
Energy Corridor

- Section 368 Corridor, Not Designated
- Bureau of Land Management Corridor
- Road: Interstate
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.



Notes
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TRANSCANYON

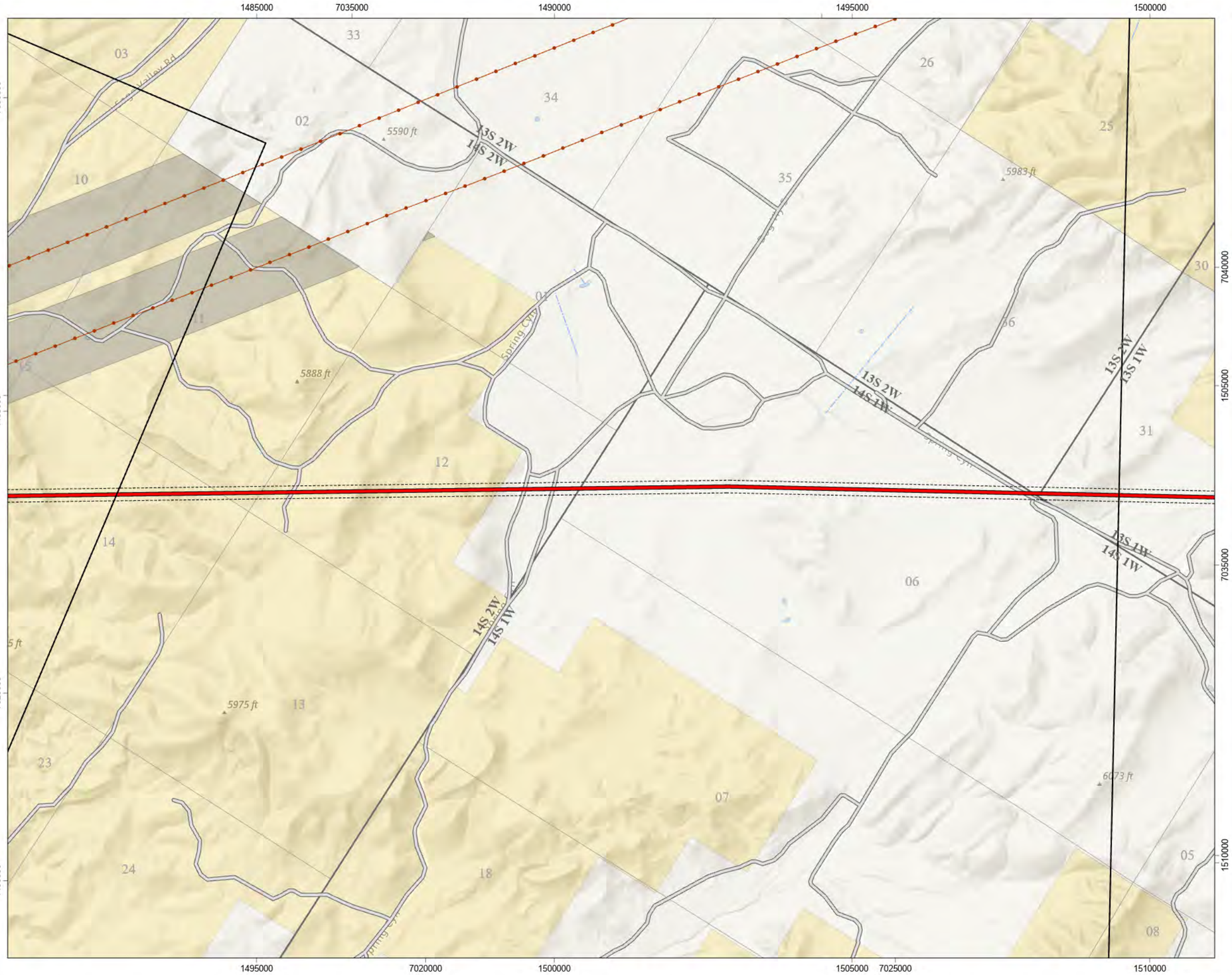

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

Notes
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TRANSCANYON

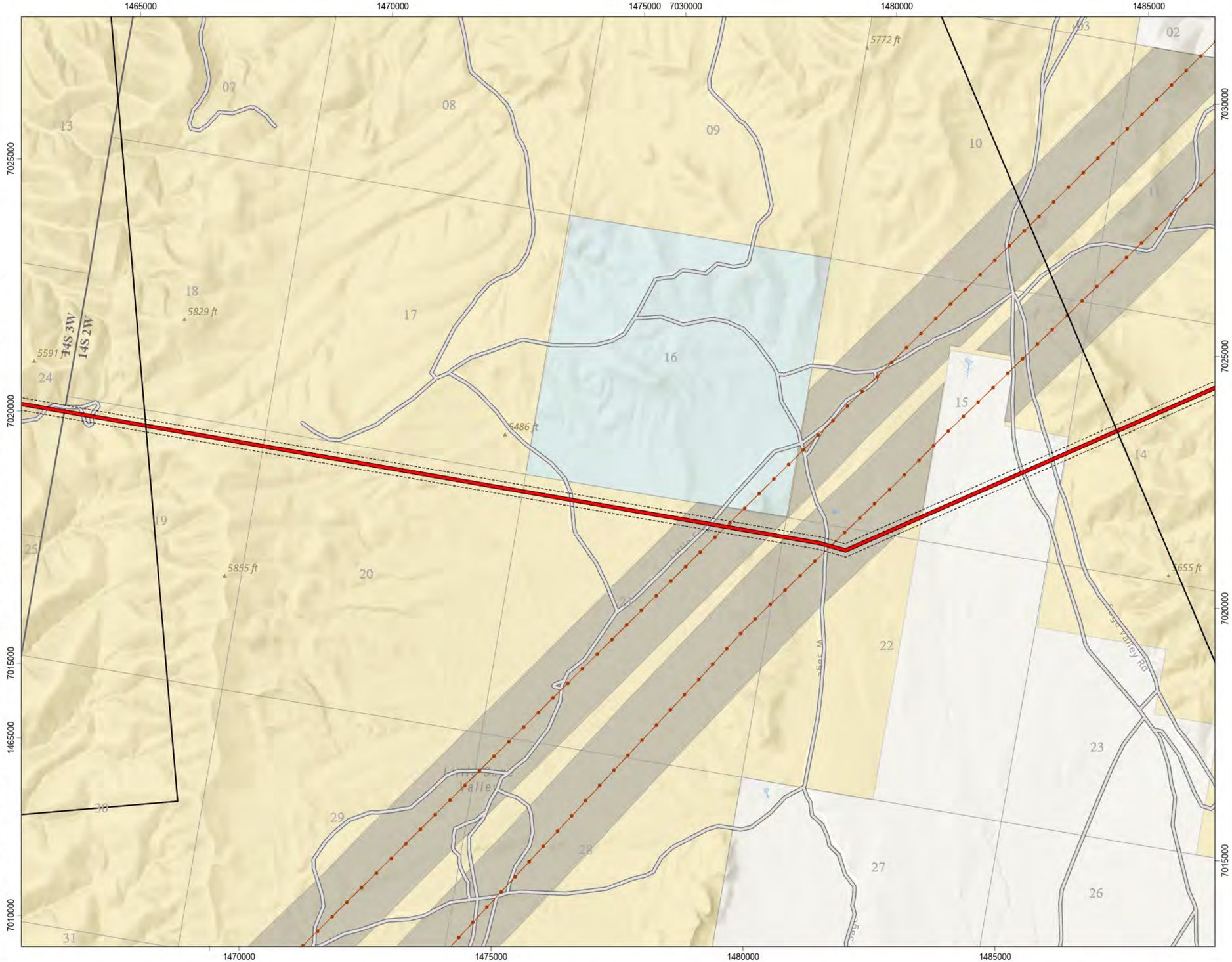

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

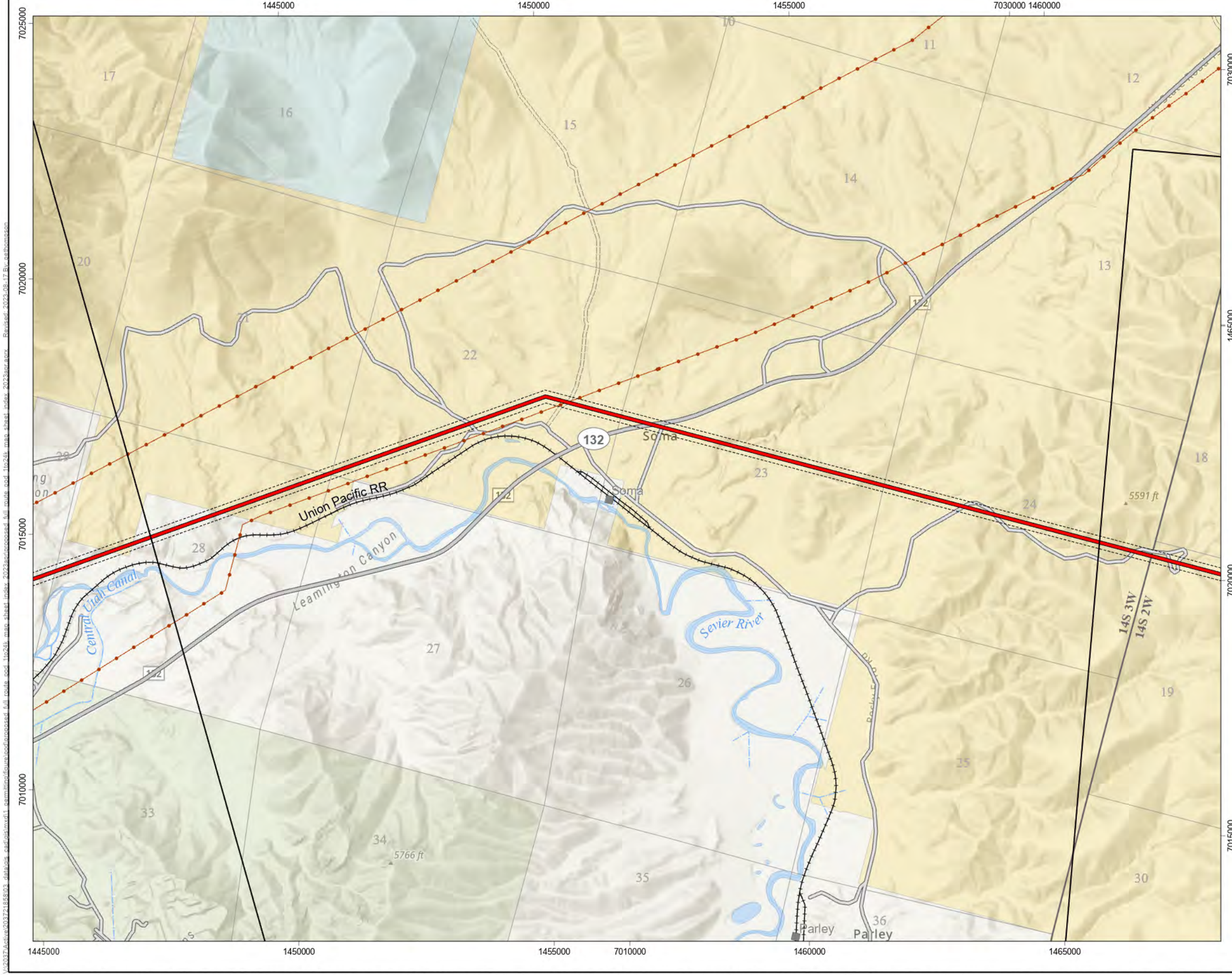

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing
- Railroad
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

Notes
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3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON

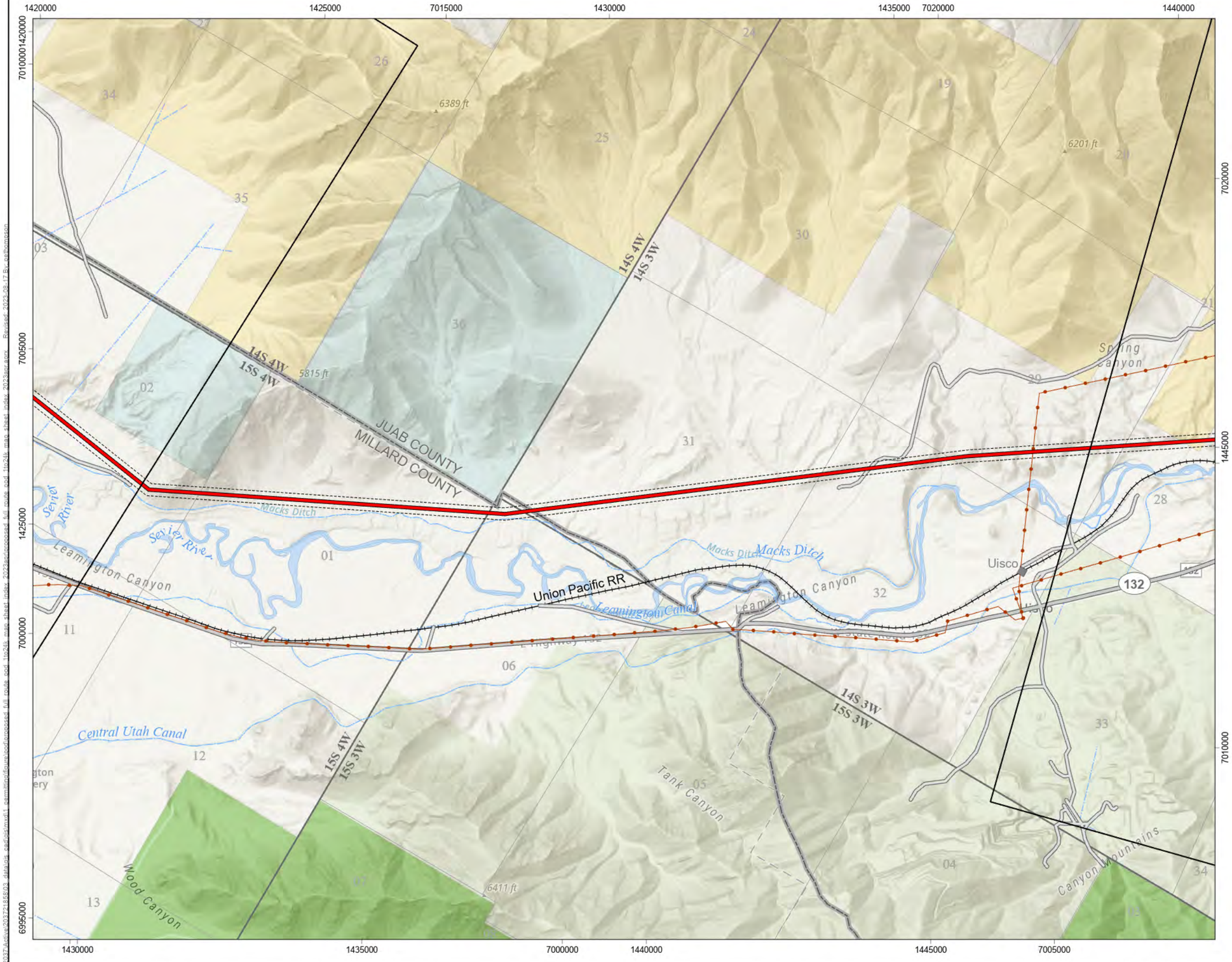


Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

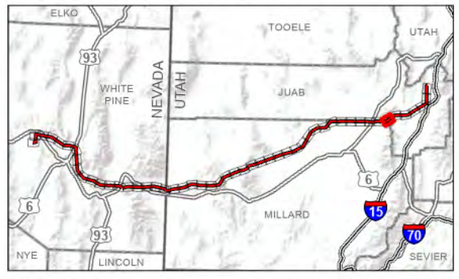
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing
- County Boundary
- Railroad
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- USDA Forest Service
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.



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TRANSCANYON

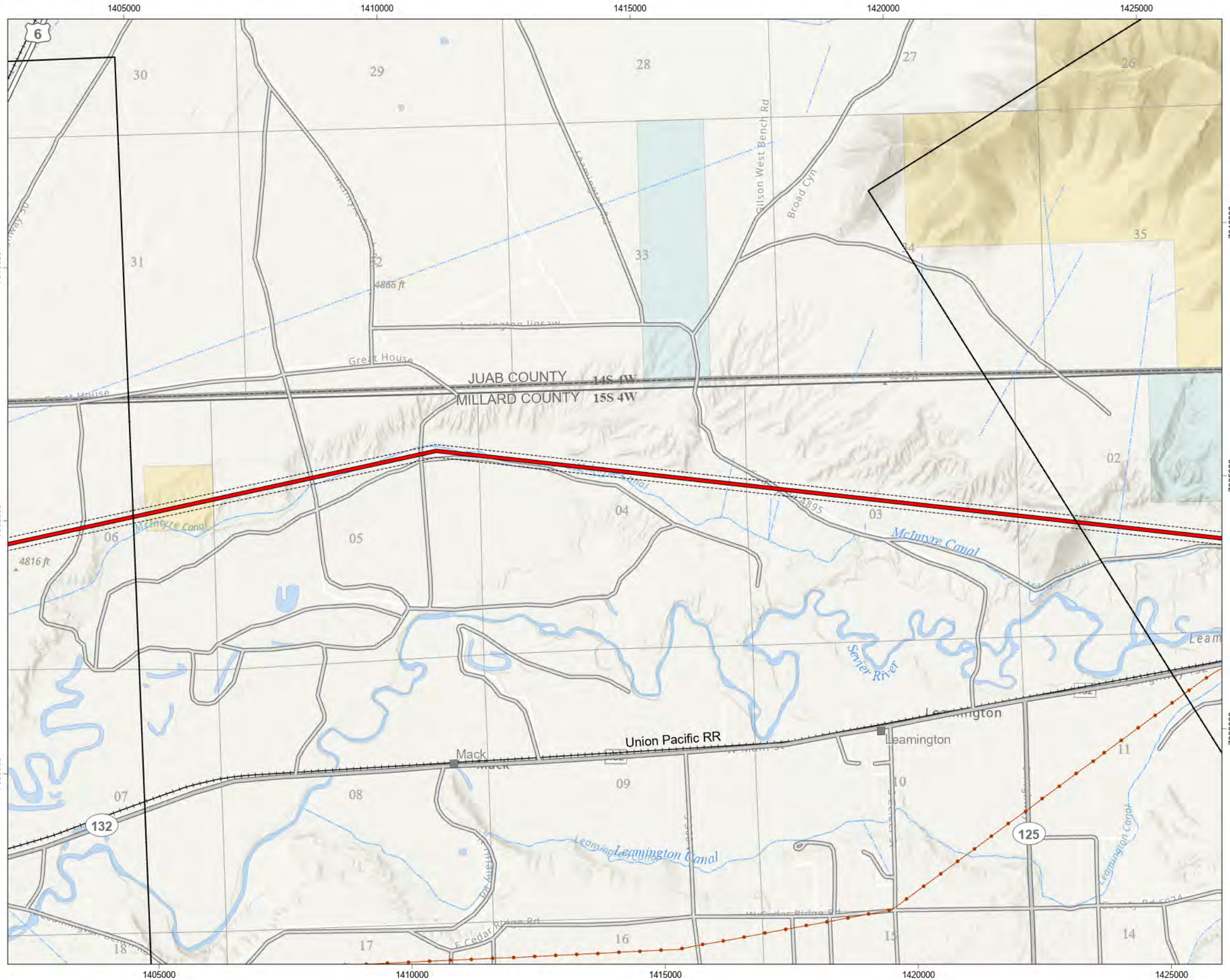

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing
- County Boundary
- Railroad
- Road: U.S. or State Highway
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

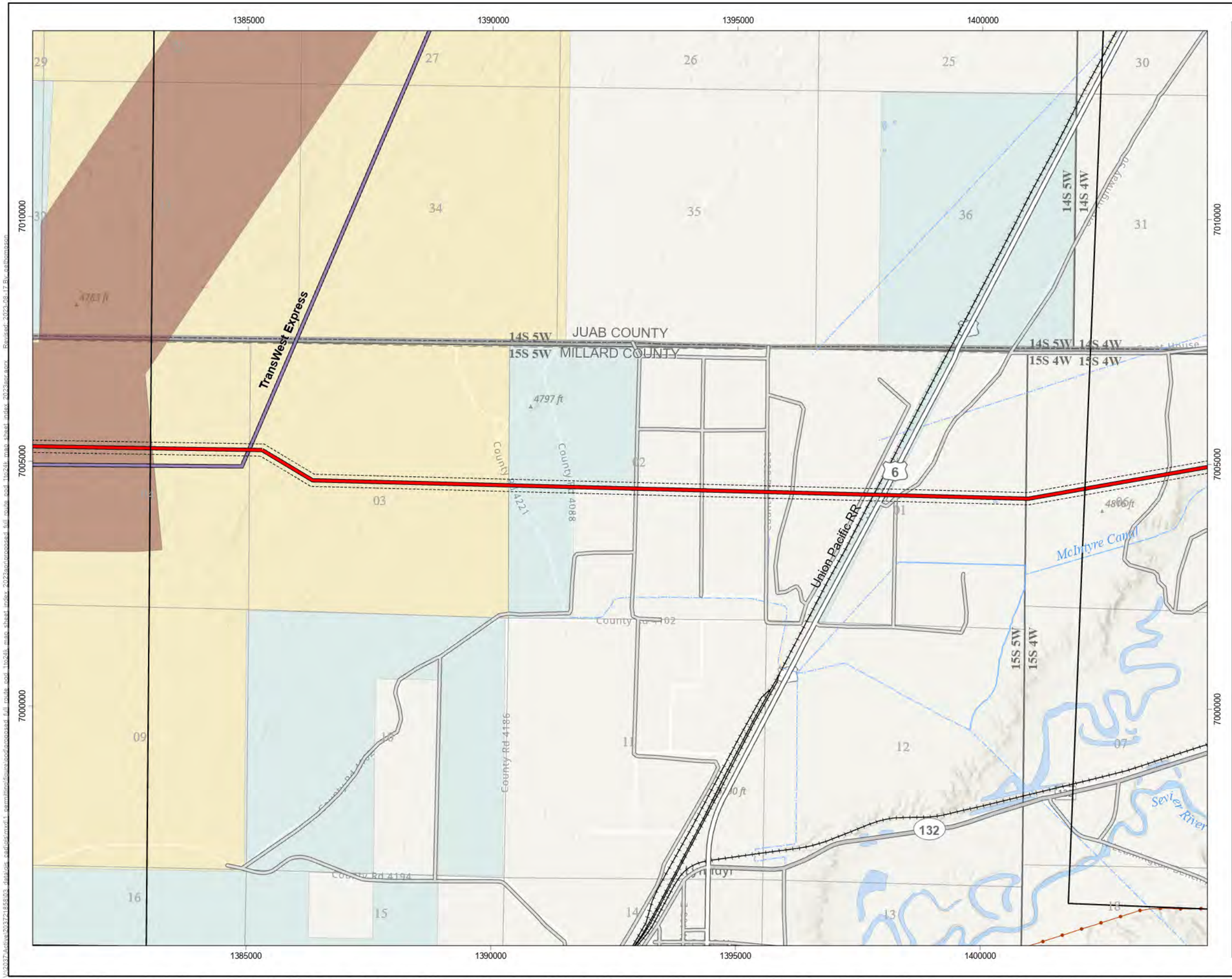

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Not Designated

- County Boundary
- Railroad
- Road: U.S. or State Highway
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

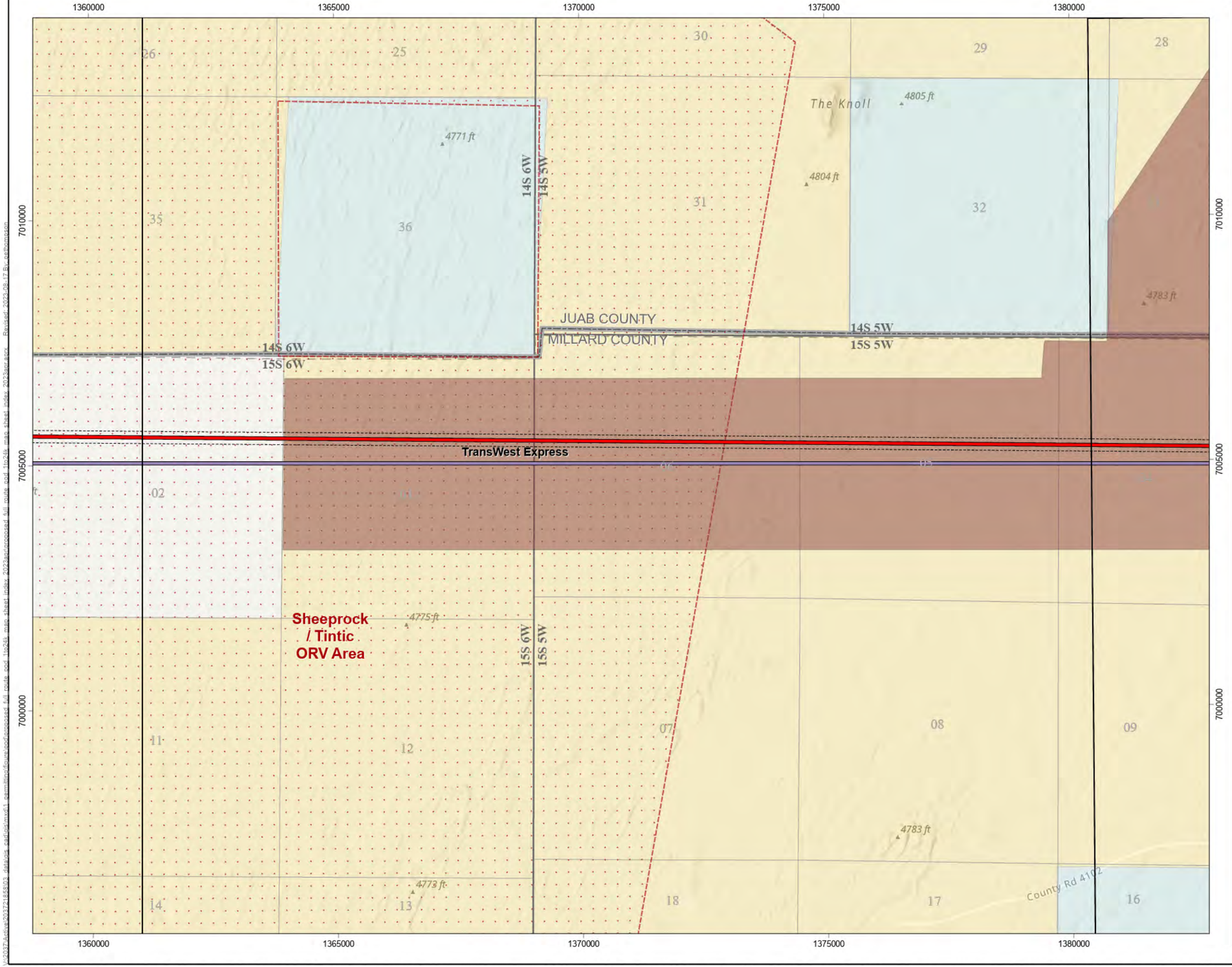

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line

Energy Corridor

- Section 368 Corridor, Not Designated
- County Boundary

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State

Land Designation

- Recreation Land
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

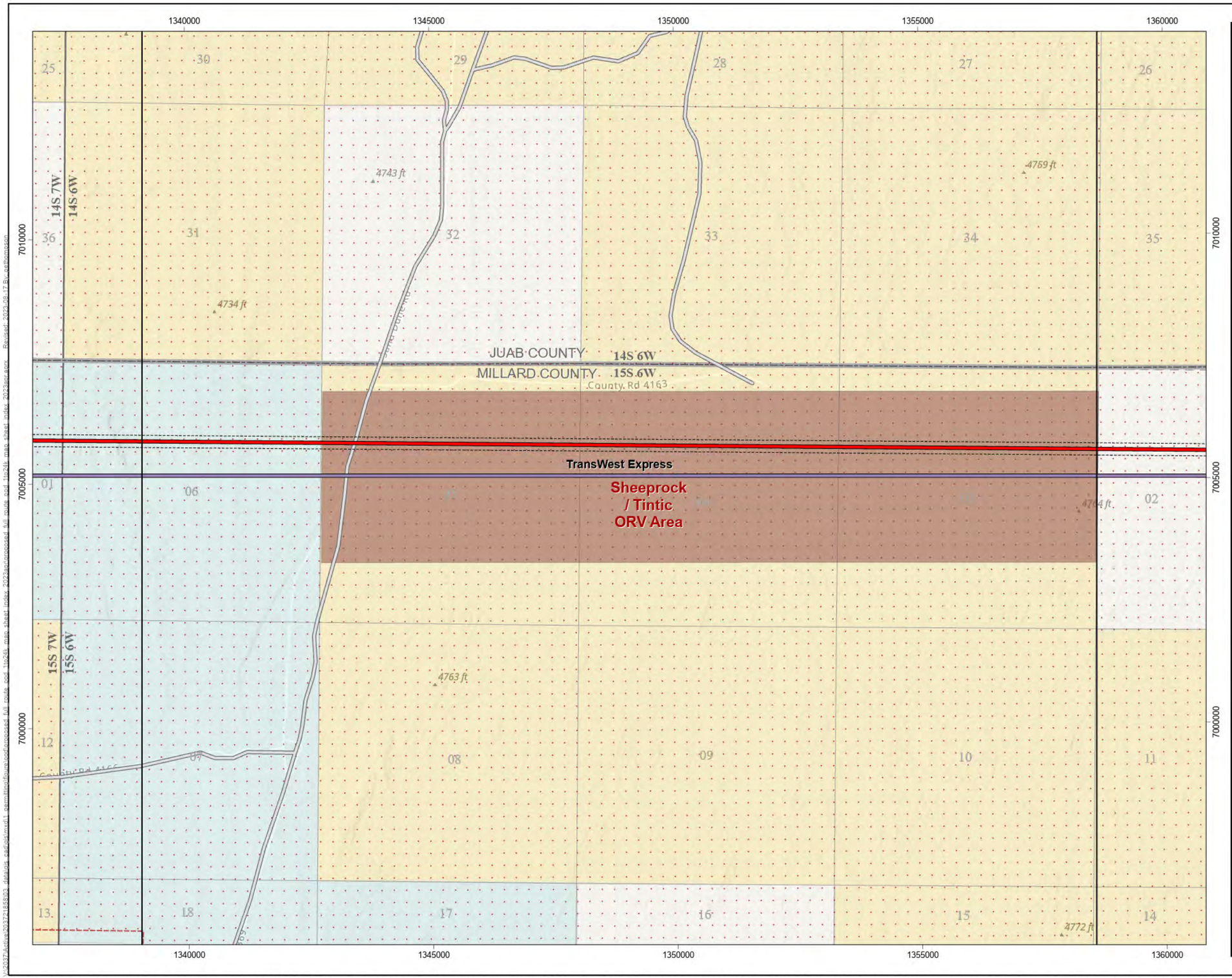

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line

Energy Corridor

- Section 368 Corridor, Not Designated
- County Boundary
- Road: Local, Neighborhood, Rural or City Street

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State

Land Designation

- Recreation Land
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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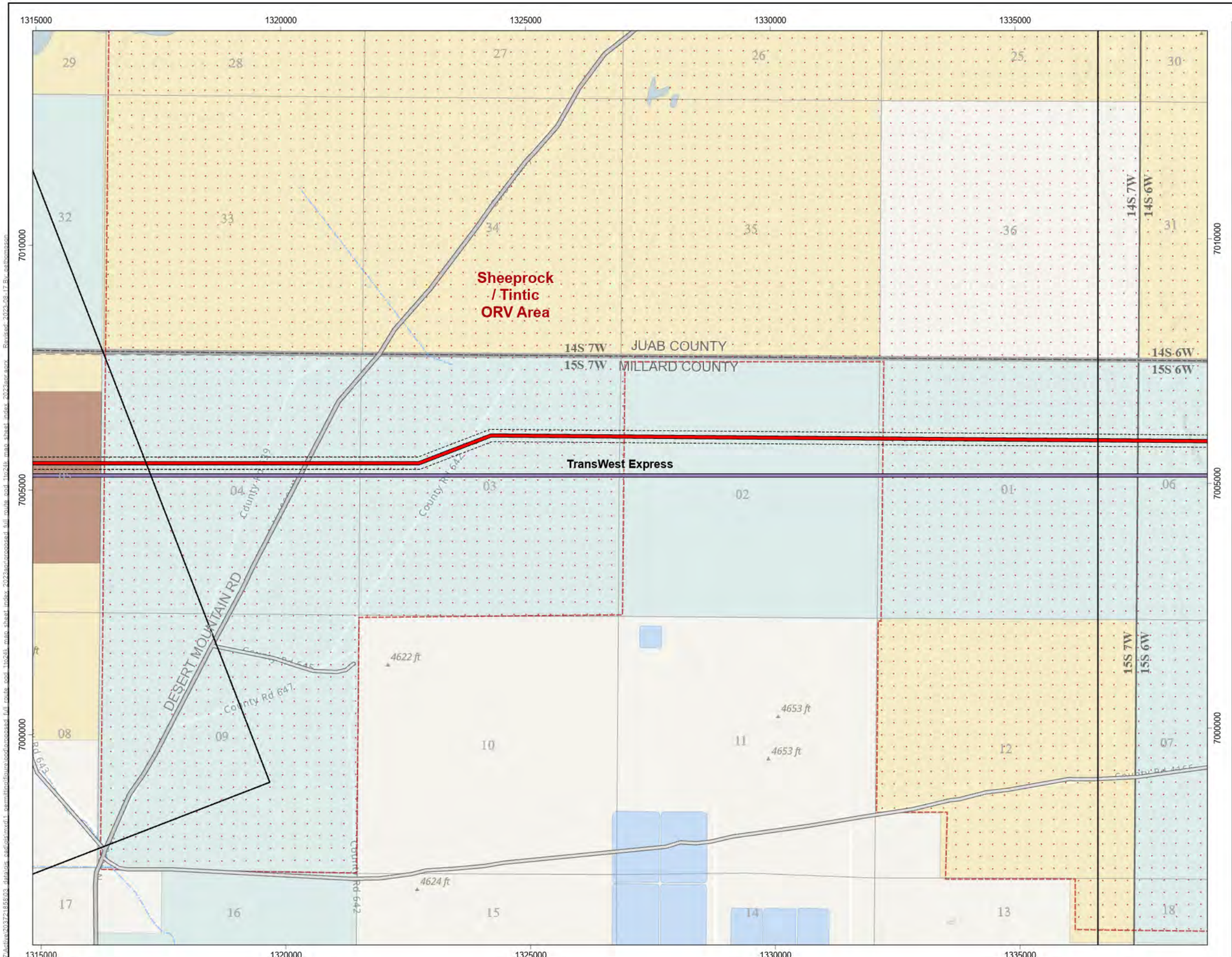

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location

White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line

Energy Corridor

- Section 368 Corridor, Not Designated
- County Boundary
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State

Land Designation

- Recreation Land
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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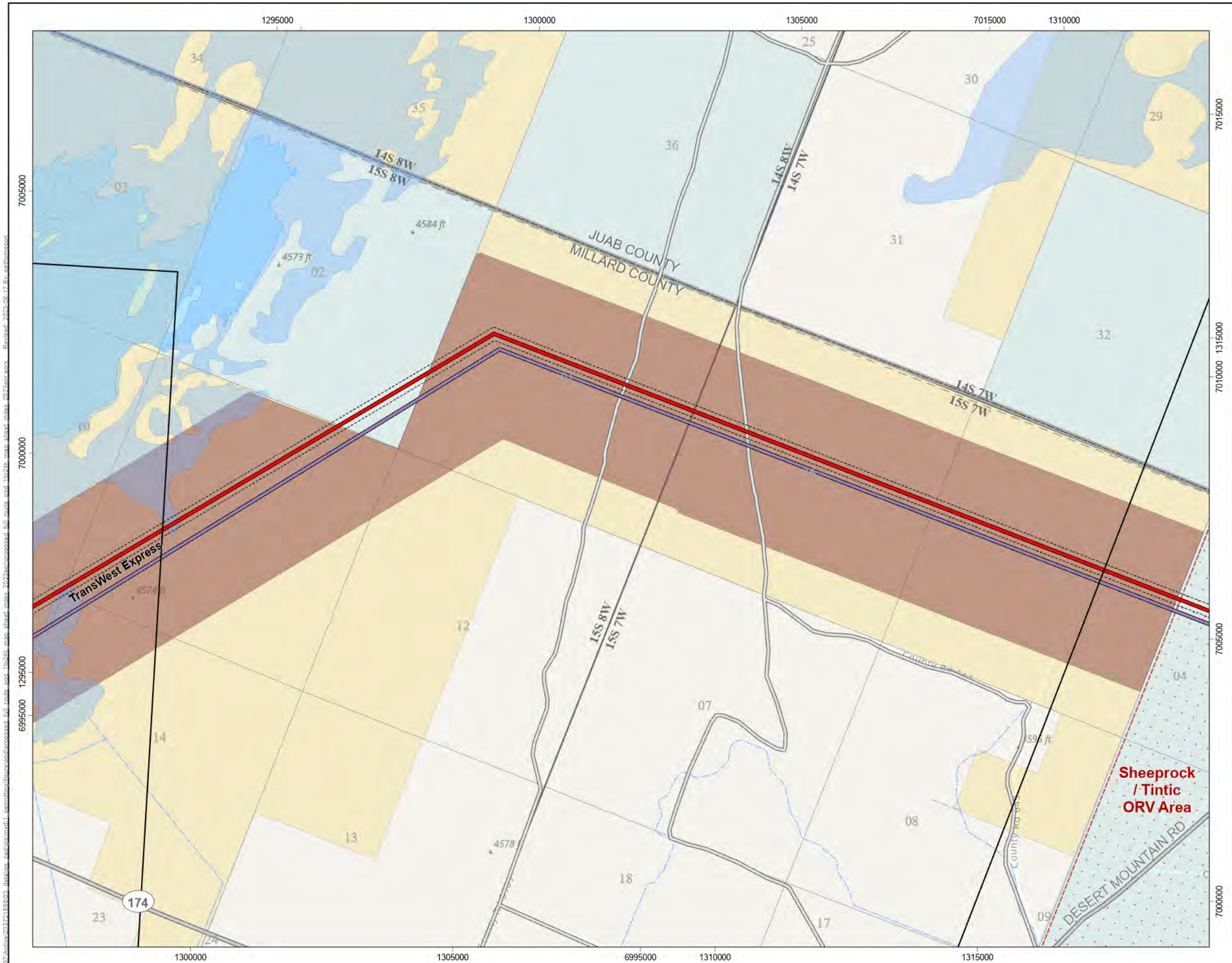

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line

Energy Corridor

- Section 368 Corridor, Not Designated
- County Boundary
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State

Land Designation

- Recreation Land
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

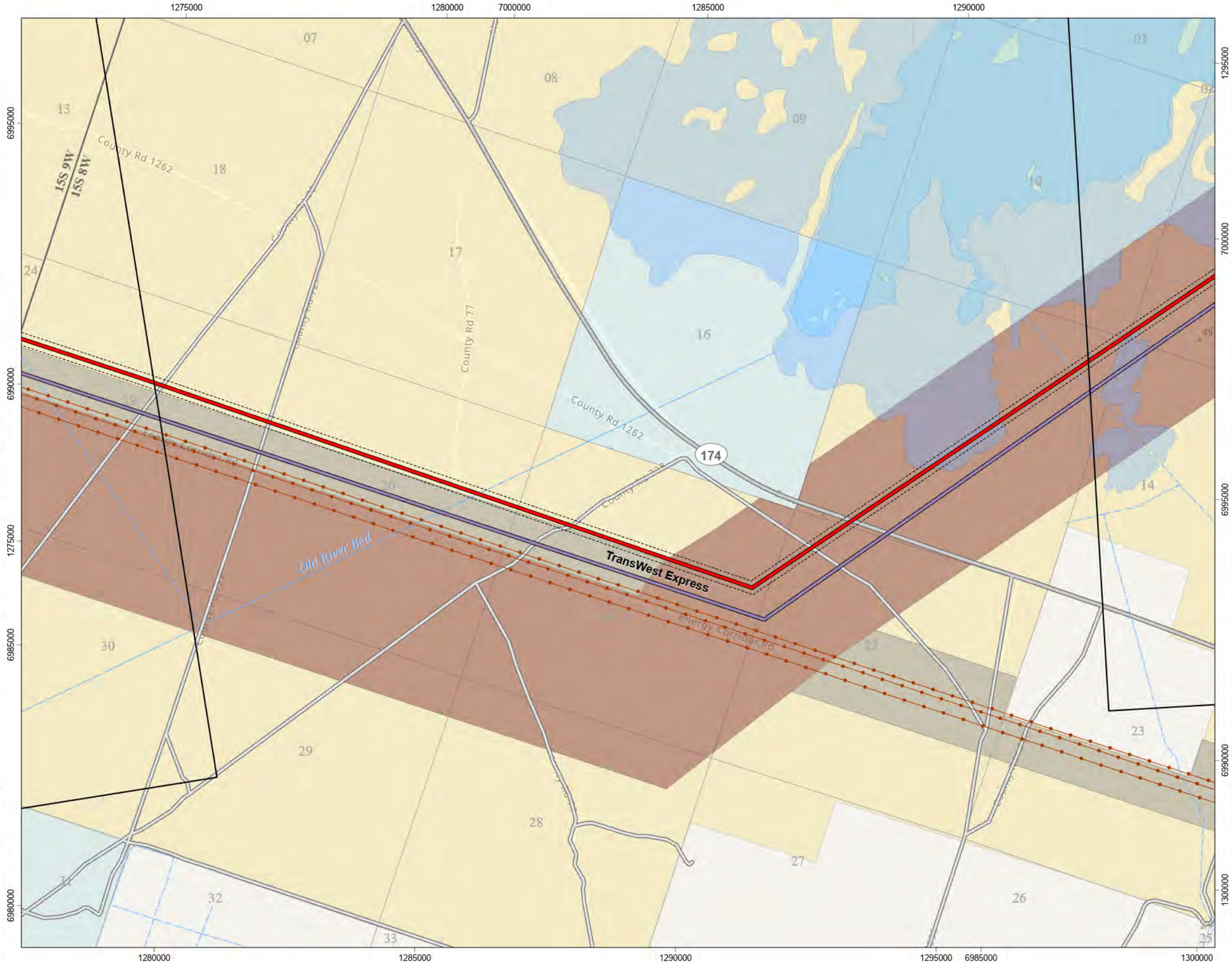

Figure No.

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Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Not Designated
- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

Notes
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2. Data Sources: TransCanyon, LLC, POWER Engineers, Stantec, BLM, Esri, FEMA, S&P Global Platts, USGS, West-wide Energy Corridor Information Center
3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

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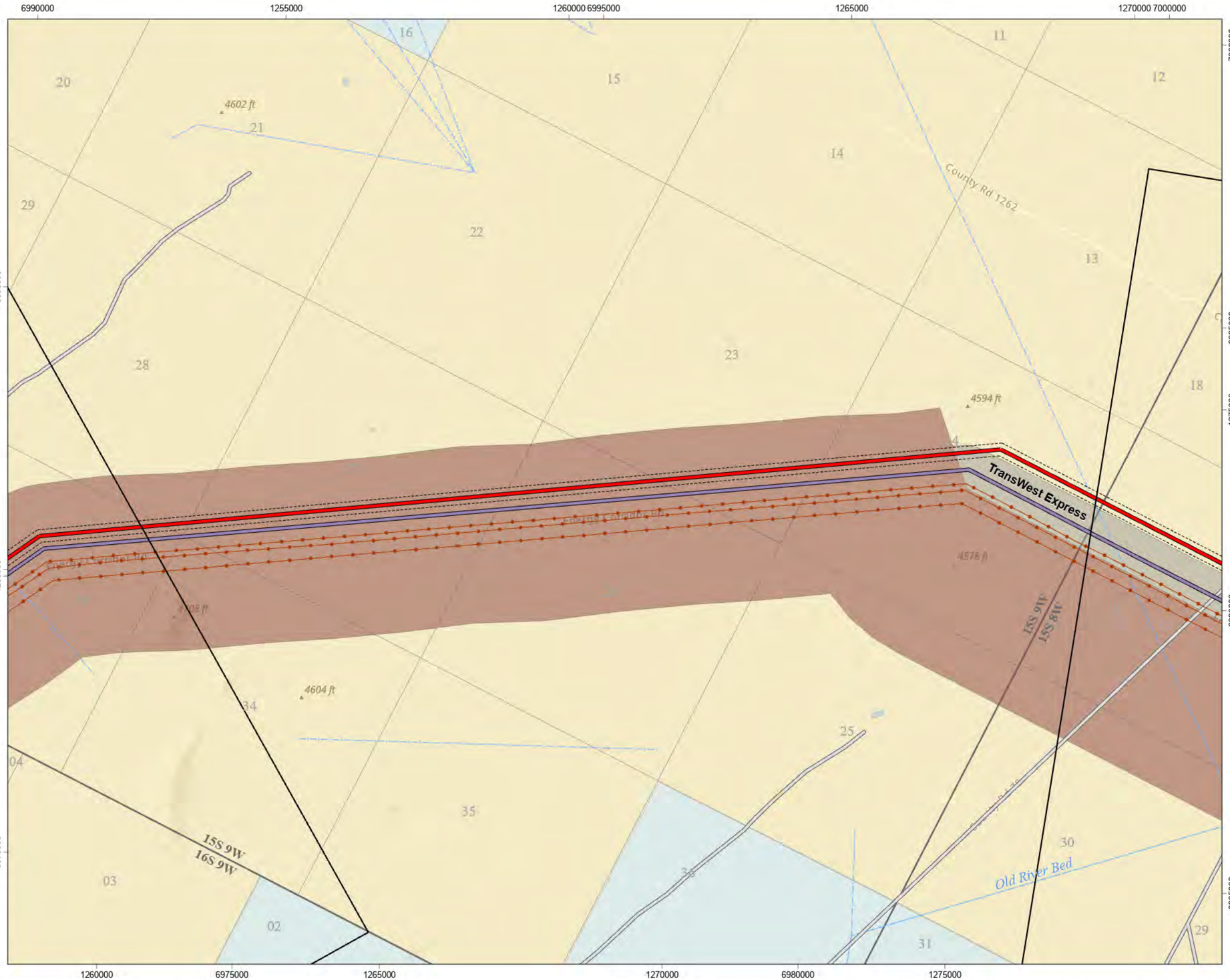

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location

White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Future TransWest Express Transmission Line
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Not Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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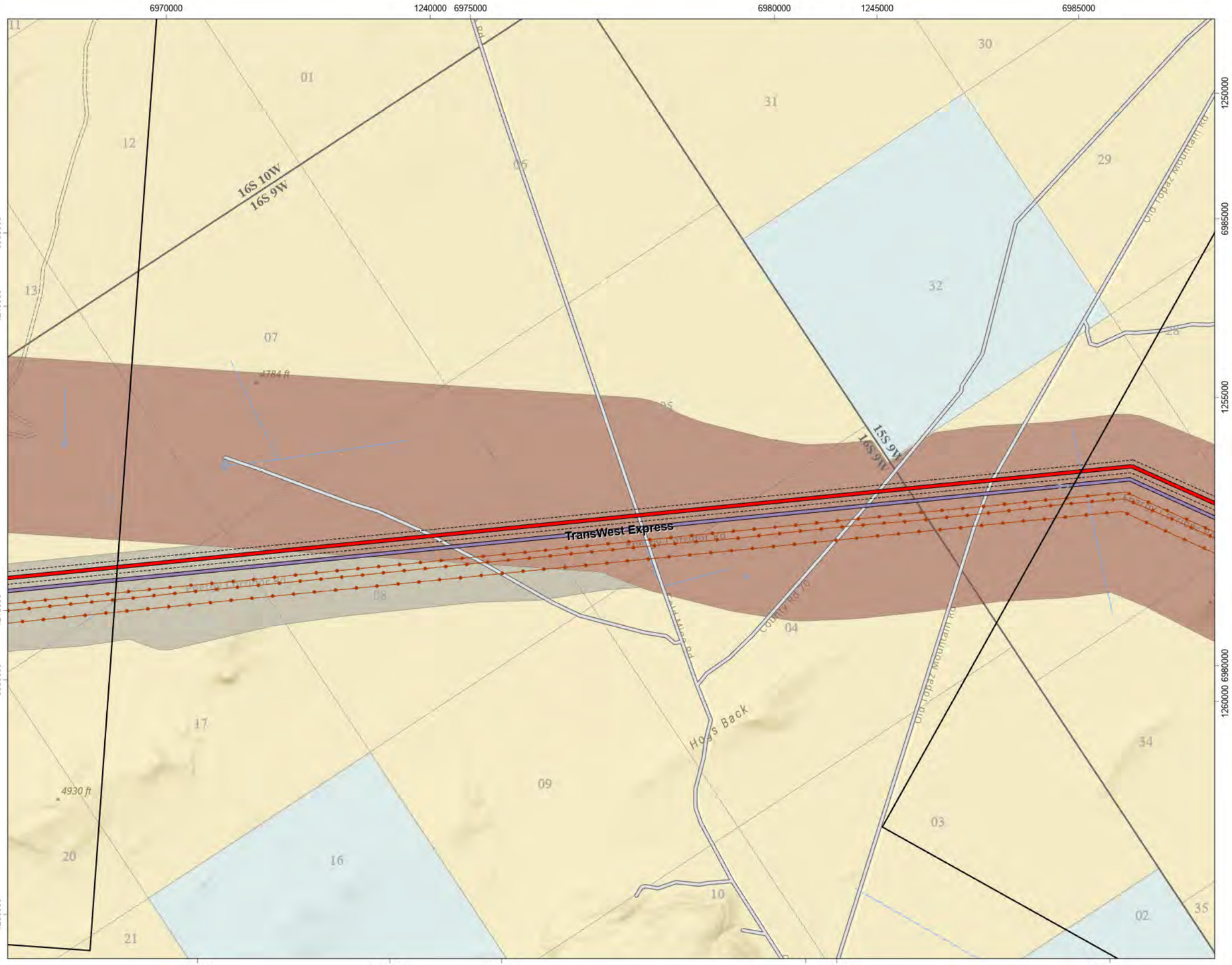

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Route Detail

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TransCanyon, LLC
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- Future TransWest Express Transmission Line
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Not Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- State
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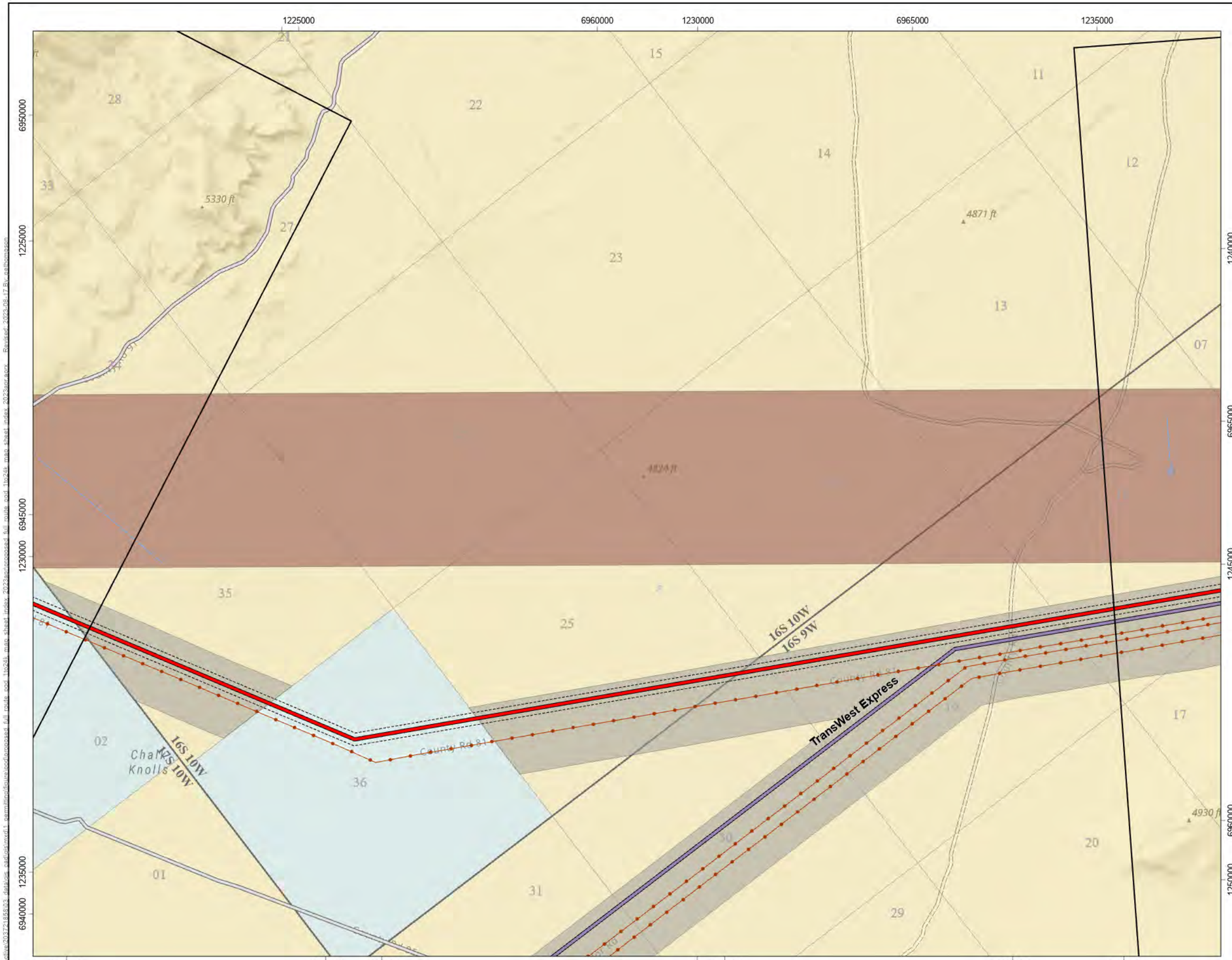

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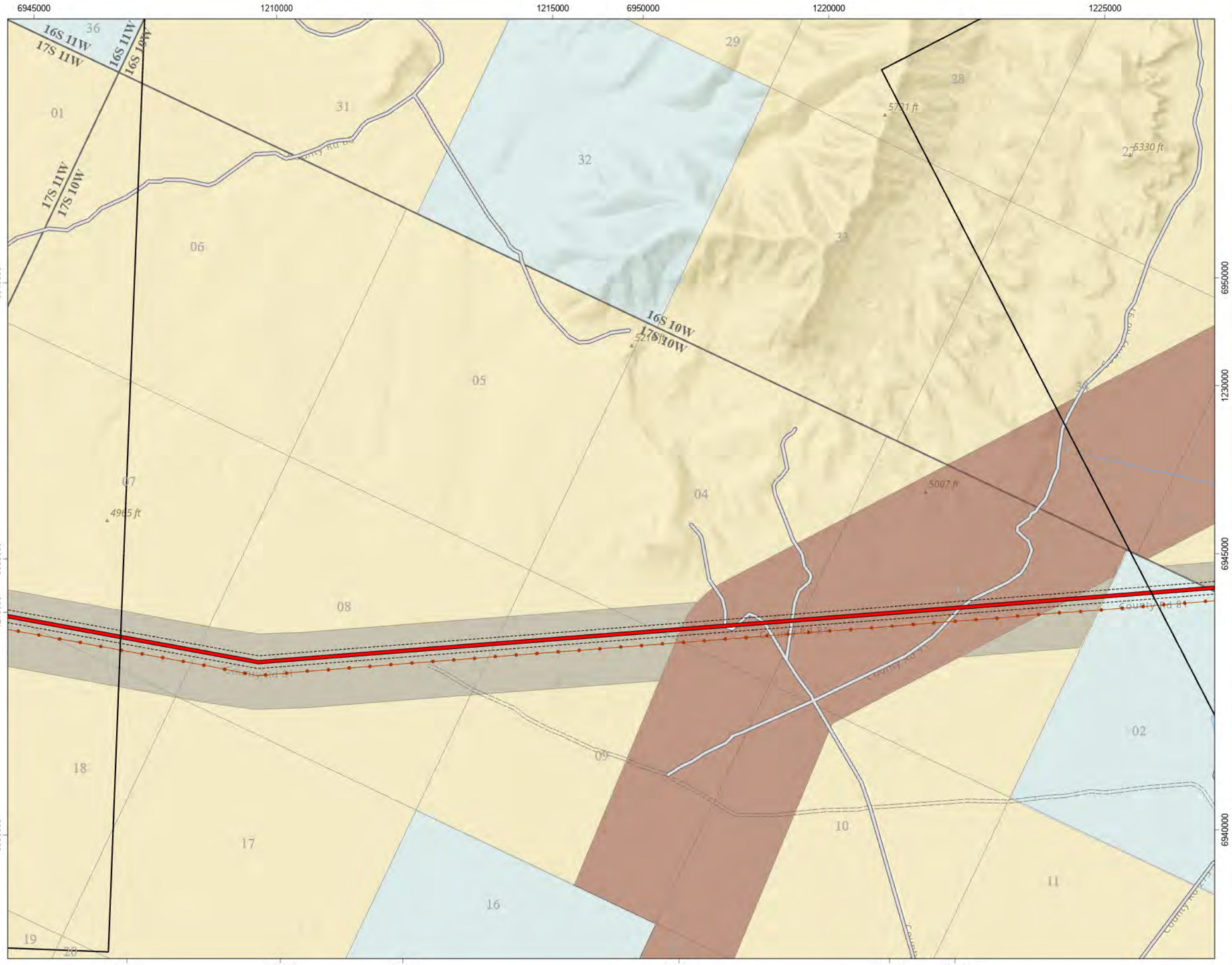

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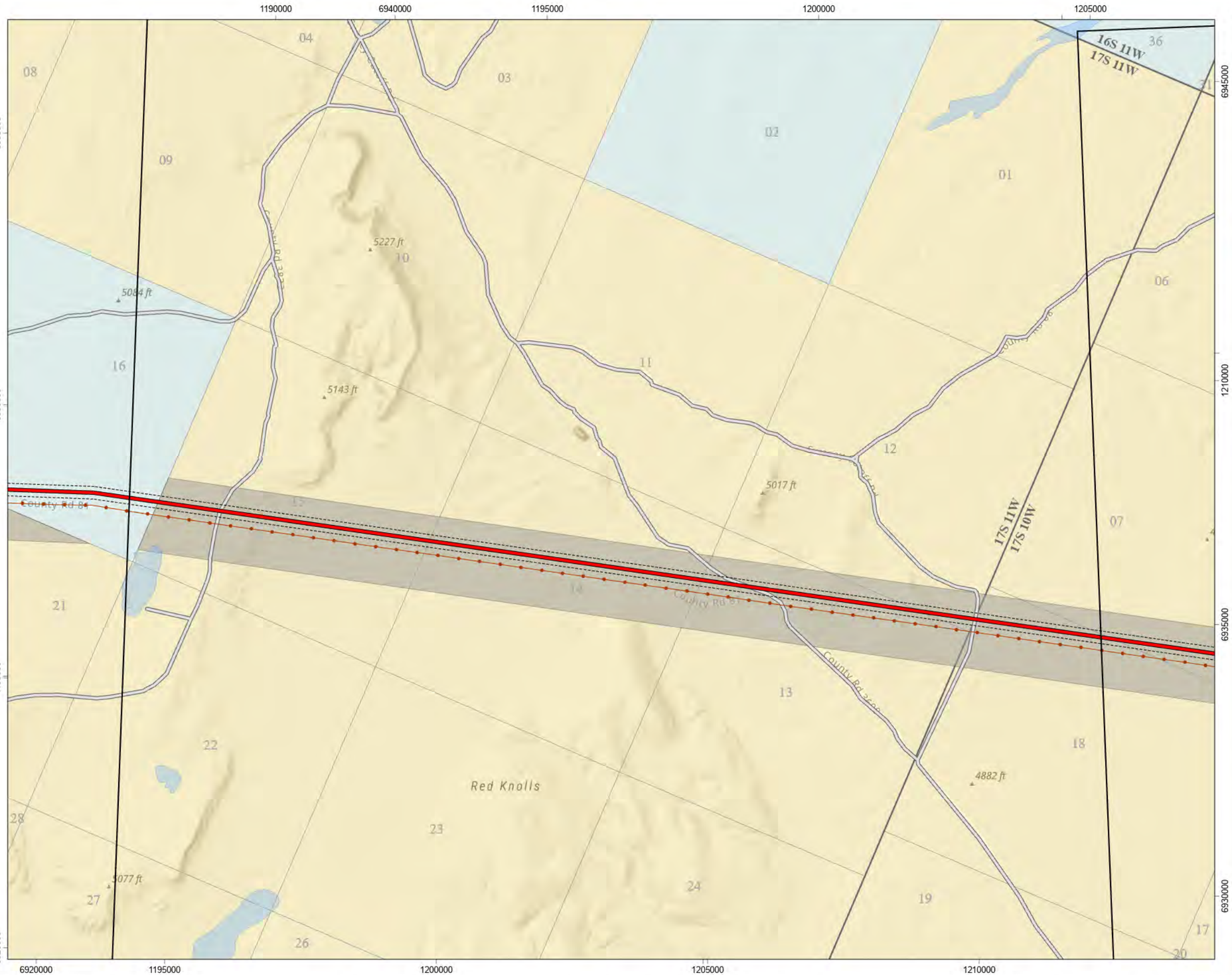

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Land Jurisdiction

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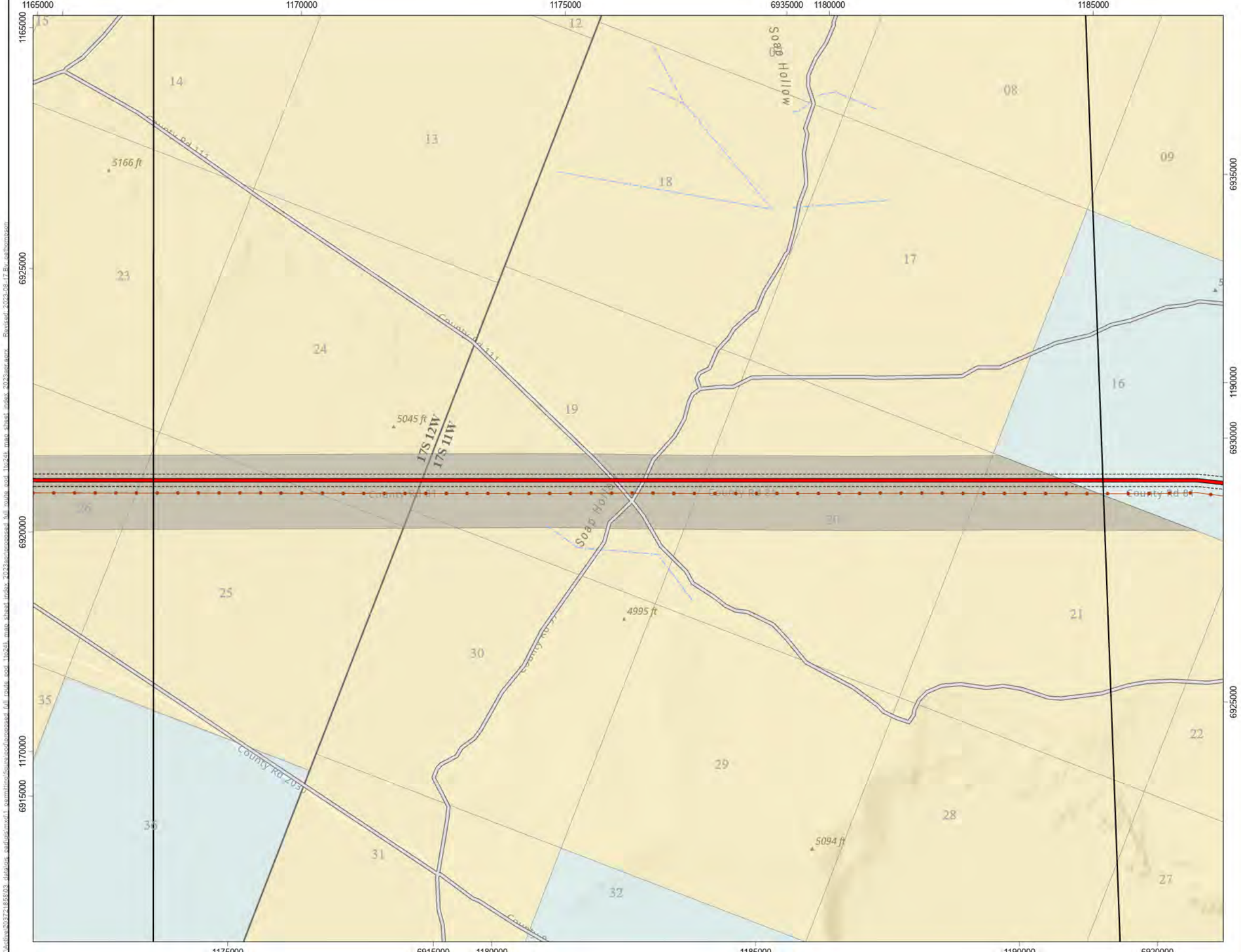

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Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
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Juab & Millard, Utah

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- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
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Land Jurisdiction

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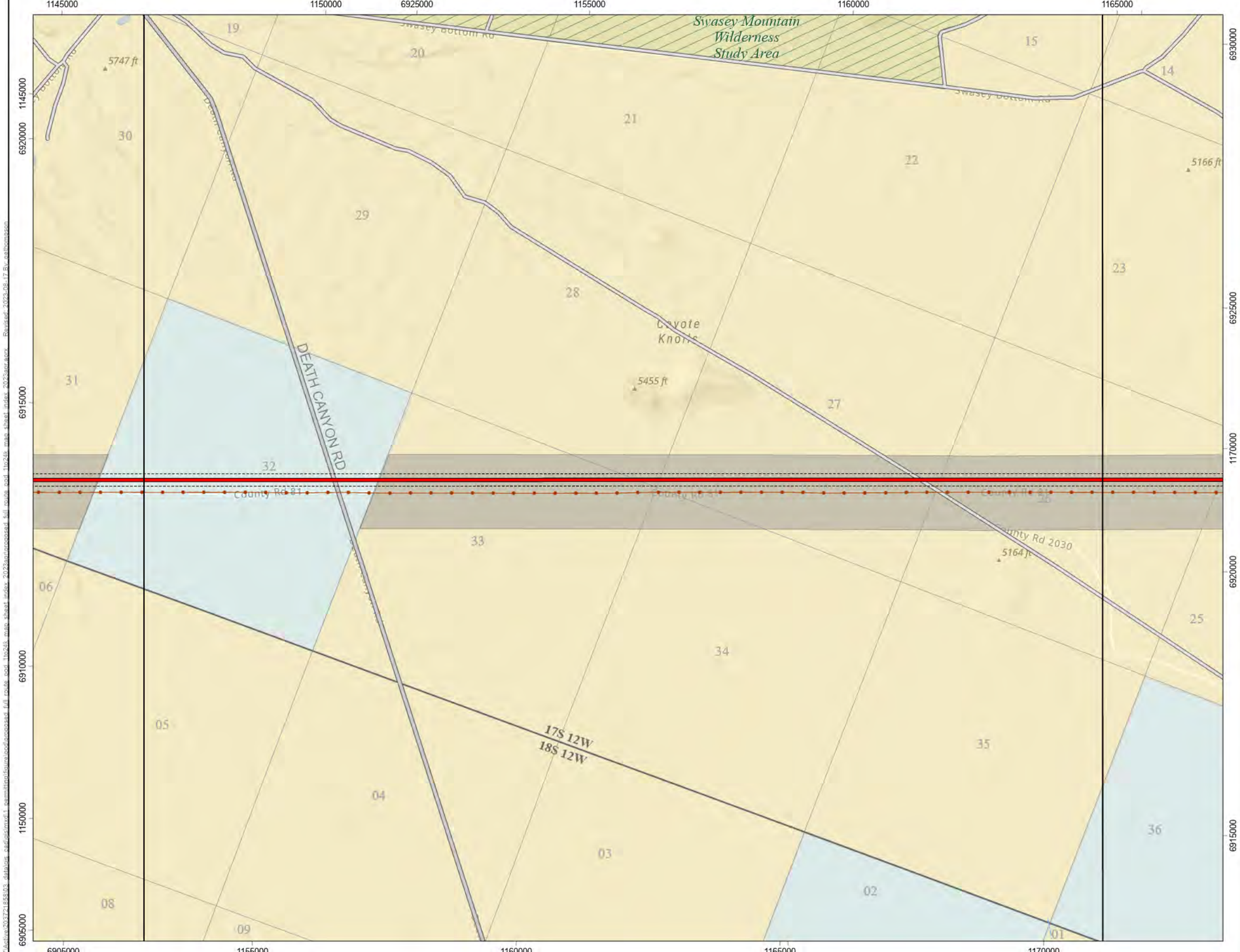

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- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- State

Land Designation

- Wilderness Study Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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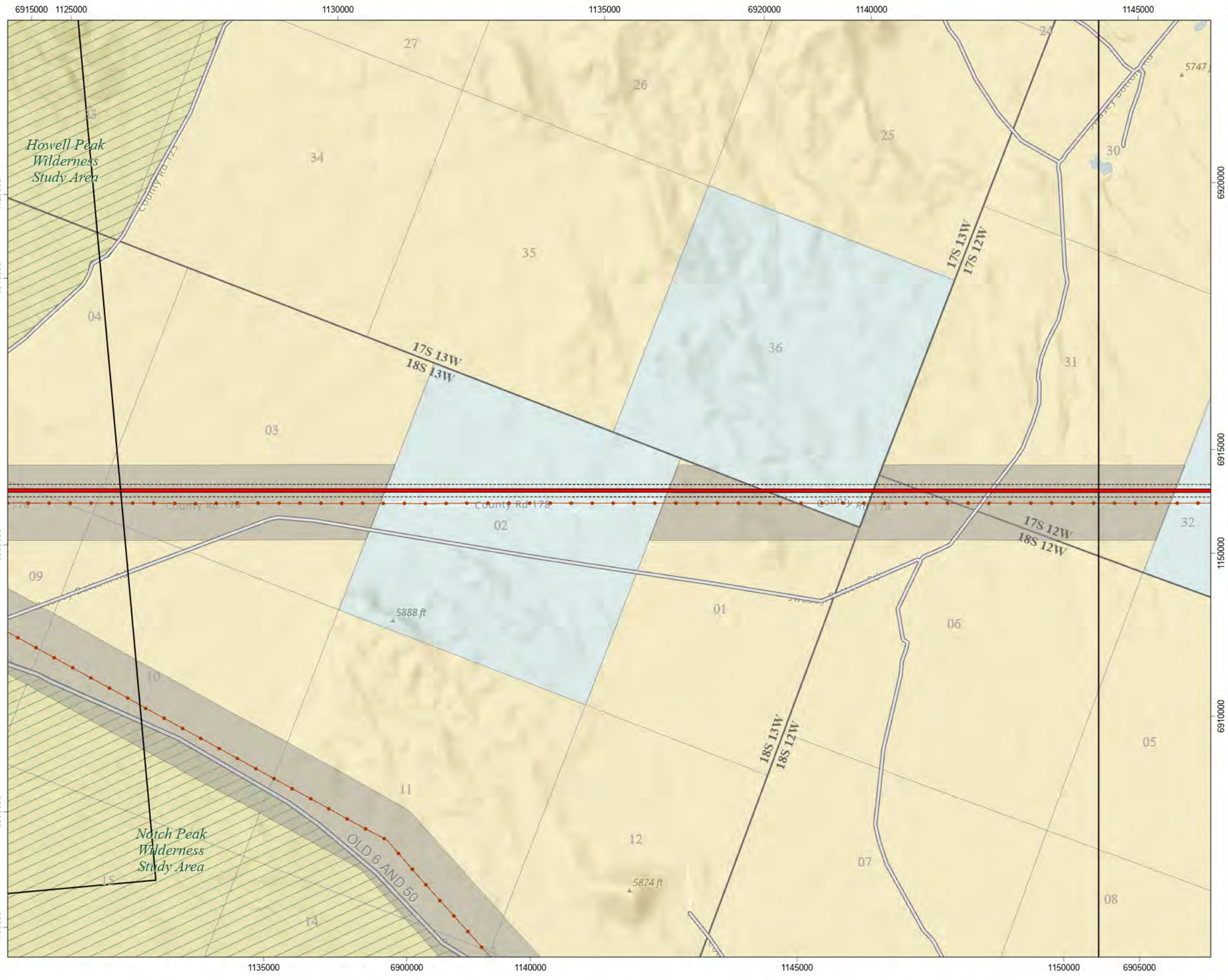

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- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
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Land Jurisdiction

- Bureau of Land Management (BLM)
- State

Land Designation

- Wilderness Study Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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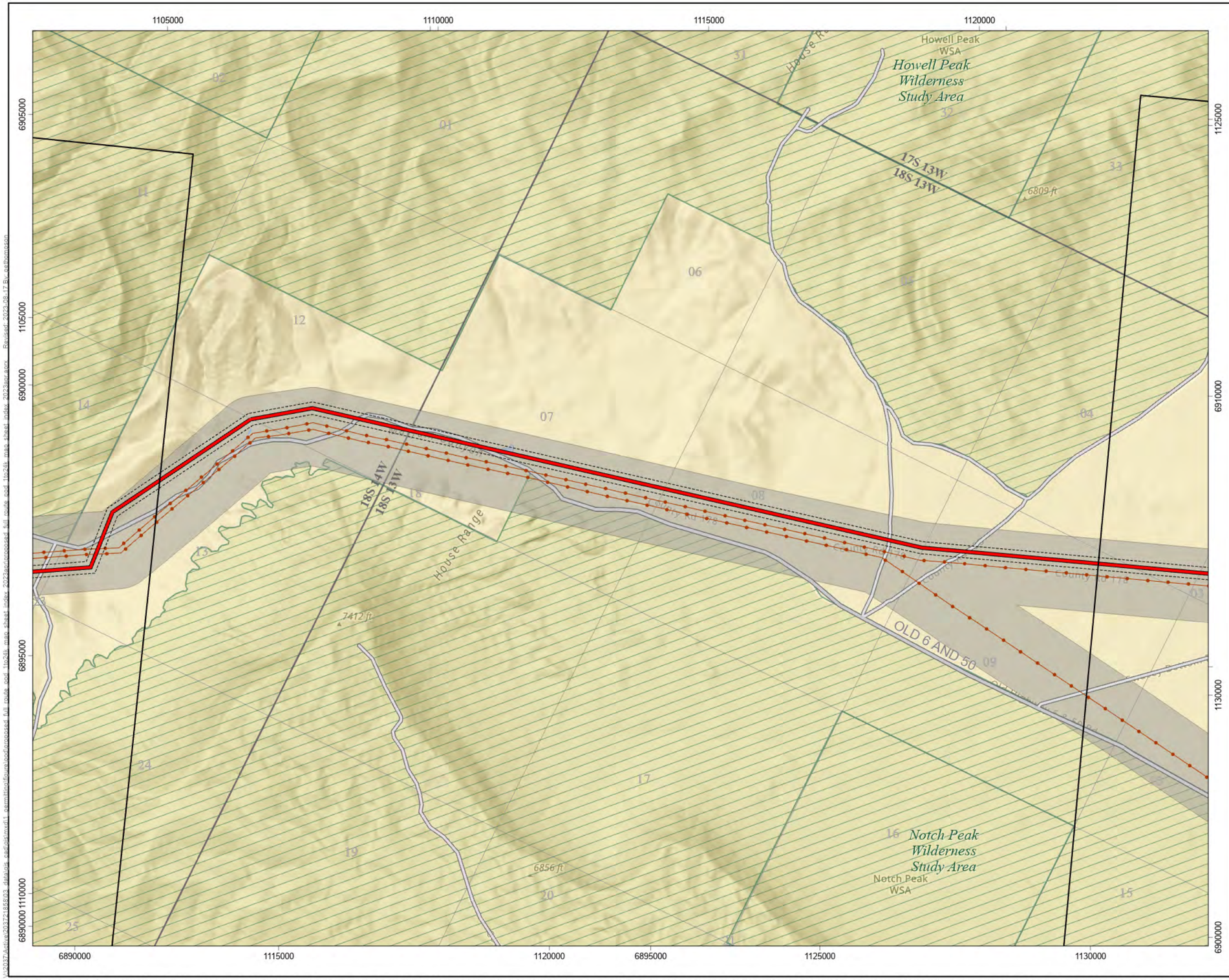

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Energy Corridor

- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)

Land Designation

- Wilderness Study Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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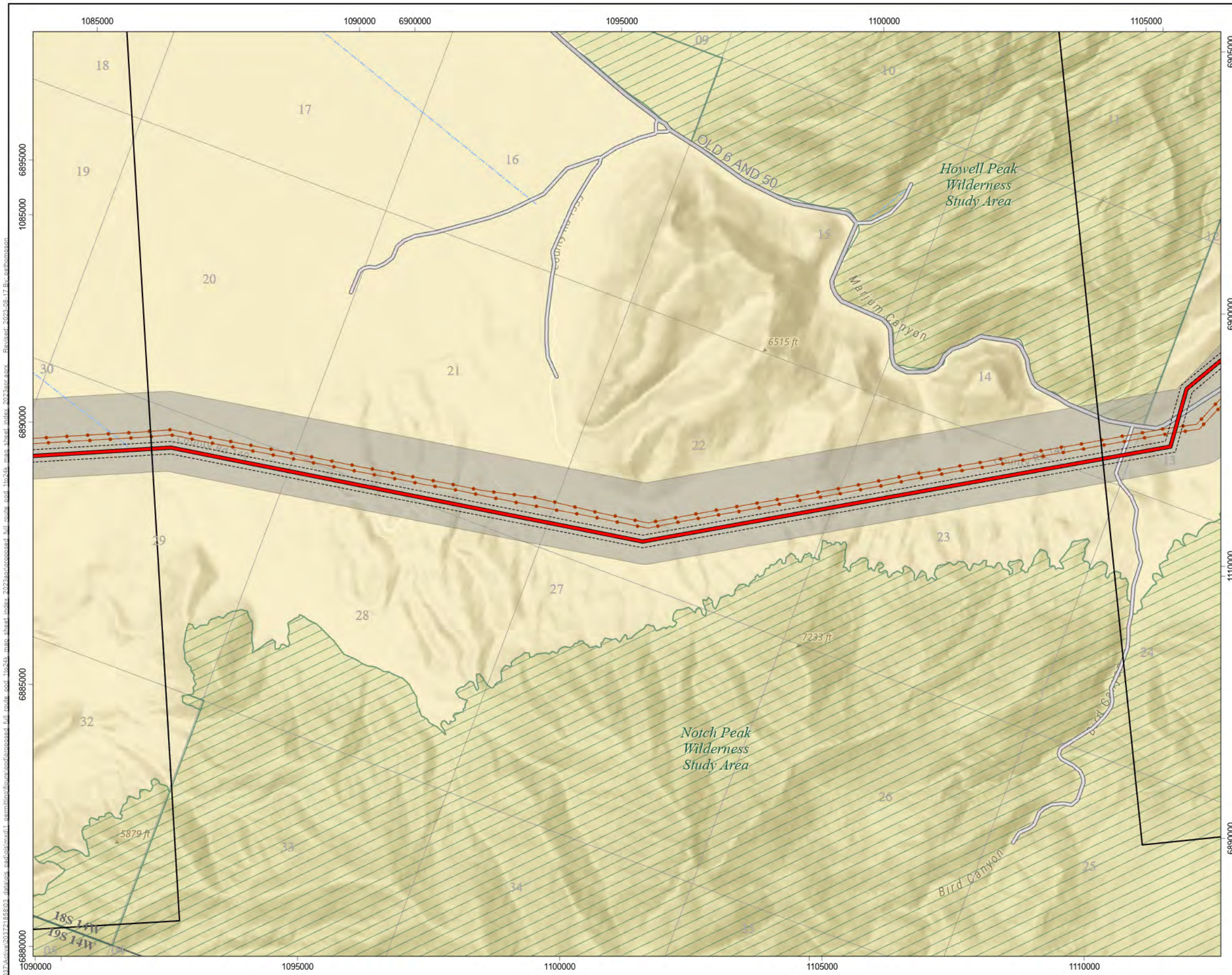

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Energy Corridor

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- Road: Secondary State or County Highway
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- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)

Land Designation

- Wilderness Study Area
- Township Boundary
- Section Boundary

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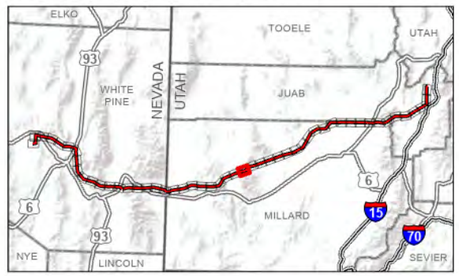

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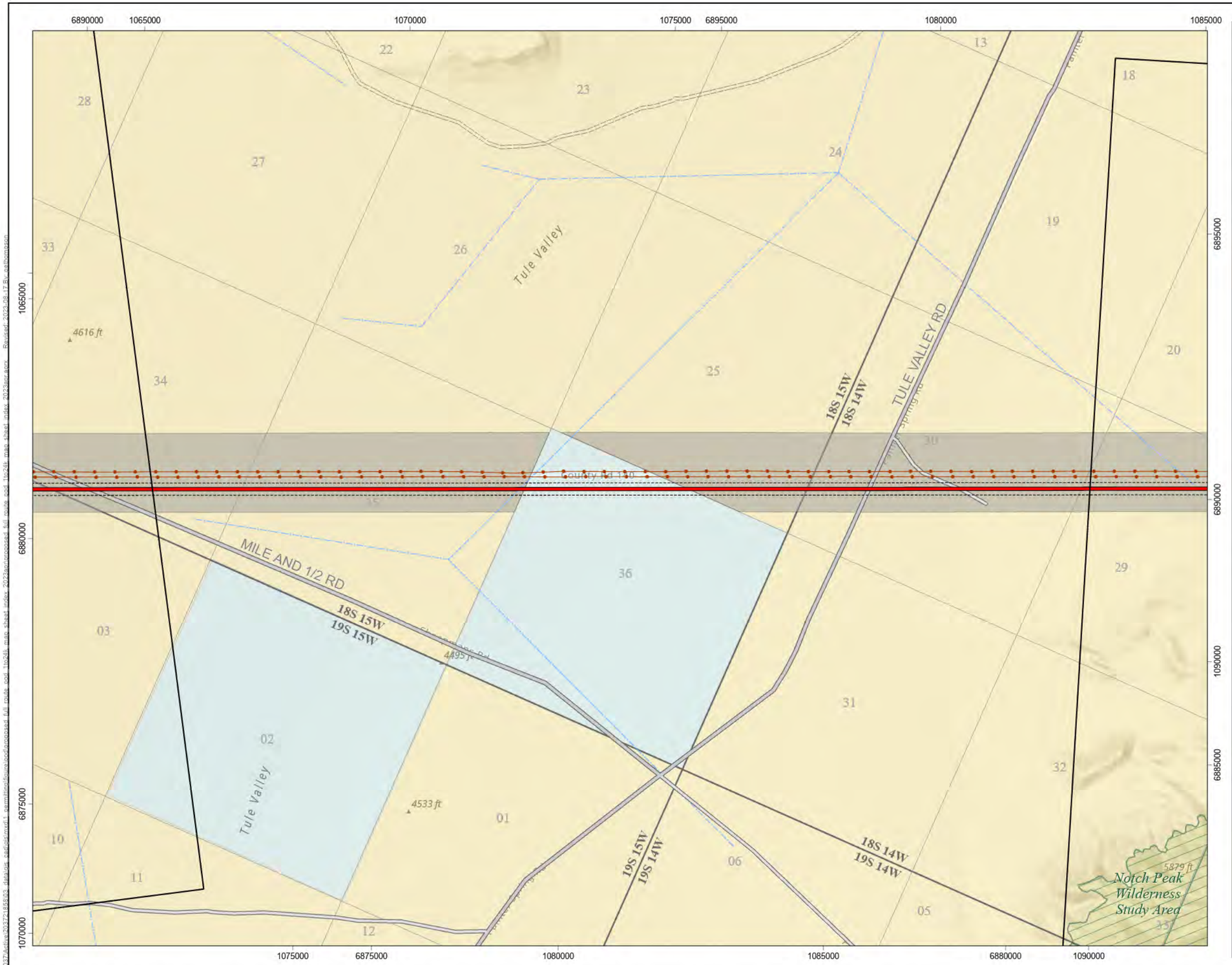

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Energy Corridor

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Land Jurisdiction

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- State

Land Designation

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- Township Boundary
- Section Boundary

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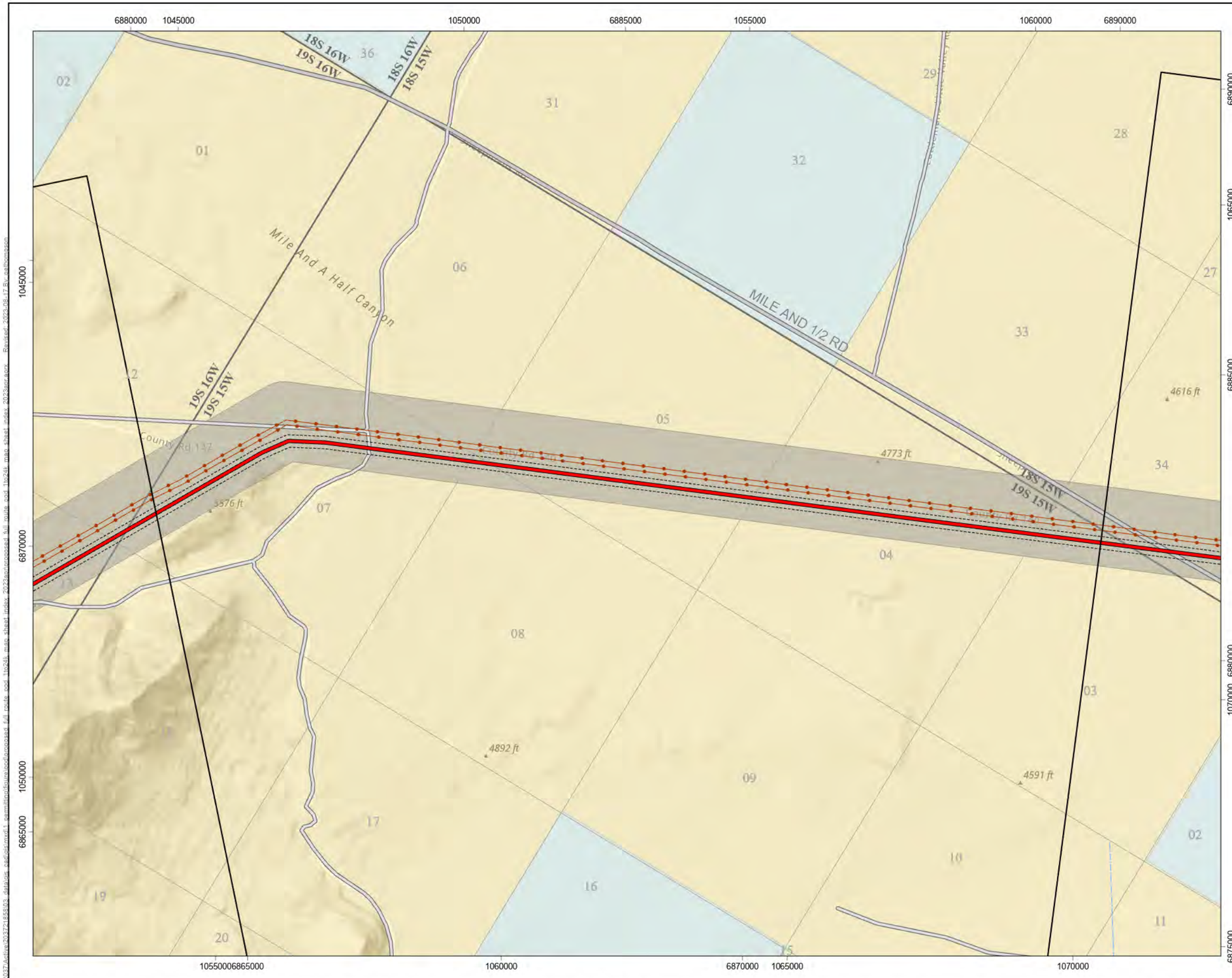

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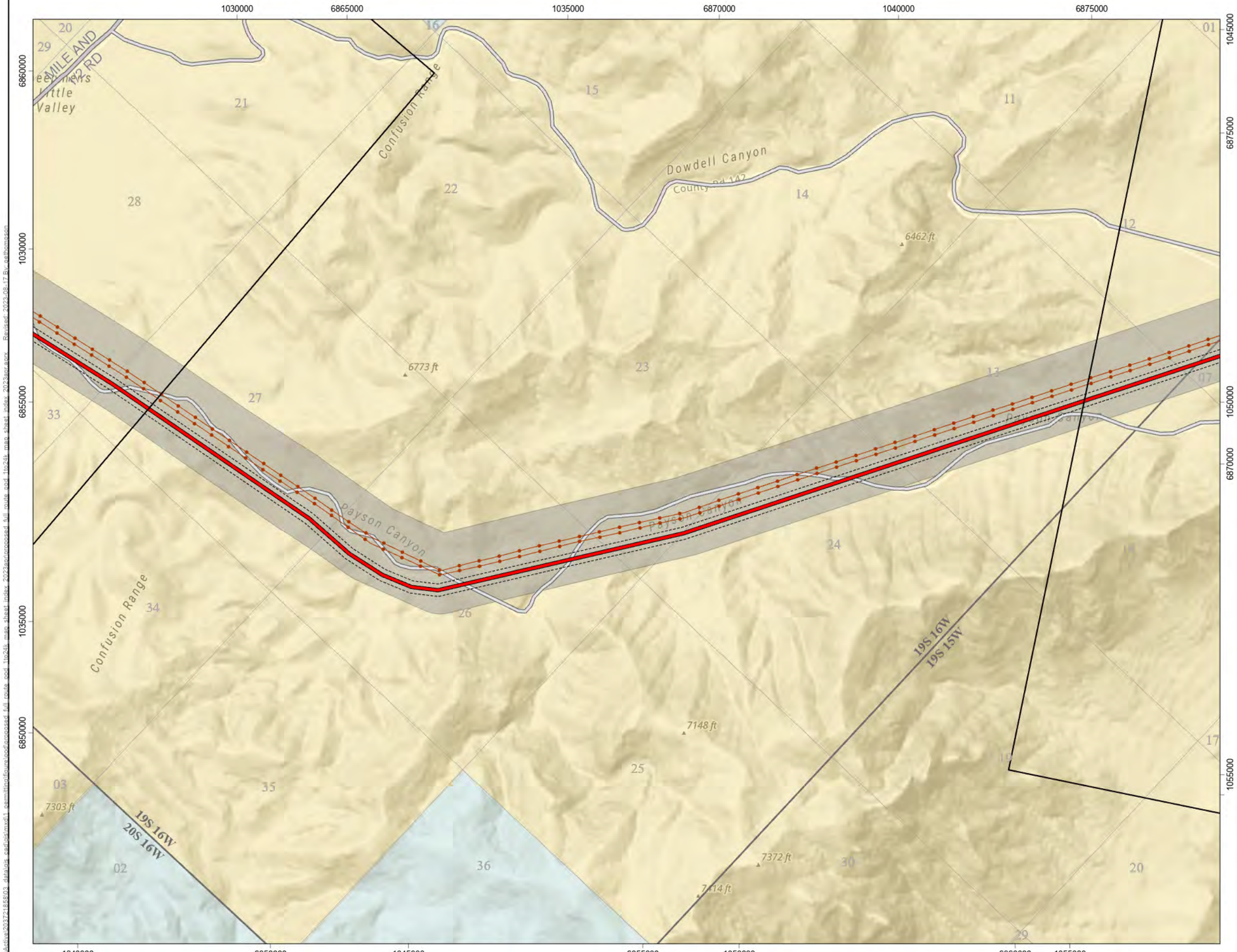

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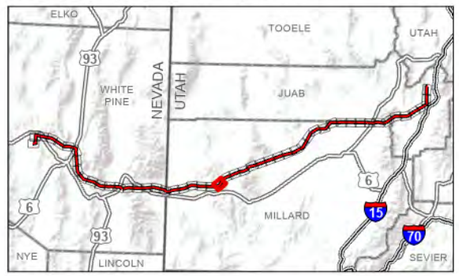

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3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON

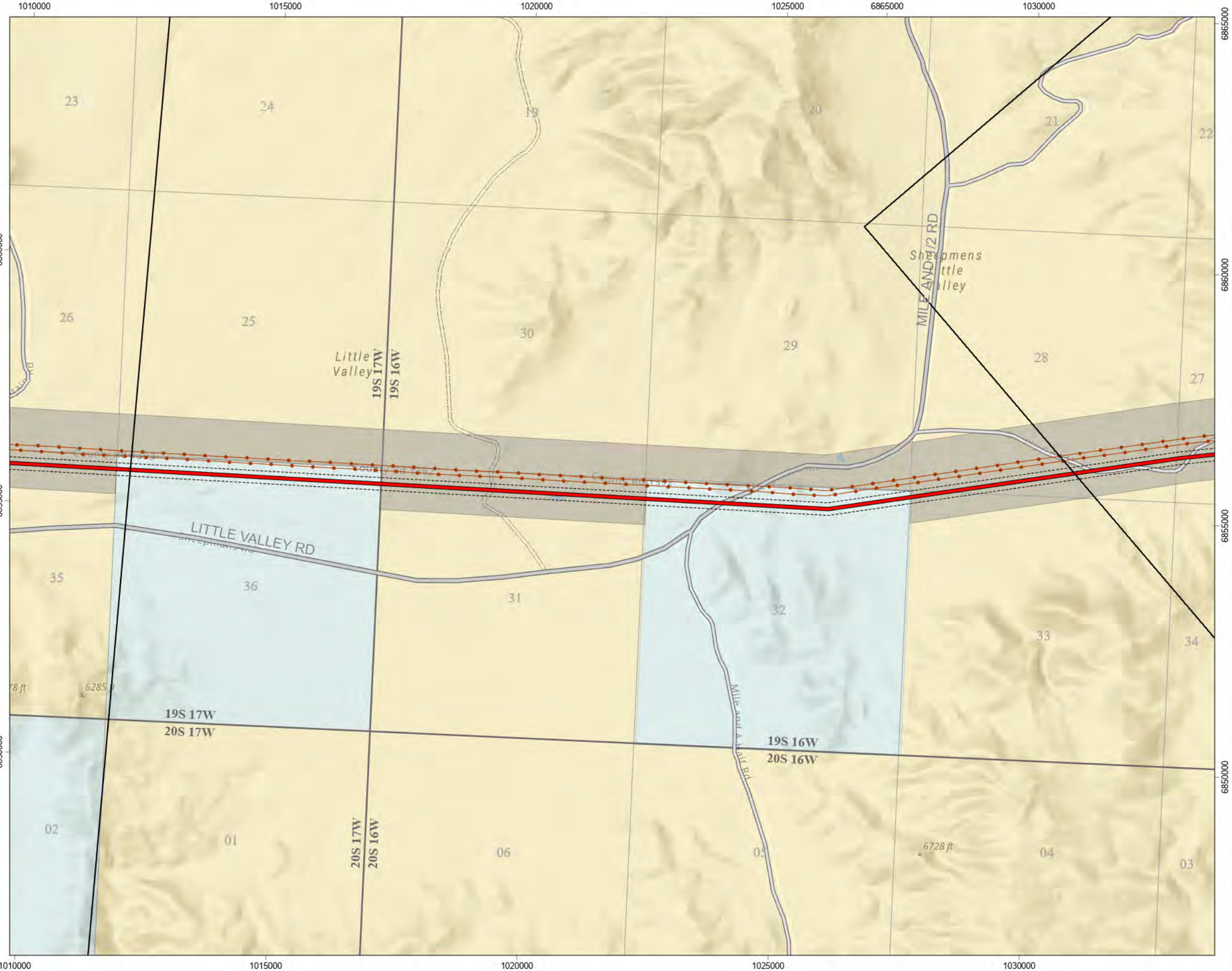

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route

Land Jurisdiction

- Bureau of Land Management (BLM)
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

Notes
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3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON

990000 995000 1000000 1005000 1010000

6865000 6860000 6855000 6850000

Knoll

County Rd 817

County Rd 820

LITTLE VALLEY RD

Sheepmans Rd

6178 ft

19S 17W

20S 17W

19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 01 02 03 04 05 06

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location

White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
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IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route

Land Jurisdiction

- Bureau of Land Management (BLM)
- State
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON

970000 975000 980000 985000

6865000 6860000 6855000 6850000

990000

Okeberry Pass

6461 ft

Toms Knoll Pass

6506 ft

Tom Knoll

County Rd 195

County Rd 82

County Rd 270

Buckskin Hills

6367 ft

6534 ft

Livingston Canyon

19S 18W

20S 18W

19S 17W

20S 17W

13 18 21 22 23 24 19 28 27 30 33 34 35 36 31 04 03 02 01 06 05

970000 975000 980000 985000 990000

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
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Juab & Millard, Utah

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- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route

Land Jurisdiction

- Bureau of Land Management (BLM)
- State
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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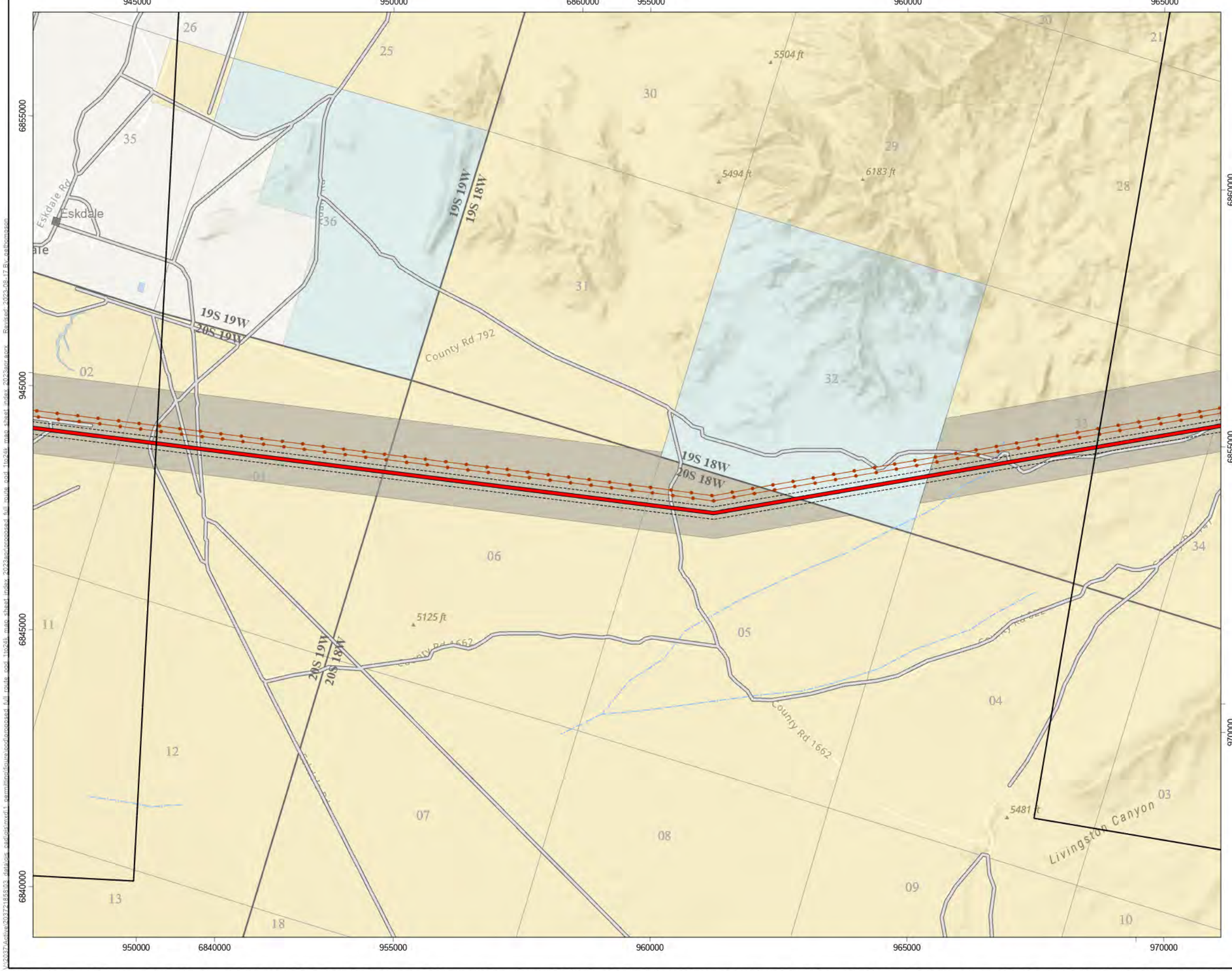

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location

White Pine, Nevada
Juab & Millard, Utah

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- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

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TransCanyon, LLC
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Project Location
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Juab & Millard, Utah

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- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

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Route Detail

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TransCanyon, LLC
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Juab & Millard, Utah

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N

0 0.25 0.5 Miles

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1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Section 368 Corridor, Not Designated
- Bureau of Land Management Corridor
- County Boundary
- Road: U.S. or State Highway
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- State Boundary
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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TRANSCANYON

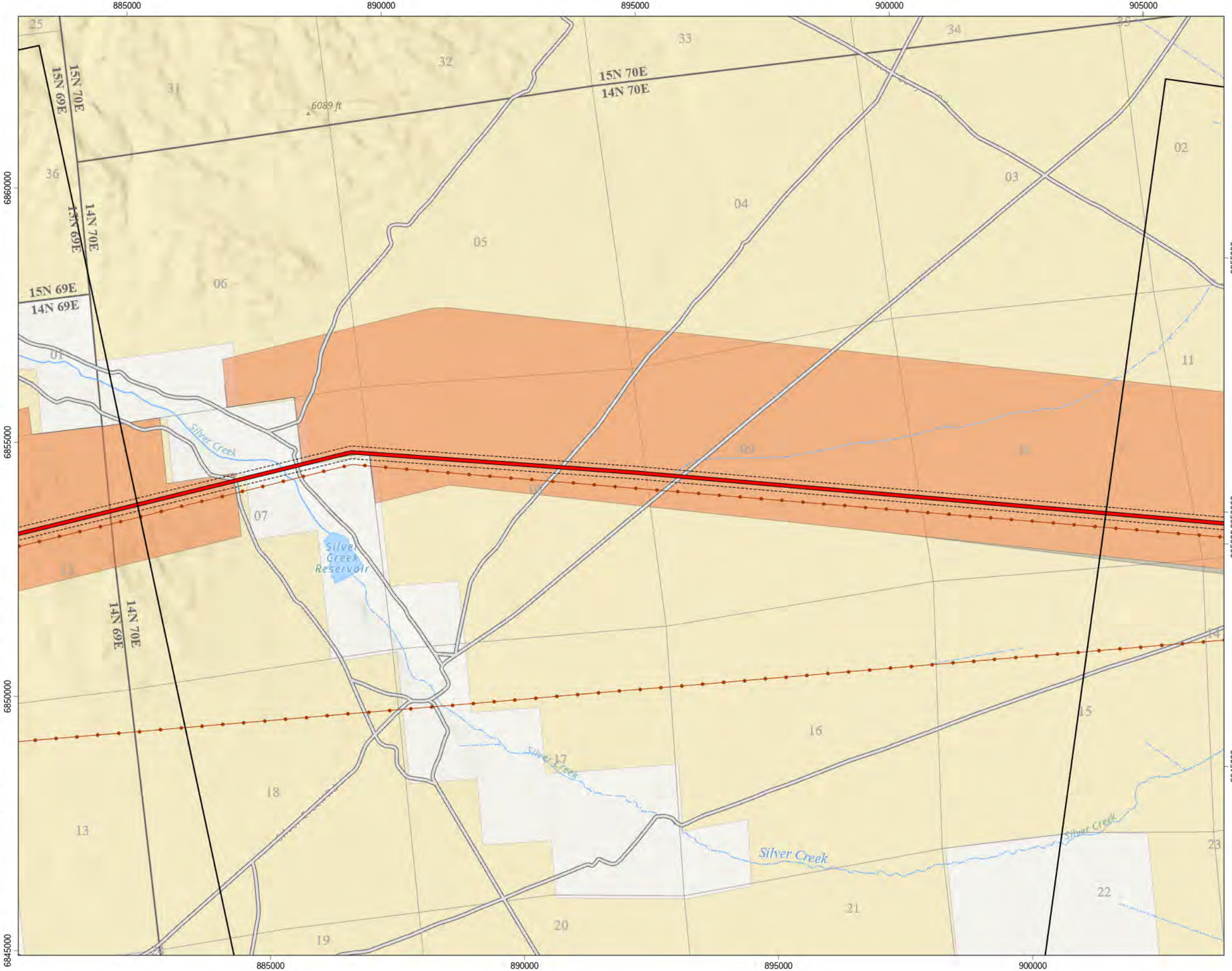

Figure No.

A-1

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Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
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N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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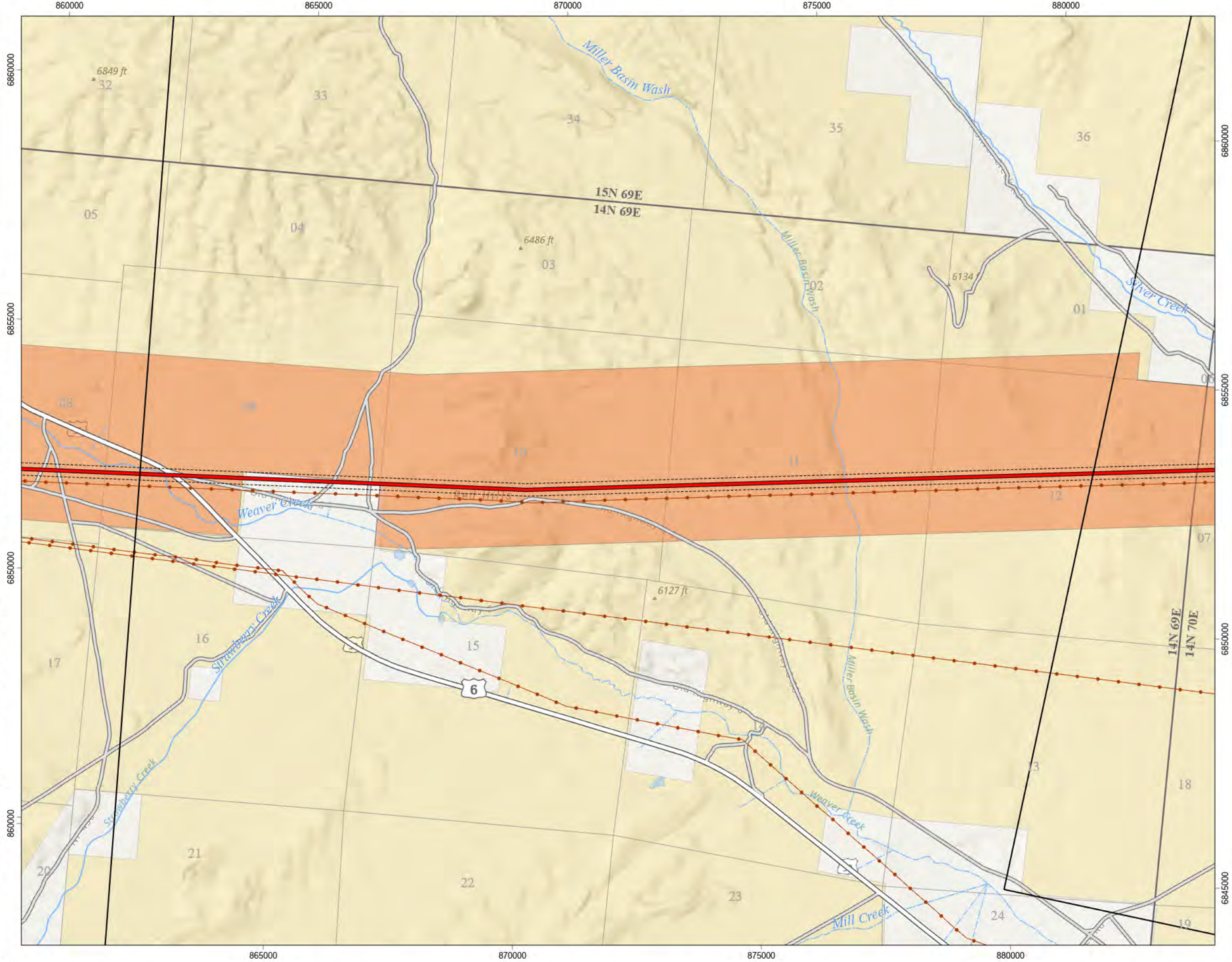

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Route Detail

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N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: U.S. or State Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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TRANSCANYON

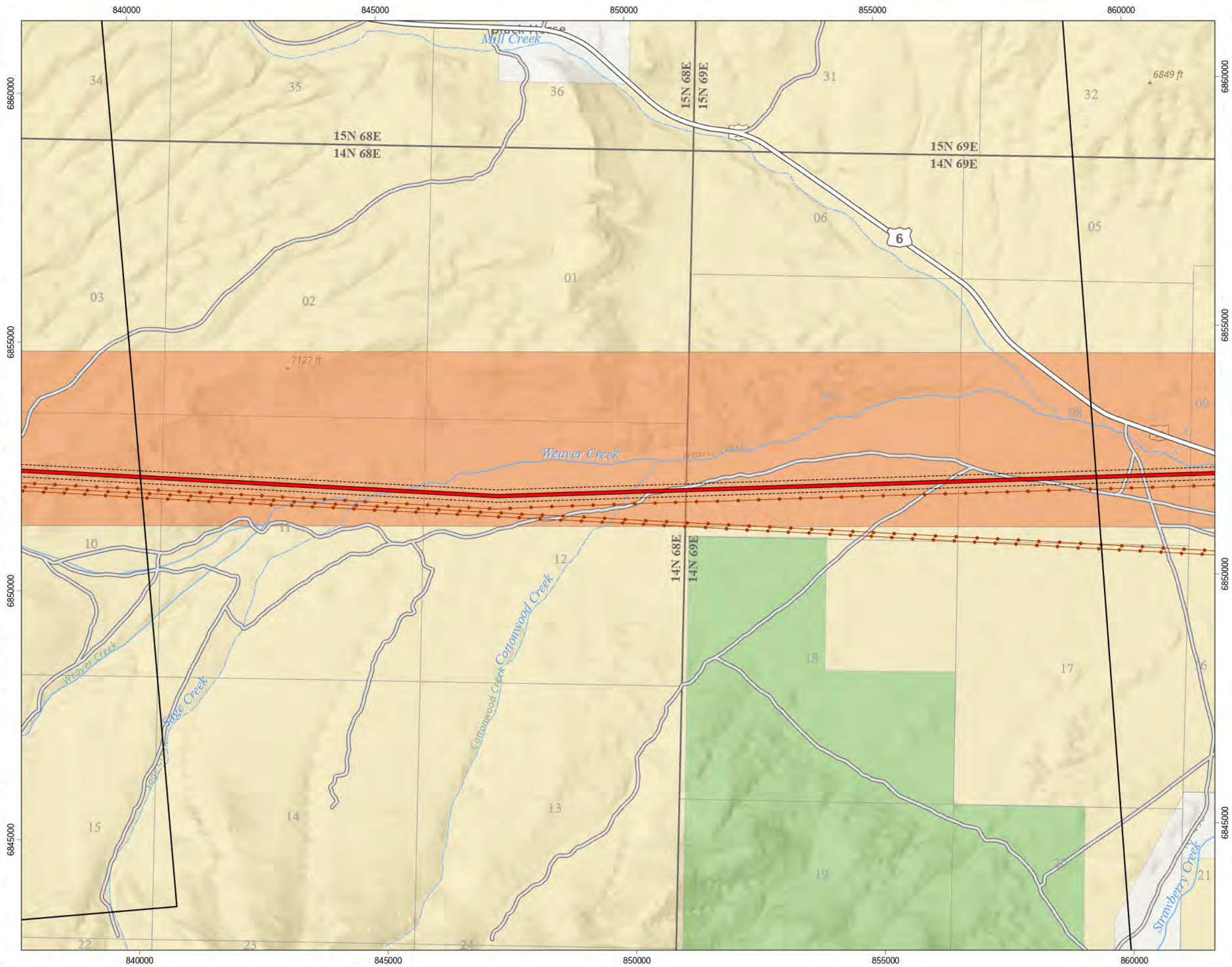

Figure No.

A-1

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Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
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N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: U.S. or State Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- USDA Forest Service
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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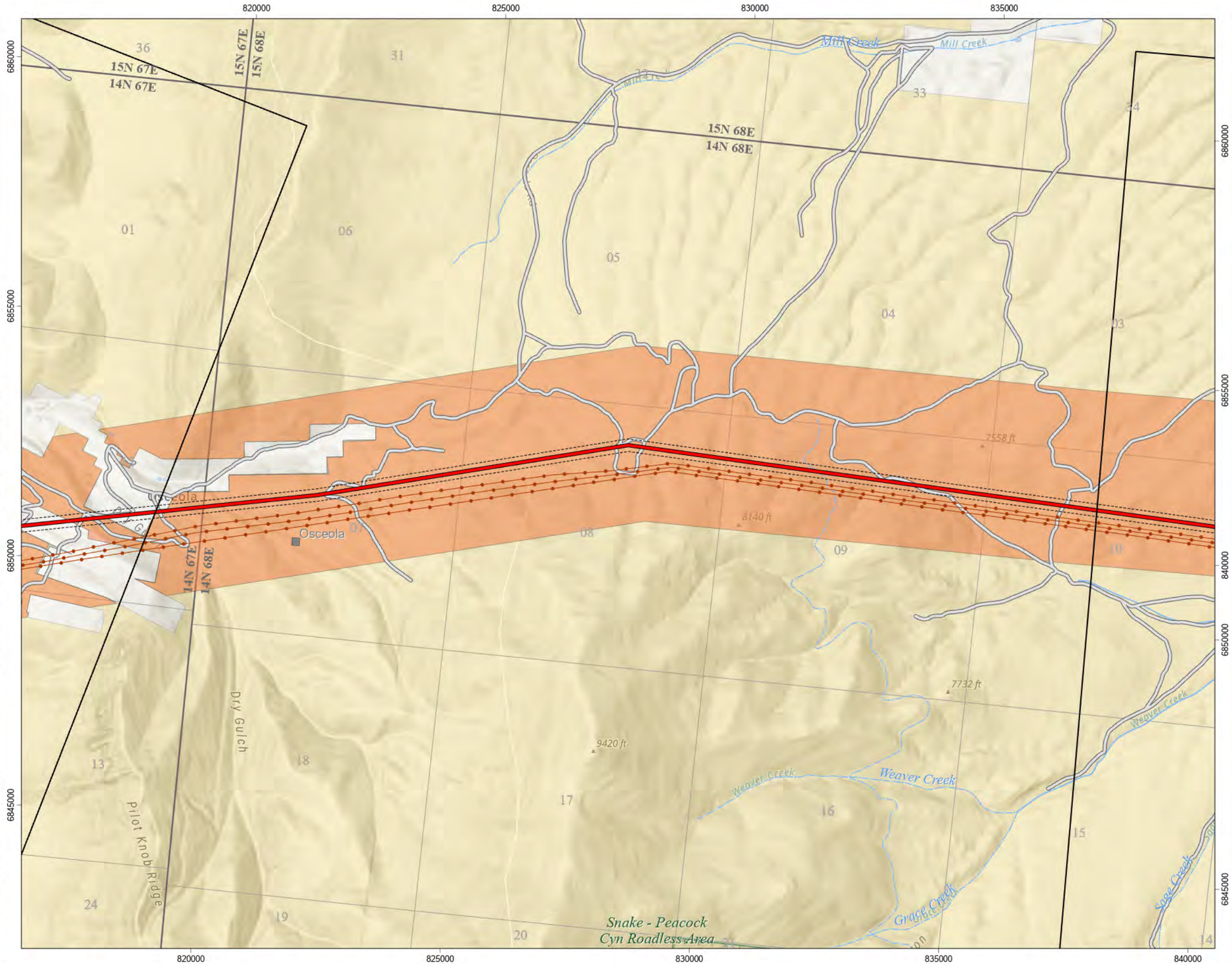
TRANSCANYON



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A-1

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Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

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IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private

Land Designation

- Roadless Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

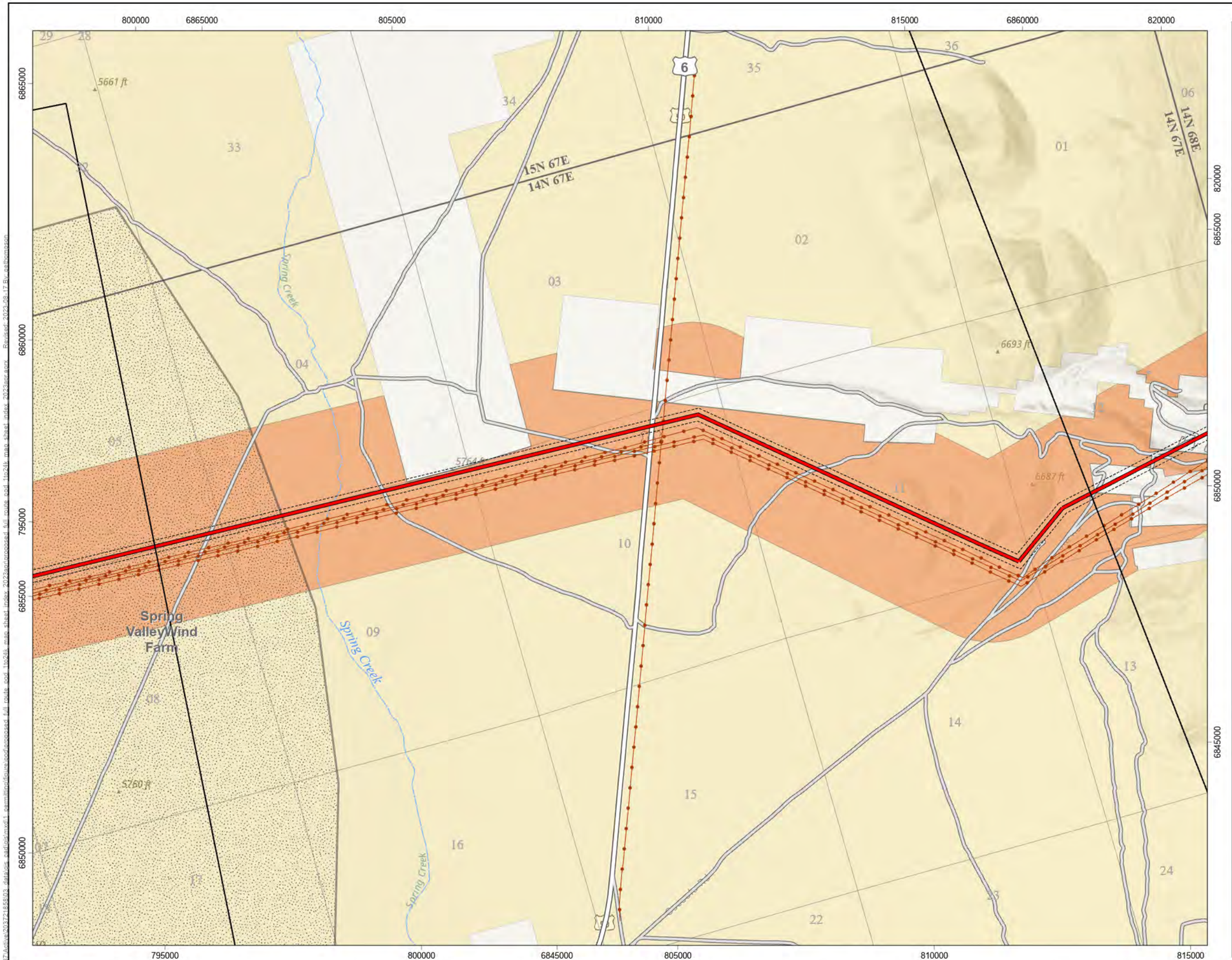

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location

White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: U.S. or State Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- Waterbody or Water Area
- Wind Farm
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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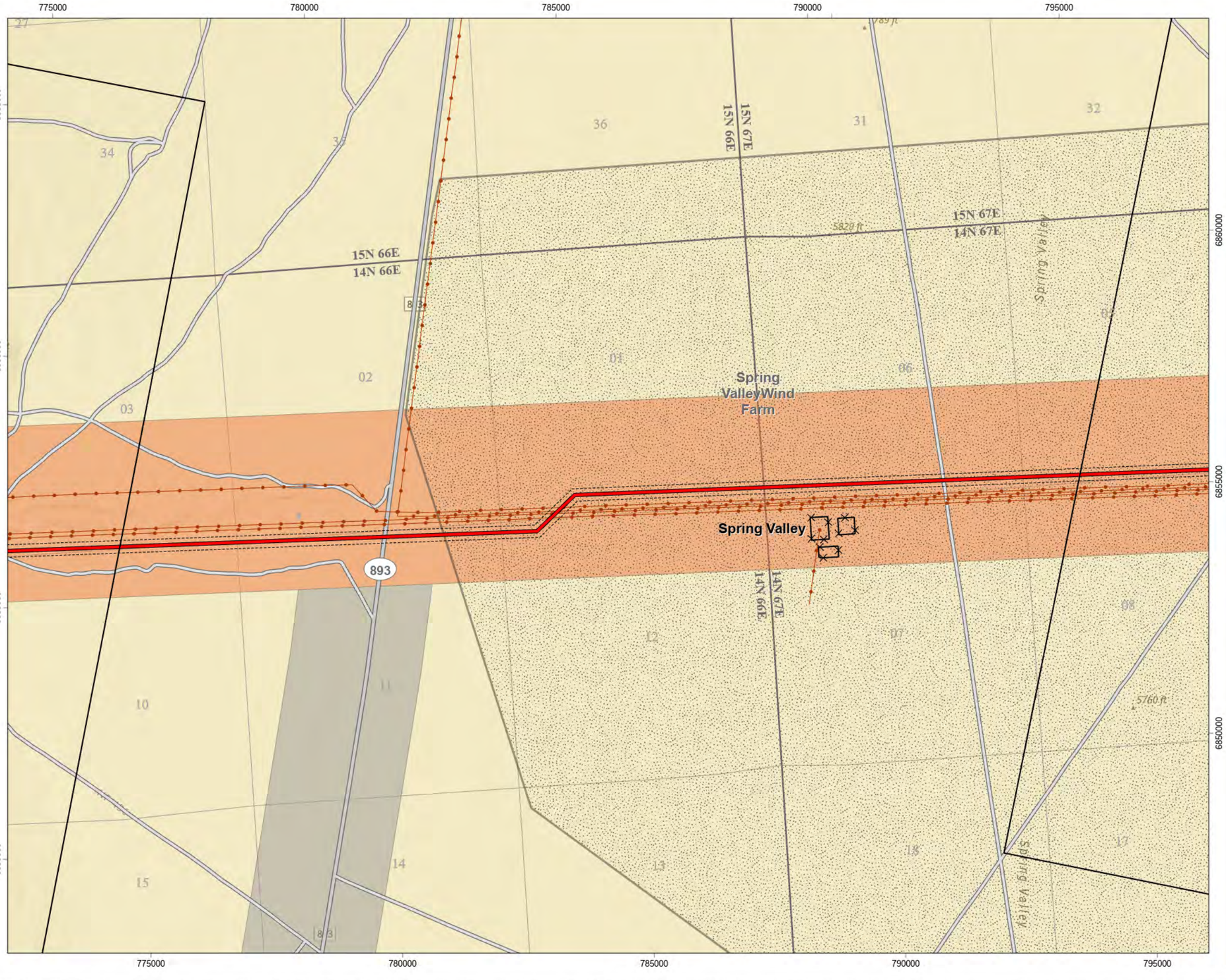

Figure No.

A-1

Title

Proposed Route Alignment Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

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TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing
- Substation

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street

Land Jurisdiction

- Bureau of Land Management (BLM)
- Waterbody or Water Area
- Wind Farm
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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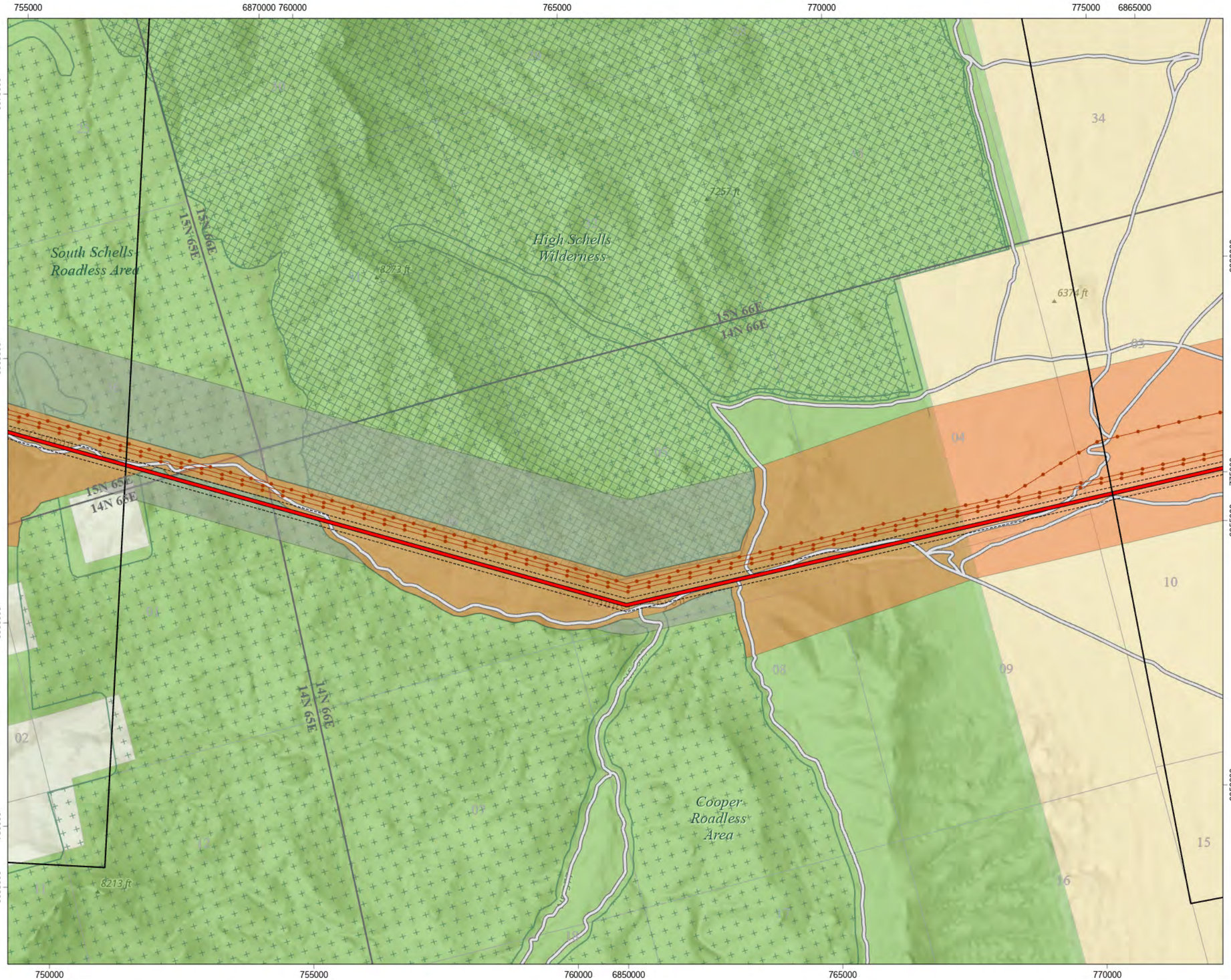

Figure No.

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Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
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IR by GB on 2023-04-28

N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- USDA Forest Service

Land Designation

- Roadless Area
- Wilderness Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
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IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Private
- USDA Forest Service

Land Designation

- Roadless Area
- Wilderness Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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TRANSCANYON

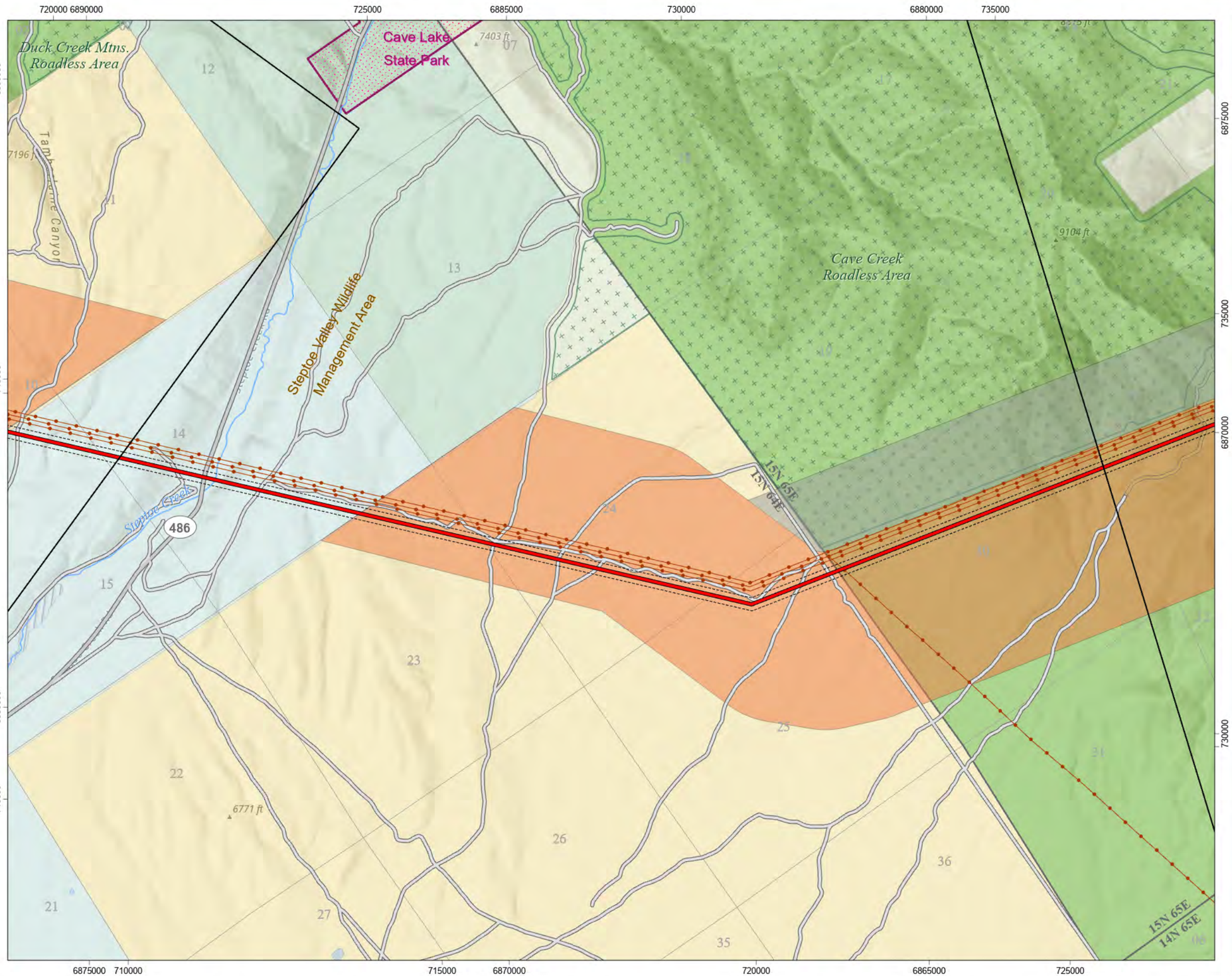


Figure No.

A-1

Title

Proposed Route Alignment
Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

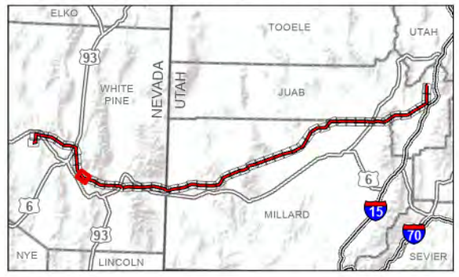
- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor
- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
- Road: 4WD Route
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)
- Flood Zone (FEMA 1% Annual Chance) or Wash Area

Land Jurisdiction
- Bureau of Land Management (BLM)
- Private
- State
- USDA Forest Service

Land Designation
- Roadless Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary
- State Park

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.



Notes
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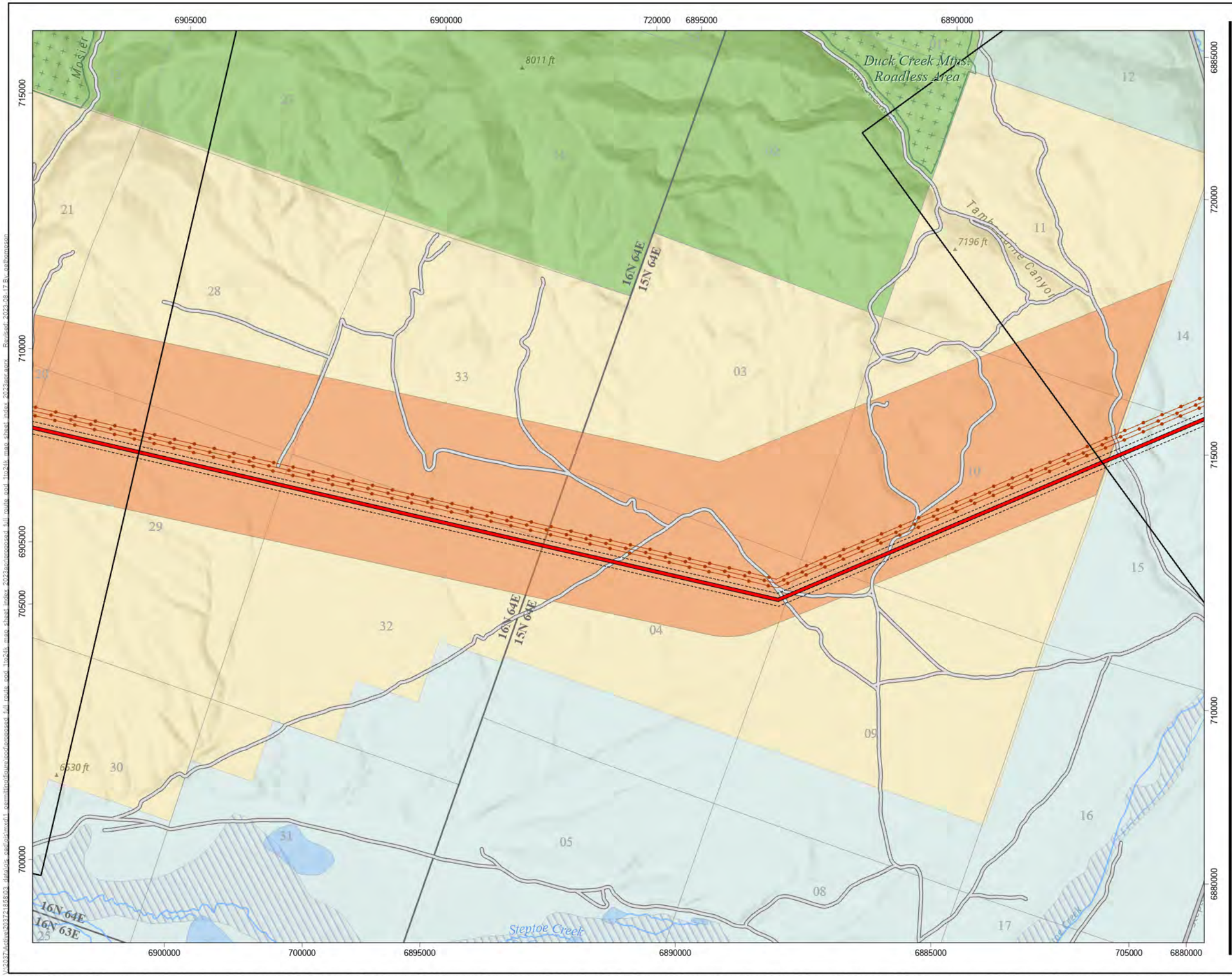
3. Background: Esri World Topographic Map (Forest Service and NPS land, federal recreation areas shaded in green with boundaries; forested areas shown in light green)

TRANSCANYON



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A-1

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Route Detail

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TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location
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Juab & Millard, Utah

Prepared by PT on 2023-04-26
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N

0 0.25 0.5 Miles
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1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Secondary State or County Highway
- Road: Local, Neighborhood, Rural or City Street
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- Waterway: Other (Canal, Pipeline, Etc.)
- Flood Zone (FEMA 1% Annual Chance) or Wash Area

Land Jurisdiction

- Bureau of Land Management (BLM)
- State
- USDA Forest Service

Land Designation

- Roadless Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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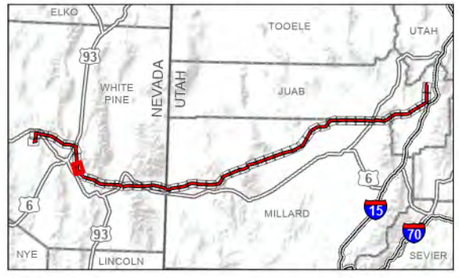

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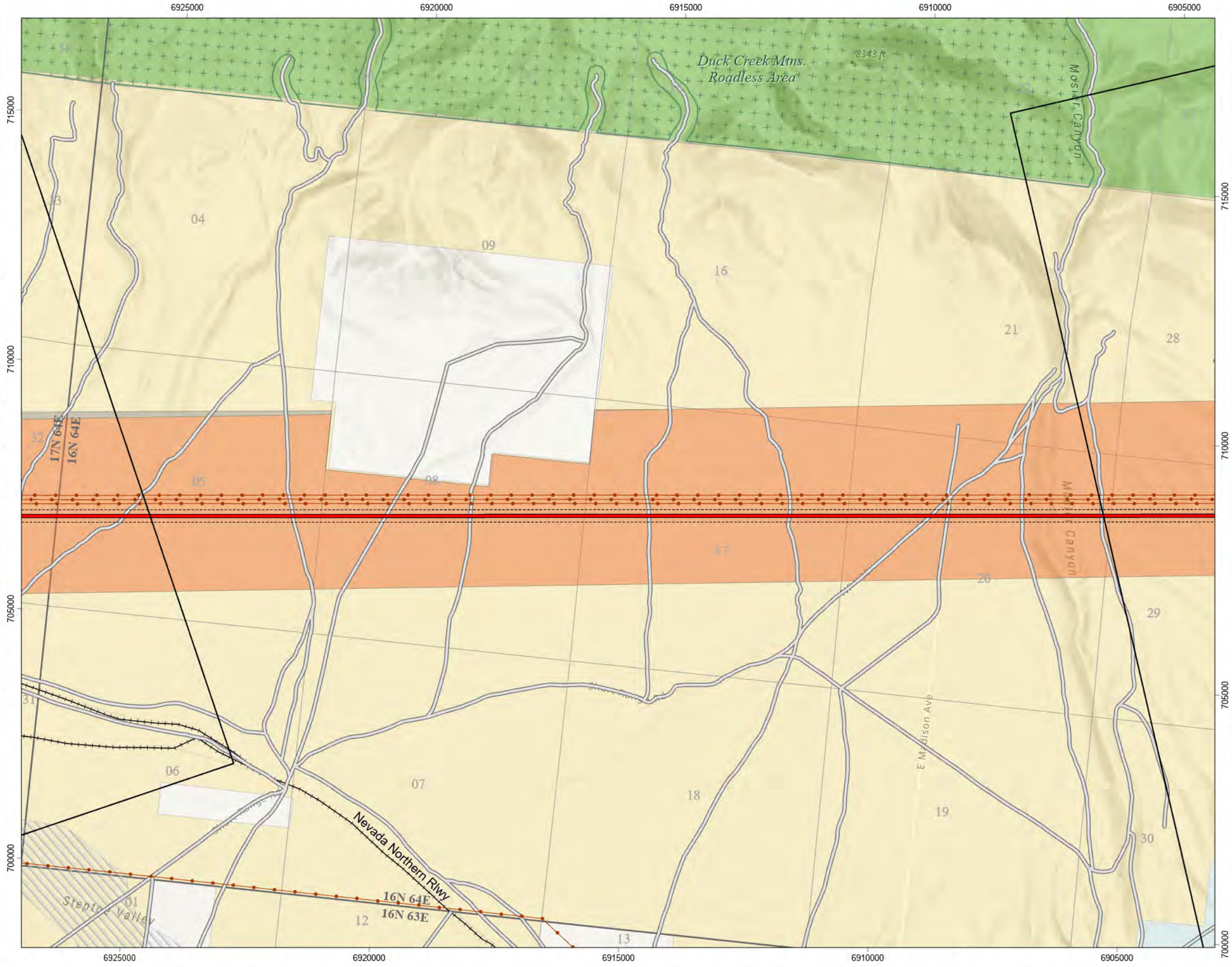
TRANSCANYON



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N

0 0.25 0.5 Miles

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- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Railroad
- Road: Local, Neighborhood, Rural or City Street
- Flood Zone (FEMA 1% Annual Chance) or Wash Area

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State
- USDA Forest Service

Land Designation

- Roadless Area
- Township Boundary
- Section Boundary

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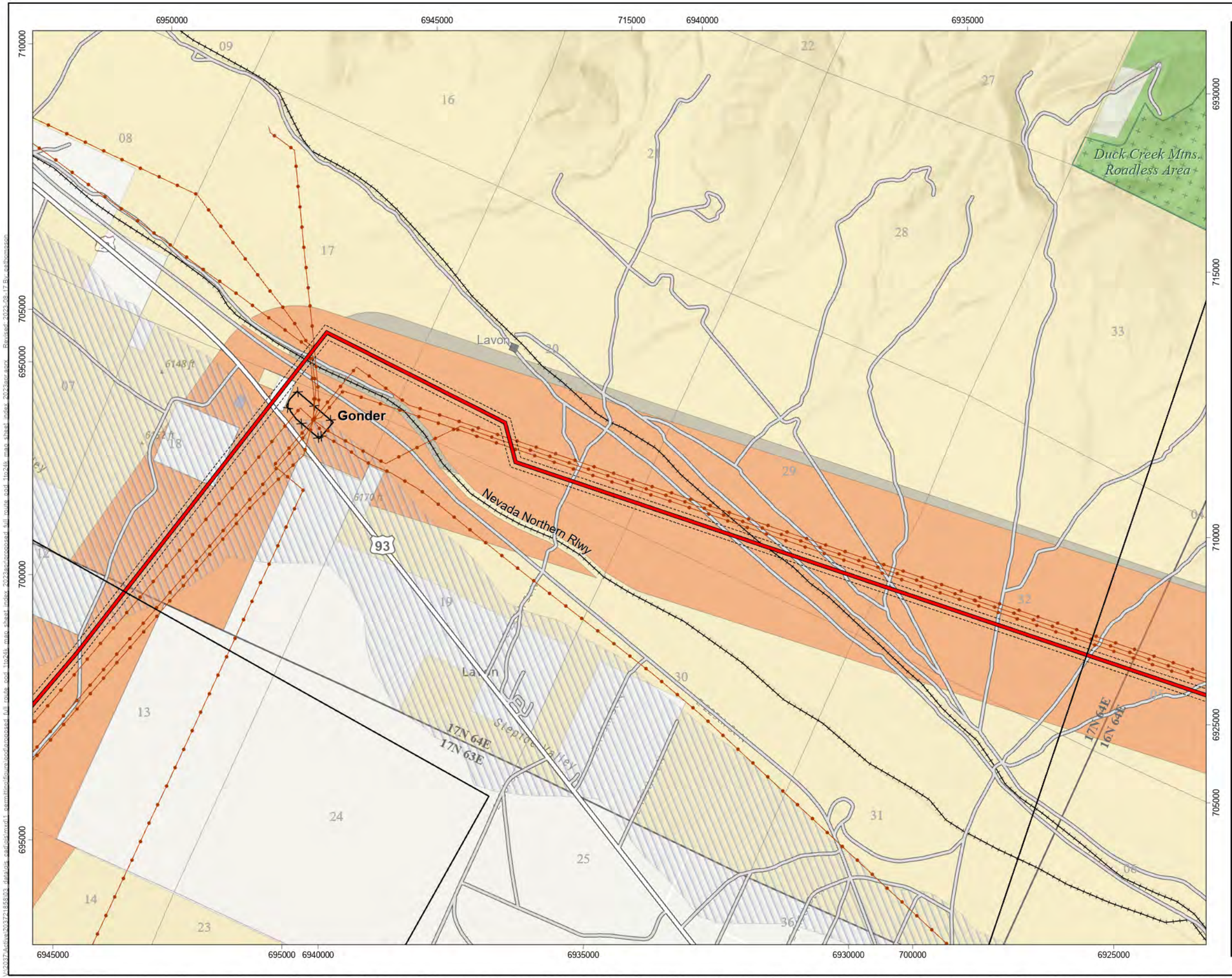

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Juab & Millard, Utah

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IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing
- Substation

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Railroad
- Road: U.S. or State Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Other (Canal, Pipeline, Etc.)
- Flood Zone (FEMA 1% Annual Chance) or Wash Area

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- USDA Forest Service

Land Designation

- Roadless Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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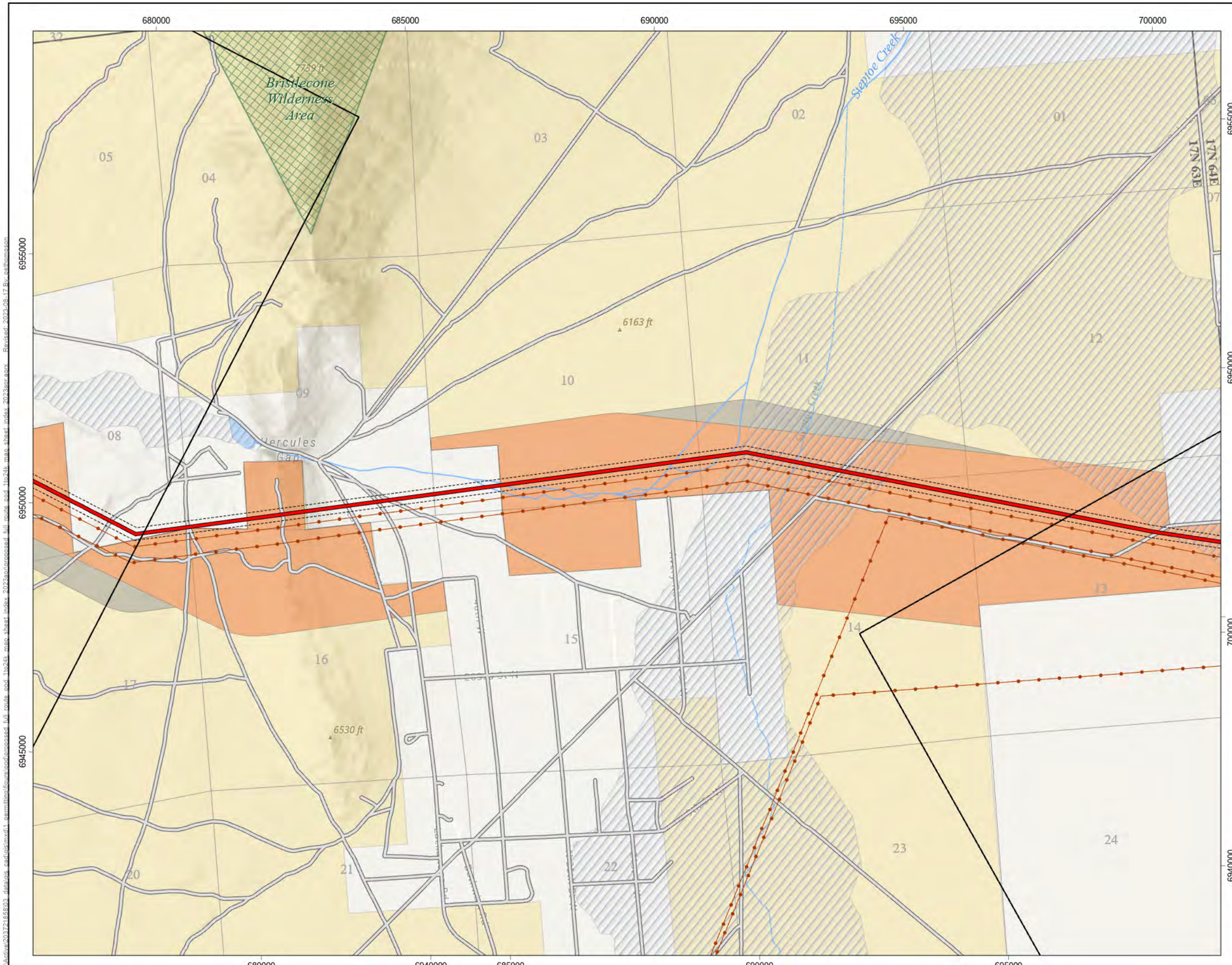
TRANSCANYON



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Juab & Millard, Utah

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N

0 0.25 0.5 Miles

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- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)
- Flood Zone (FEMA 1% Annual Chance) or Wash Area

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private

Land Designation

- Wilderness Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

Note: The BLM Utility Corridor data is based on data received from the BLM on April 7, 2023. Per the BLM's Resource Management Plans for the Project Area (Warm Springs Record of Decision, April 1987, and the House Range Record of Decision, October 1987) existing major rights-of-way are designated as corridors.

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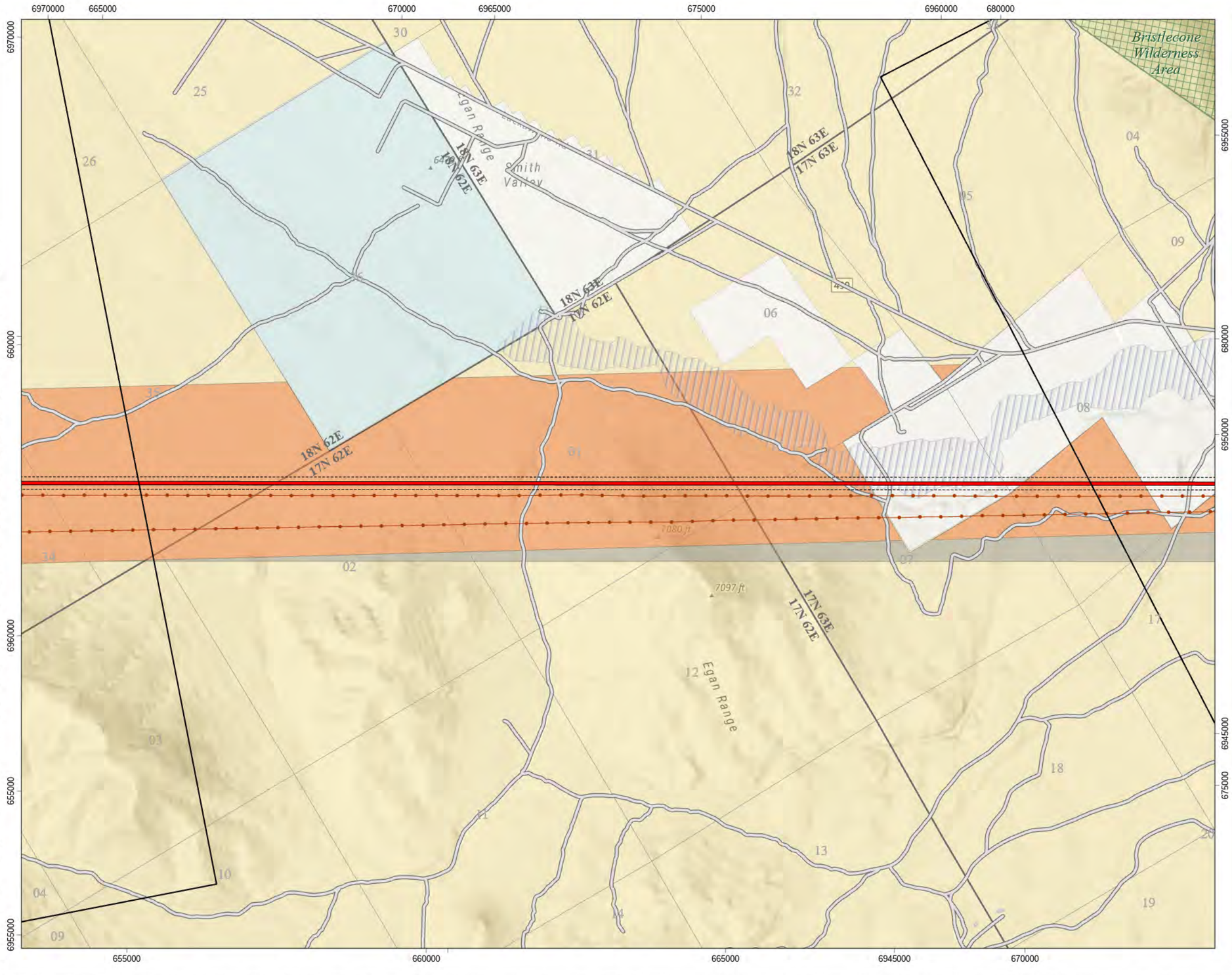

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Juab & Millard, Utah

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0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Flood Zone (FEMA 1% Annual Chance) or Wash Area

Land Jurisdiction

- Bureau of Land Management (BLM)
- Private
- State

Land Designation

- Wilderness Area
- Waterbody or Water Area
- Township Boundary
- Section Boundary

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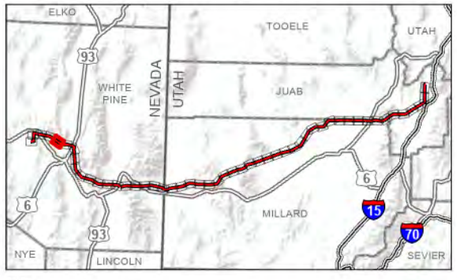

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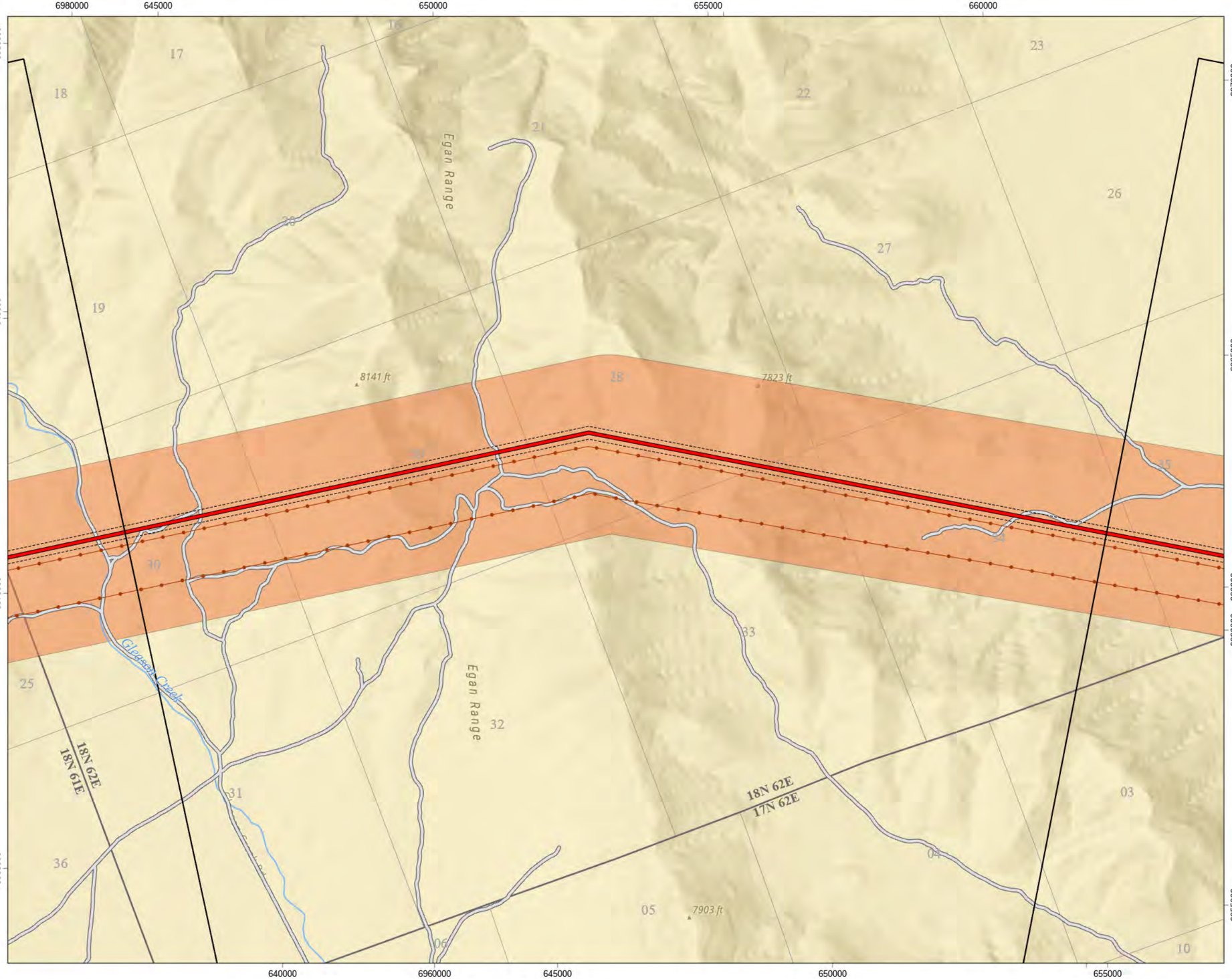

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N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial
- Waterway: Other (Canal, Pipeline, Etc.)

Land Jurisdiction

- Bureau of Land Management (BLM)
- Township Boundary
- Section Boundary

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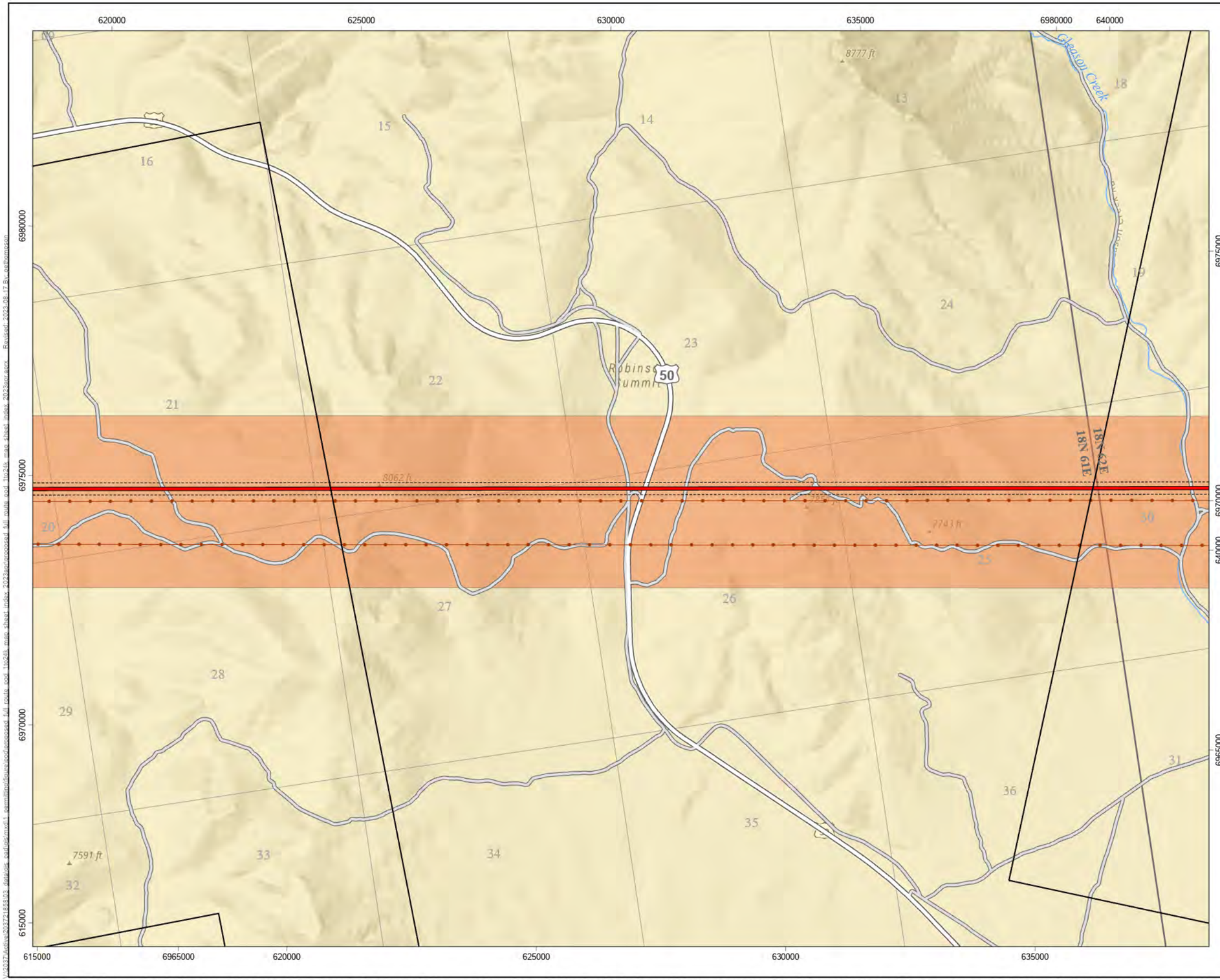

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N

0 0.25 0.5 Miles
(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: U.S. or State Highway
- Road: Local, Neighborhood, Rural or City Street
- Waterway: Stream/River, Perennial

Land Jurisdiction

- Bureau of Land Management (BLM)
- Township Boundary
- Section Boundary

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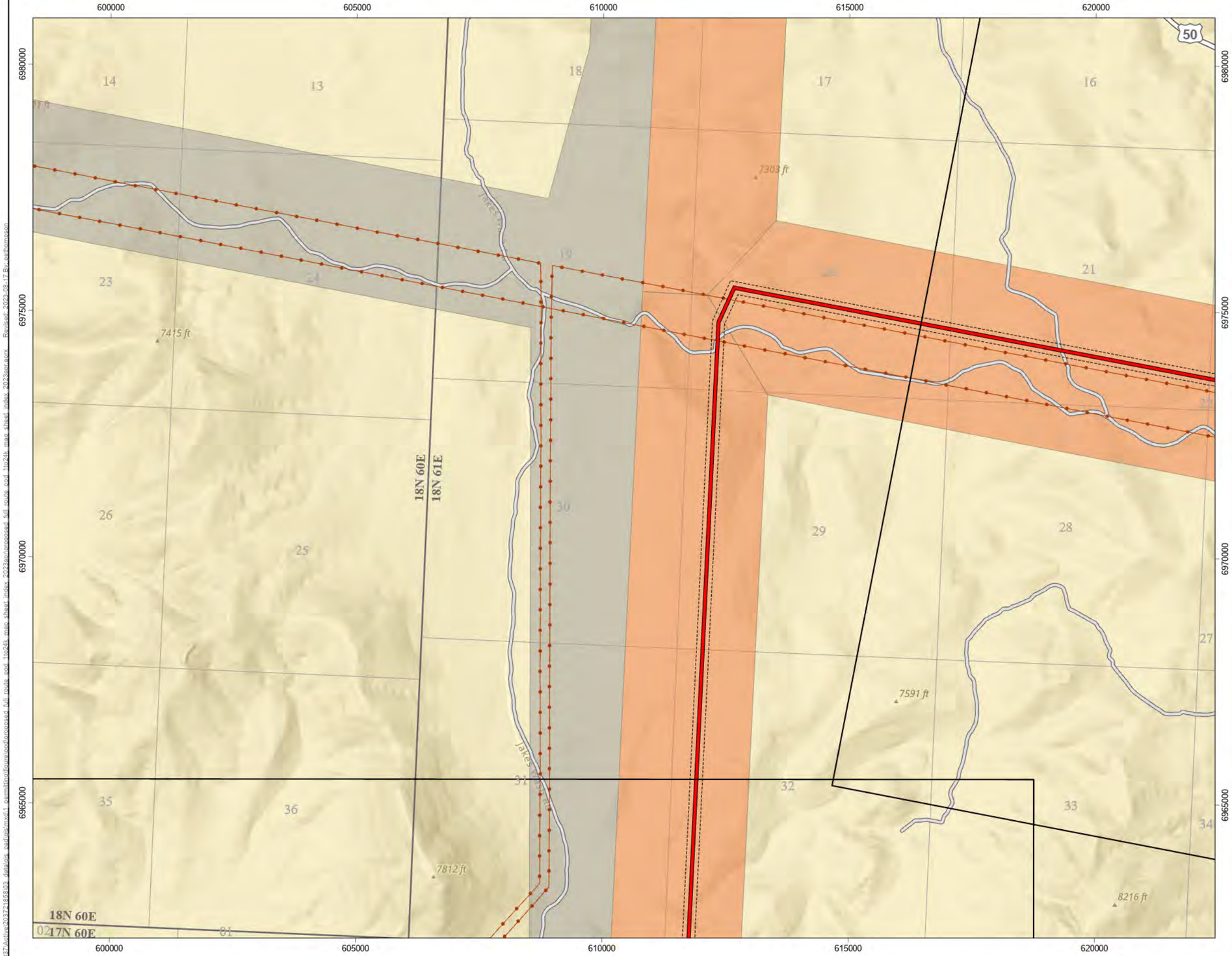

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TransCanyon, LLC
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Juab & Millard, Utah

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IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: U.S. or State Highway
- Road: Local, Neighborhood, Rural or City Street

Land Jurisdiction

- Bureau of Land Management (BLM)
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TRANSCANYON

595000 600000 605000 610000 615000

6965000 6960000 6955000 6950000

18N 60E
17N 60E

18N 61E
17N 61E

18N 60E
18N 61E

17N 60E
17N 61E

7812 ft

7373 ft

7254 ft

34 35 36 31 32 33
03 02 01 06 05 04
10 11 07 08 09
15 14 13 18 17 16
22 23 24 19 20 21
12

Robinson Summit Substation Expansion

Thirty Mile / Robinson Summit

595000 600000 605000 610000 615000

Figure No.

A-1

Title

Proposed Route Alignment Route Detail

Client/Project

TransCanyon, LLC
TransCanyon Cross-Tie 500-kV Transmission Line

Project Location

White Pine, Nevada
Juab & Millard, Utah

Prepared by PT on 2023-04-26
TR by AB on 2023-04-27
IR by GB on 2023-04-28

N

0 0.25 0.5 Miles

(At original document size of 11x17)
1:4,250,000

- Proposed Route Alignment
- Proposed Route Alignment, ROW
- Transmission Line, Existing
- Substation
- Substation Expansion (Planned)

Energy Corridor

- Section 368 Corridor, Designated
- Bureau of Land Management Corridor
- Road: Local, Neighborhood, Rural or City Street

Land Jurisdiction

- Bureau of Land Management (BLM)
- Township Boundary
- Section Boundary

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TRANSCANYON

Appendix B. Construction Considerations

Appendix B1. Structure Types

Cross-Tie 500-kV Transmission Project

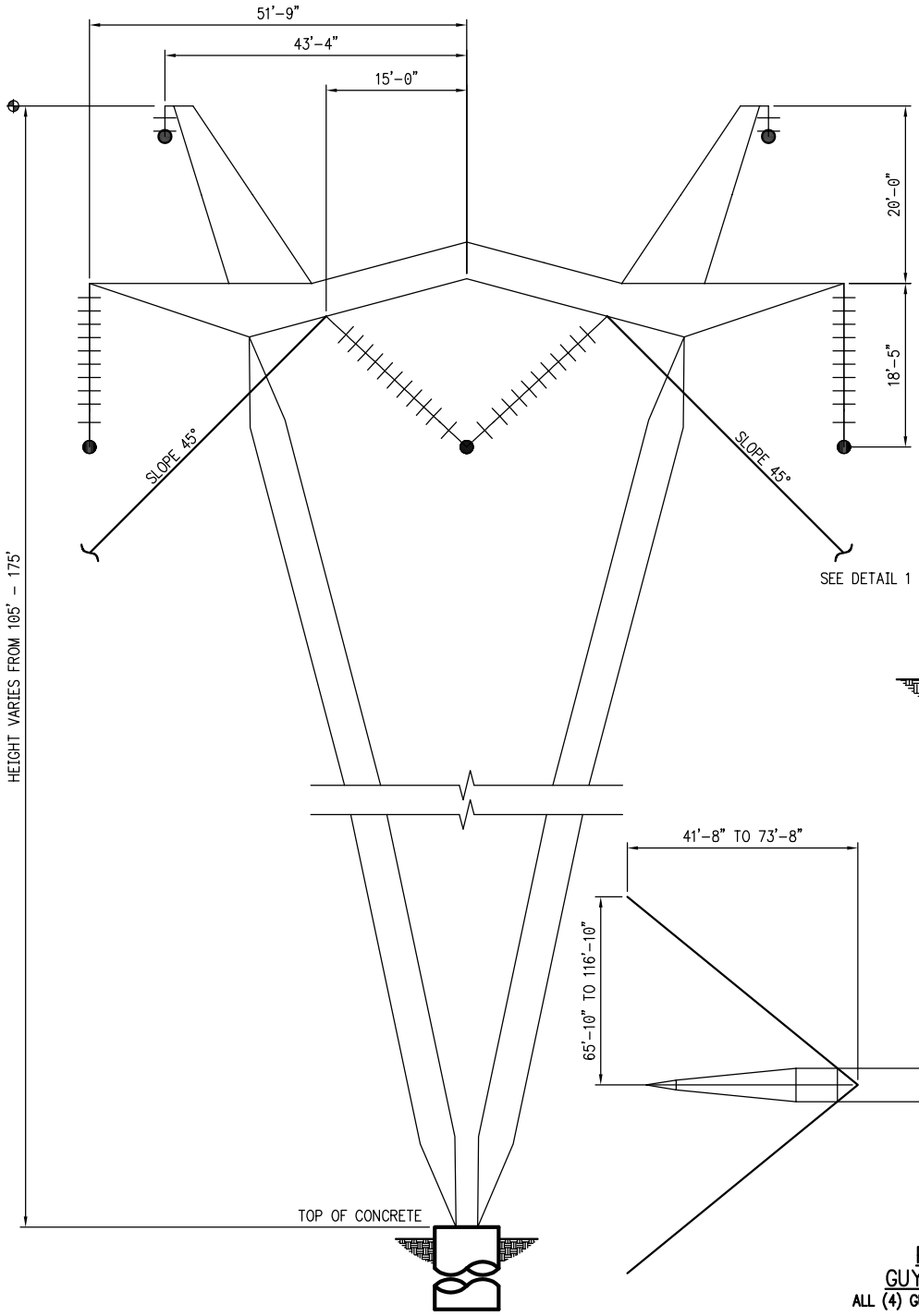
Plan of Development

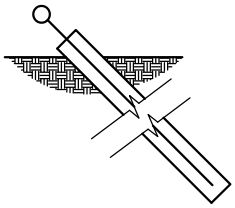
Appendix B1. Structure Types

Prepared by:

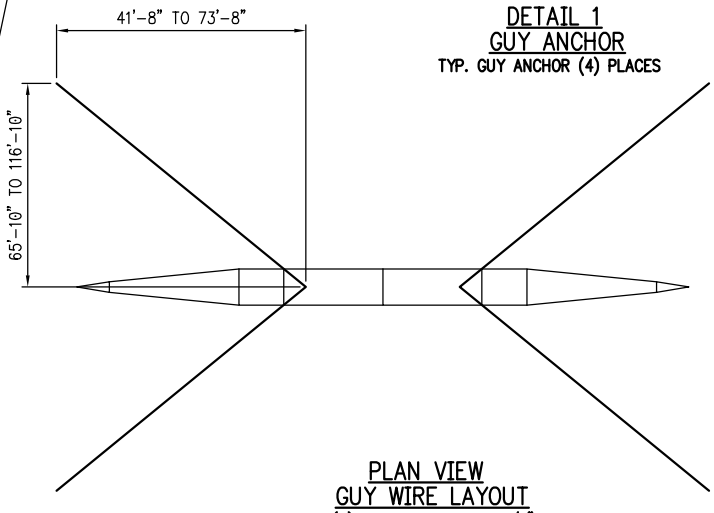
TransCanyon, LLC
400 East Van Buren
Street, Suite 350
Phoenix, Arizona 85004

July 2023





DETAIL 1
GUY ANCHOR
TYP. GUY ANCHOR (4) PLACES



PLAN VIEW
GUY WIRE LAYOUT
ALL (4) GUYS ARE SINGLE 7/8" EHS

NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
C	02/03/23	WO# ADDED FOUNDATIONS	J. SMITH/PEI	S. ANDERSON/PEI	-	-
B	07/20/22	WO# ADDED DIMENSIONAL INFORMATION	J. SMITH/PEI	S. ANDERSON/PEI	-	-
A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	-	-

REVISED 11.01.06 D. HURLEY CAD NO.: A-1.1.dwg

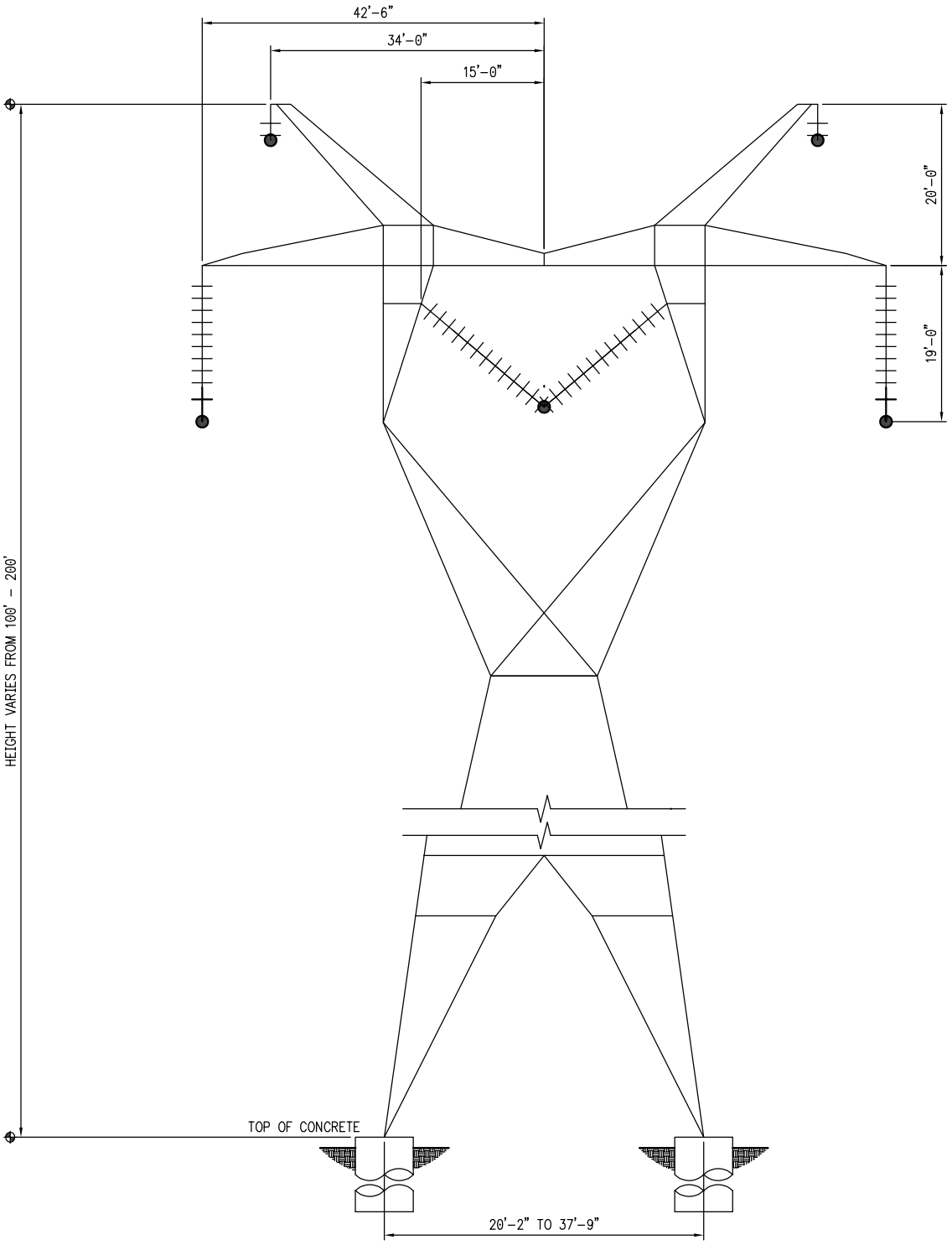
TRANSMISSION

DISCIPLINE ENG. –	PROJ/ER#	PL#
	DATE: 02/03/23	
PROJECT ENG. –	ENG: J. SMITH/PEI	DES: –
	DR: J. QUINTANA/PEI	CH: –
APPROVAL ENG. –	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE TYPICAL GUYED-V TOWER

SHEET		REVISION
1 of 1	A-1.1	C

TRANSCANYON



NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
C	02/03/23	WO# ADDED FOUNDATIONS	J. SMITH/PEI	S. ANDERSON/PEI	–	–
B	07/20/22	WO# ADDED DIMENSIONAL INFORMATION	J. SMITH/PEI	S. ANDERSON/PEI	–	–
A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	–	–

TRANSMISSION

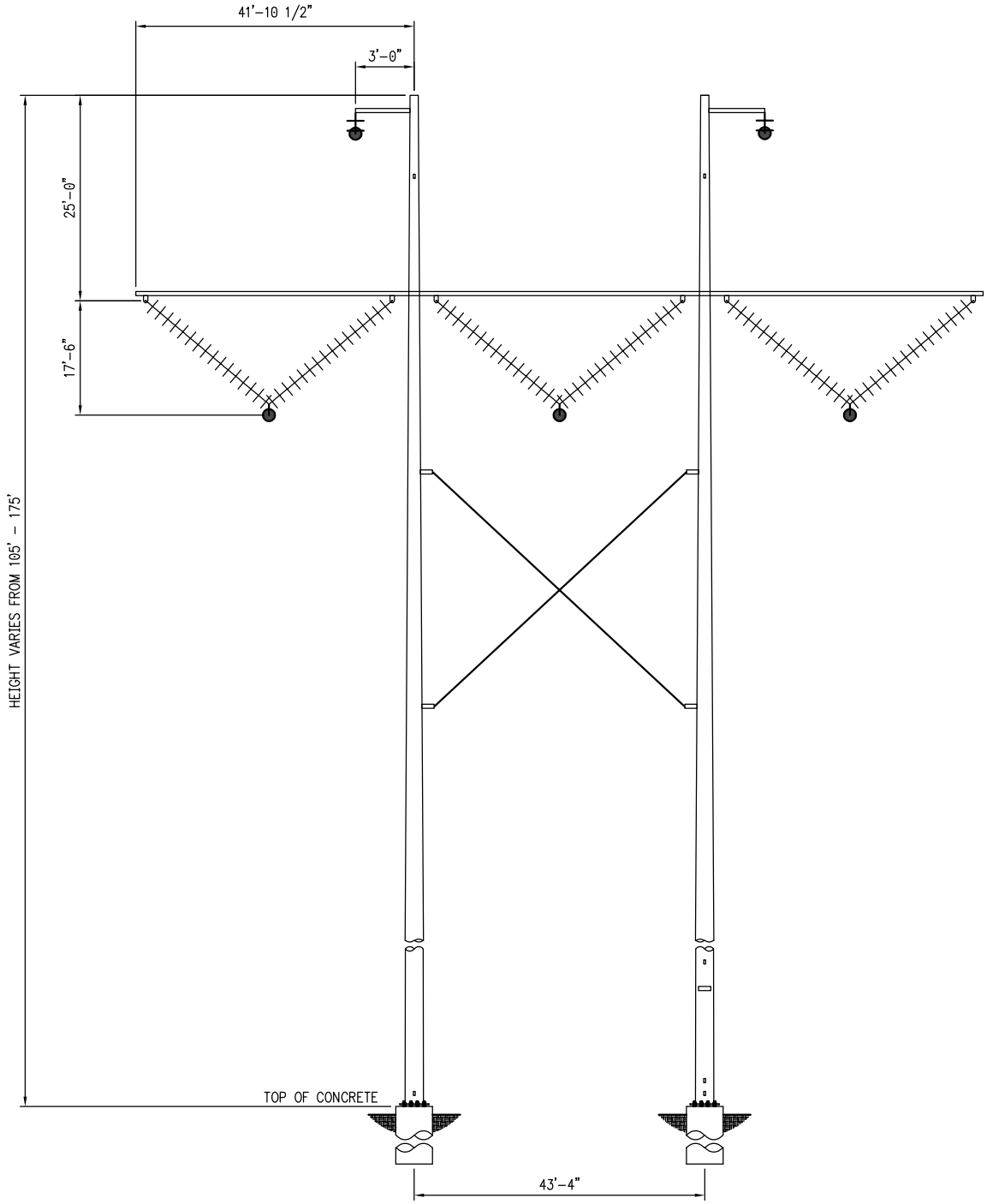
DISCIPLINE ENG. –	PROJ/ER#	PL#
	DATE: 02/03/23	
PROJECT ENG. –	ENG: J. SMITH/PEI	DES: –
	DR: J. QUINTANA/PEI	CH: –
APPROVAL ENG. –	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE TYPICAL LATTICE TANGENT TOWER

SHEET		REVISION
1 of 1	A-2.1	C

TRANSCANYON

REVISED 11.01.06 D. HURLEY CAD NO.: A-2.1.dwg



NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
B	07/29/22	WO# ADDED DIMENSIONAL INFORMATION	J. SMITH/PEI	S. ANDERSON/PEI	-	-
A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	-	-

TRANSMISSION

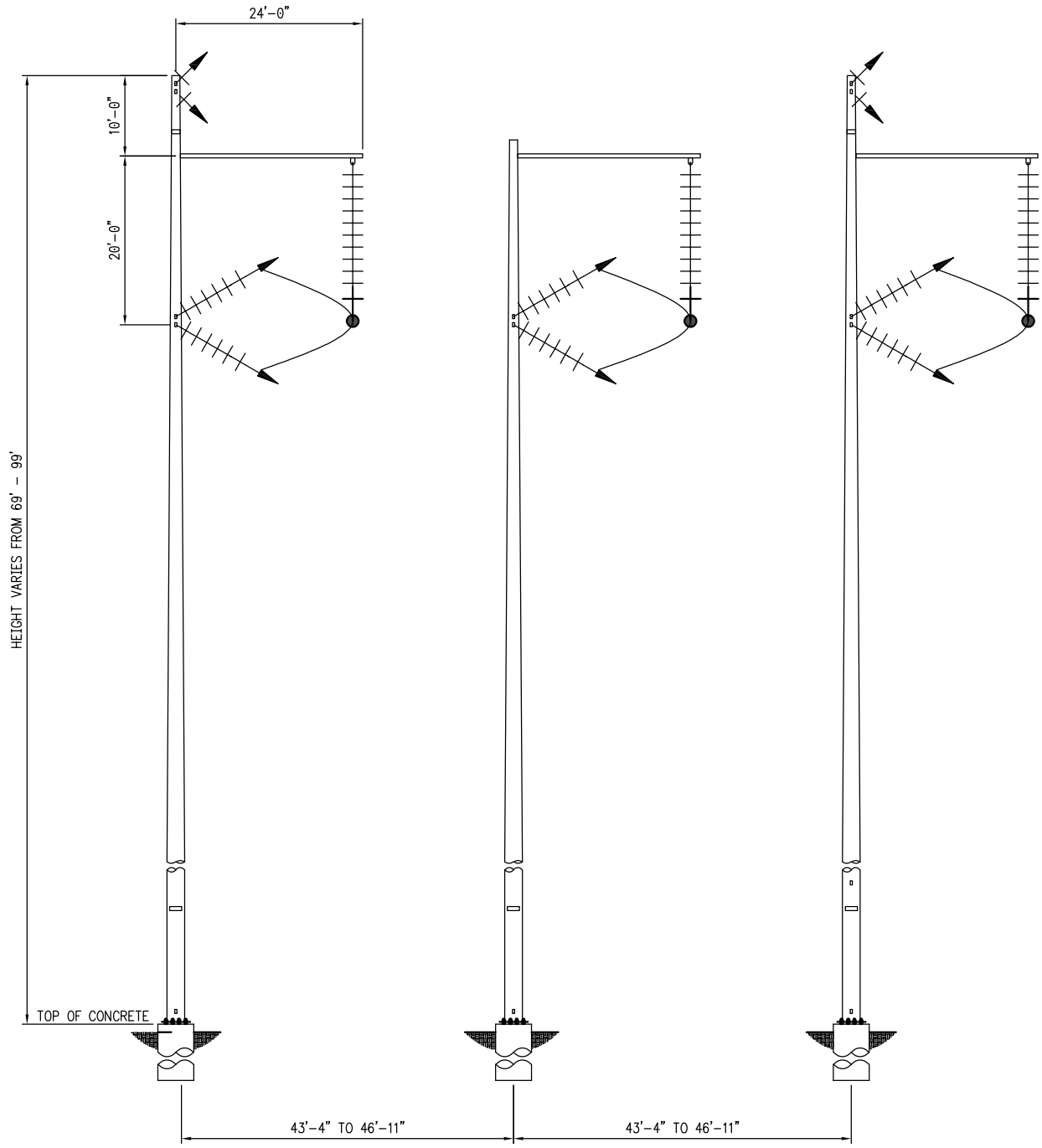
DISCIPLINE ENG.	PROJ/ER#	PL#	
-	DATE: 07/29/22		
PROJECT ENG.	ENG: J. SMITH/PEI	DES: -	
-	DR: J. QUINTANA/PEI	CH: -	
APPROVAL ENG.	SCALE: NONE		
-			

CROSS-TIE 500kV TRANSMISSION LINE TYPICAL STEEL H-FRAME

SHEET		REVISION
1 of 1	A-3.1	B

TRANSCANYON

REVISED 11.01.06 D. HURLEY CAD NO.: A-3.1.dwg



NOTE:

1. STEEL POLE SPACING VARIES PER LINE ANGLE TURNED TO MAINTAIN PHASE SPACING

NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
C	07/20/22	WO# ADDED DIMENSIONAL INFORMATION	J. SMITH/PEI	S. ANDERSON/PEI	-	-
B	06/10/22	WO# STRUCTURE HEIGHT RANGE UPDATE	J. SMITH/PEI	J. QUINTANA/PEI	-	-
A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	-	-

TRANSMISSION

DISCIPLINE ENG. -	PROJ/ER#	PL#
	DATE: 07/20/22	
PROJECT ENG. -	ENG: J. SMITH/PEI	DES: -
	DR: J. QUINTANA/PEI	CH: -
APPROVAL ENG. -	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE TYPICAL STEEL 3-POLE DEADEND

SHEET 1 of 1 | A-4.1 | REVISION C

TRANSCANYON

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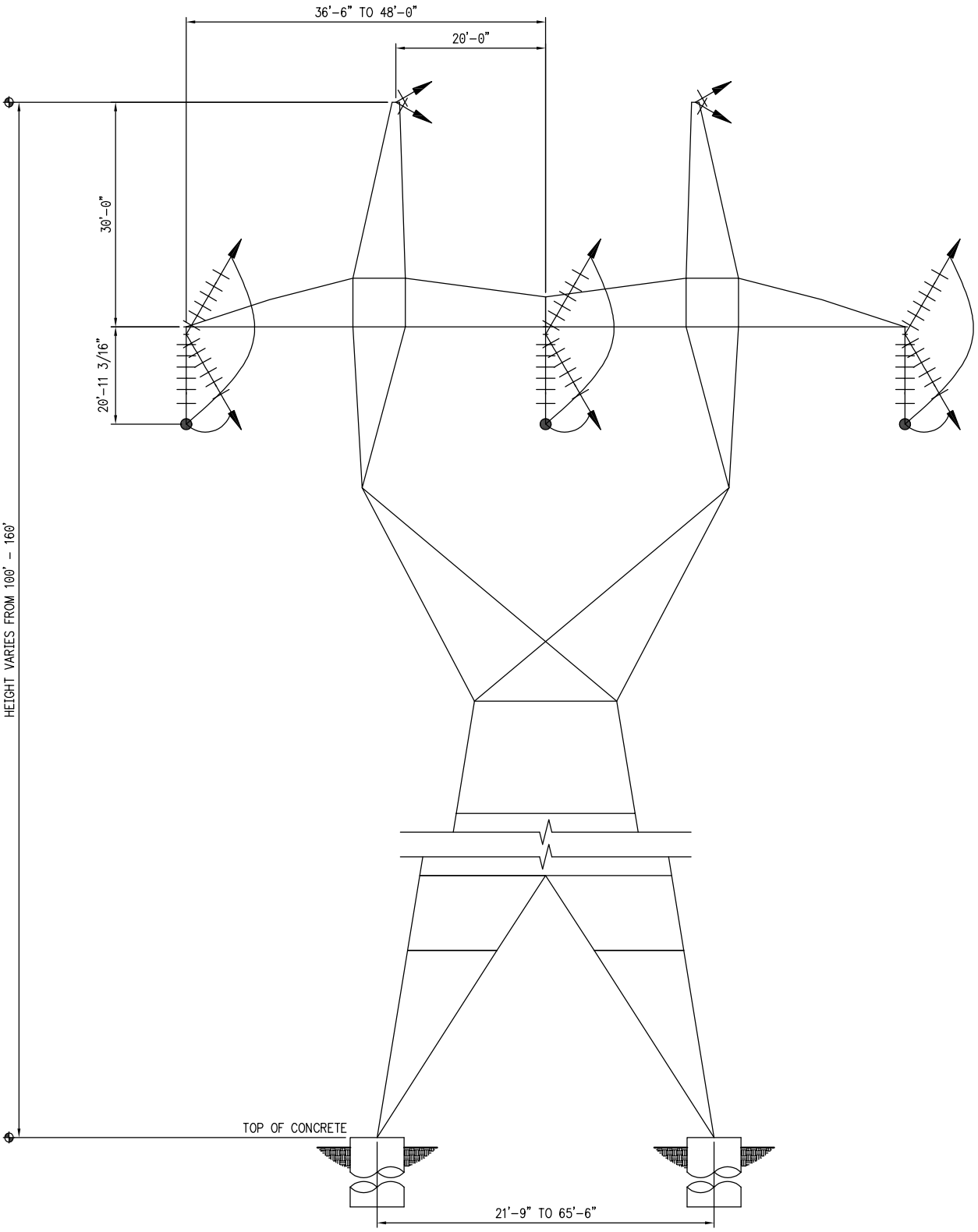

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B	07/20/22	WO# ADDED DIMENSIONAL INFORMATION	J. SMITH/PEI	S. ANDERSON/PEI	-	-
A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	-	-

TRANSMISSION

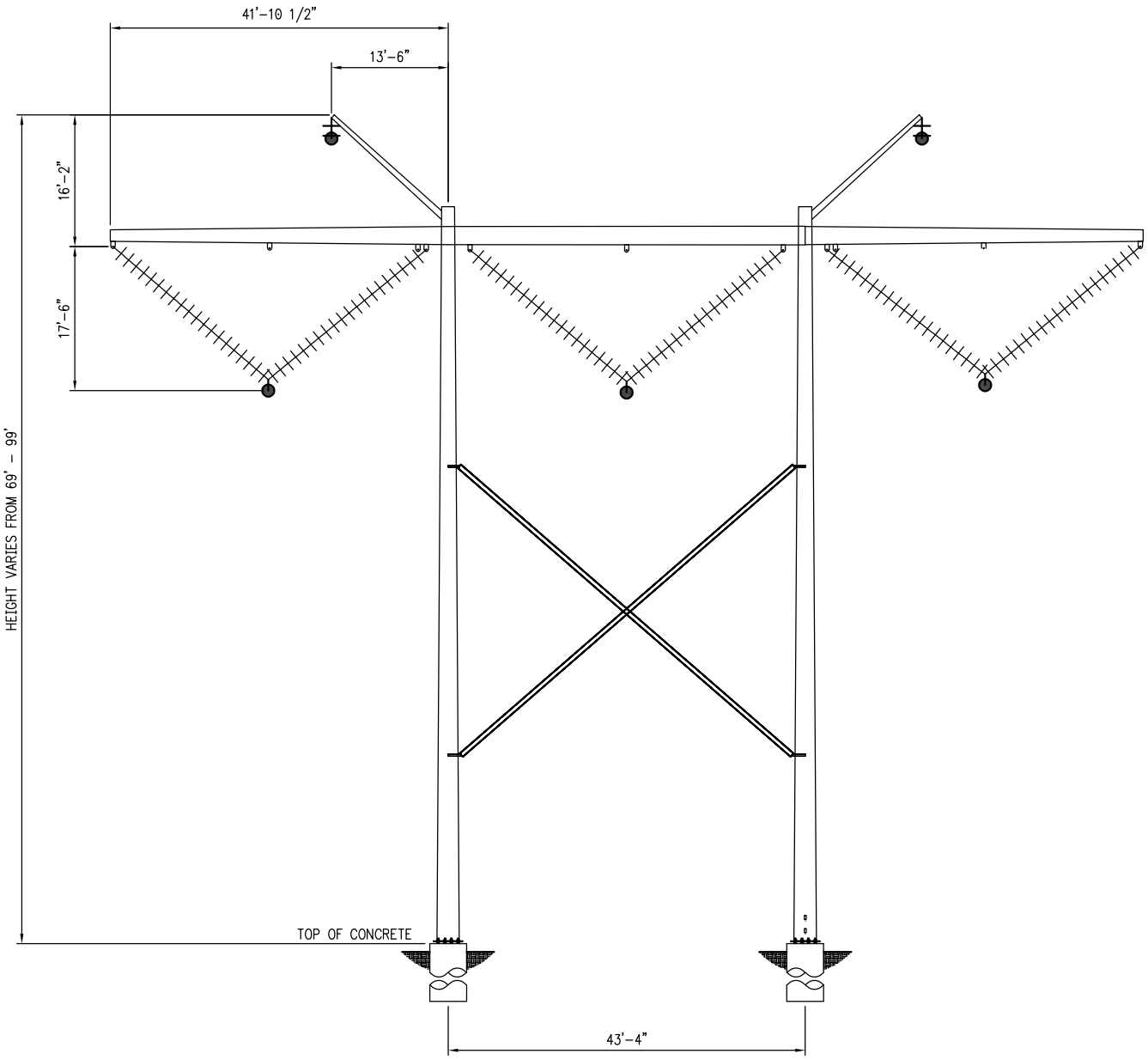
DISCIPLINE ENG. -	PROJ/ER#	PL#
	DATE: 02/03/23	
PROJECT ENG. -	ENG: J. SMITH/PEI	DES: -
	DR: J. QUINTANA/PEI	CH: -
APPROVAL ENG. -	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE TYPICAL LATTICE DEADEND

SHEET		REVISION
1 of 1	A-5.1	C

TRANSCANYON

REVISED 11.01.06 D. HURLEY CAD NO.: A-5.1.dwg



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A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	-	-

TRANSMISSION

DISCIPLINE ENG. -	PROJ/ER#	PL#
	DATE: 07/29/22	
PROJECT ENG. -	ENG: J. SMITH/PEI	DES: -
	DR: J. QUINTANA/PEI	CH: -
APPROVAL ENG. -	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE RESTRICTED HEIGHT STEEL H-FRAME

SHEET 1 of 1 | **A-6.1** | REVISION C

TRANSCANYON

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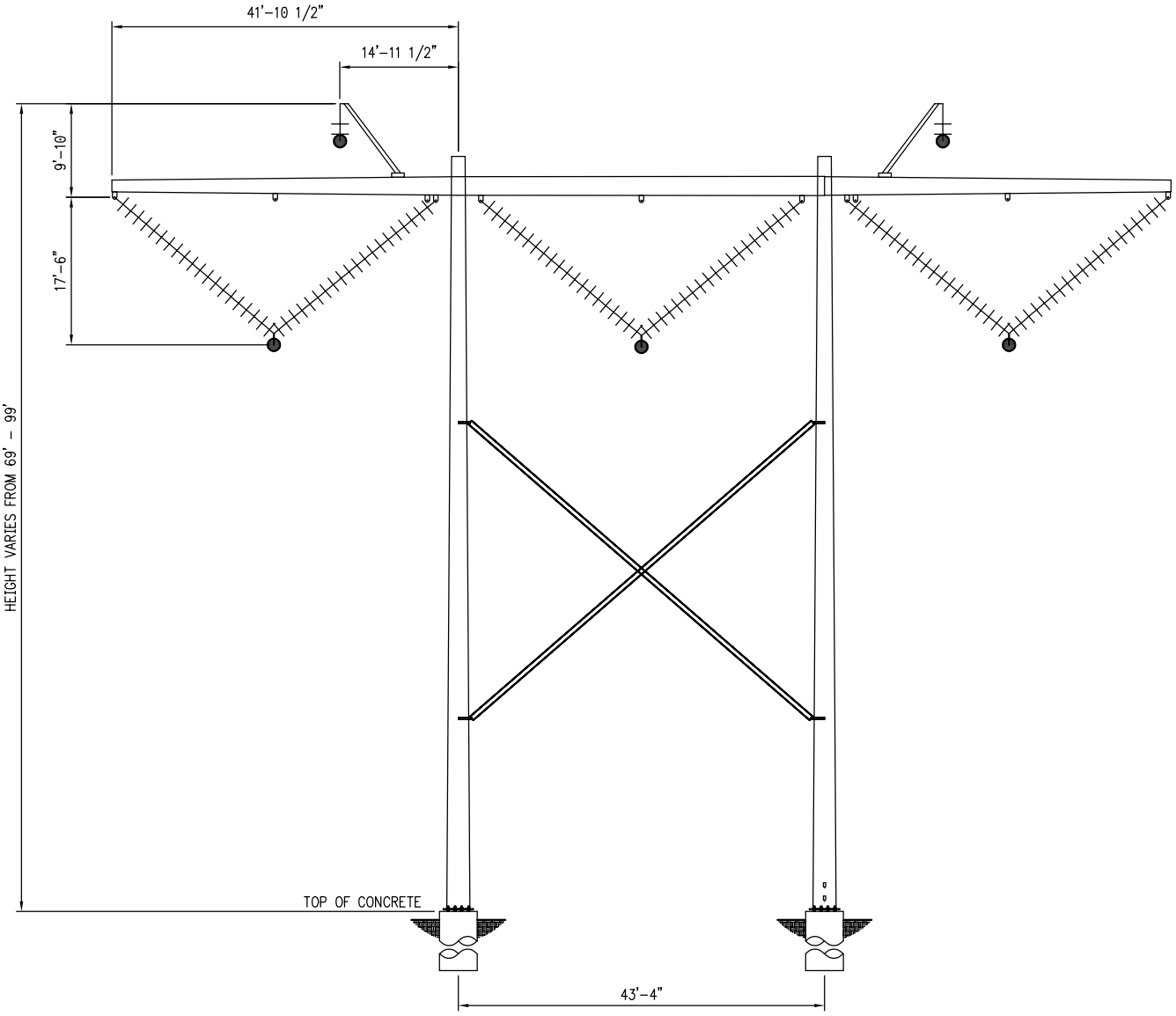

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B	06/10/22	WO# STRUCTURE HEIGHT RANGE UPDATE	J. SMITH/PEI	J. QUINTANA/PEI	–	–
A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	–	–

TRANSMISSION

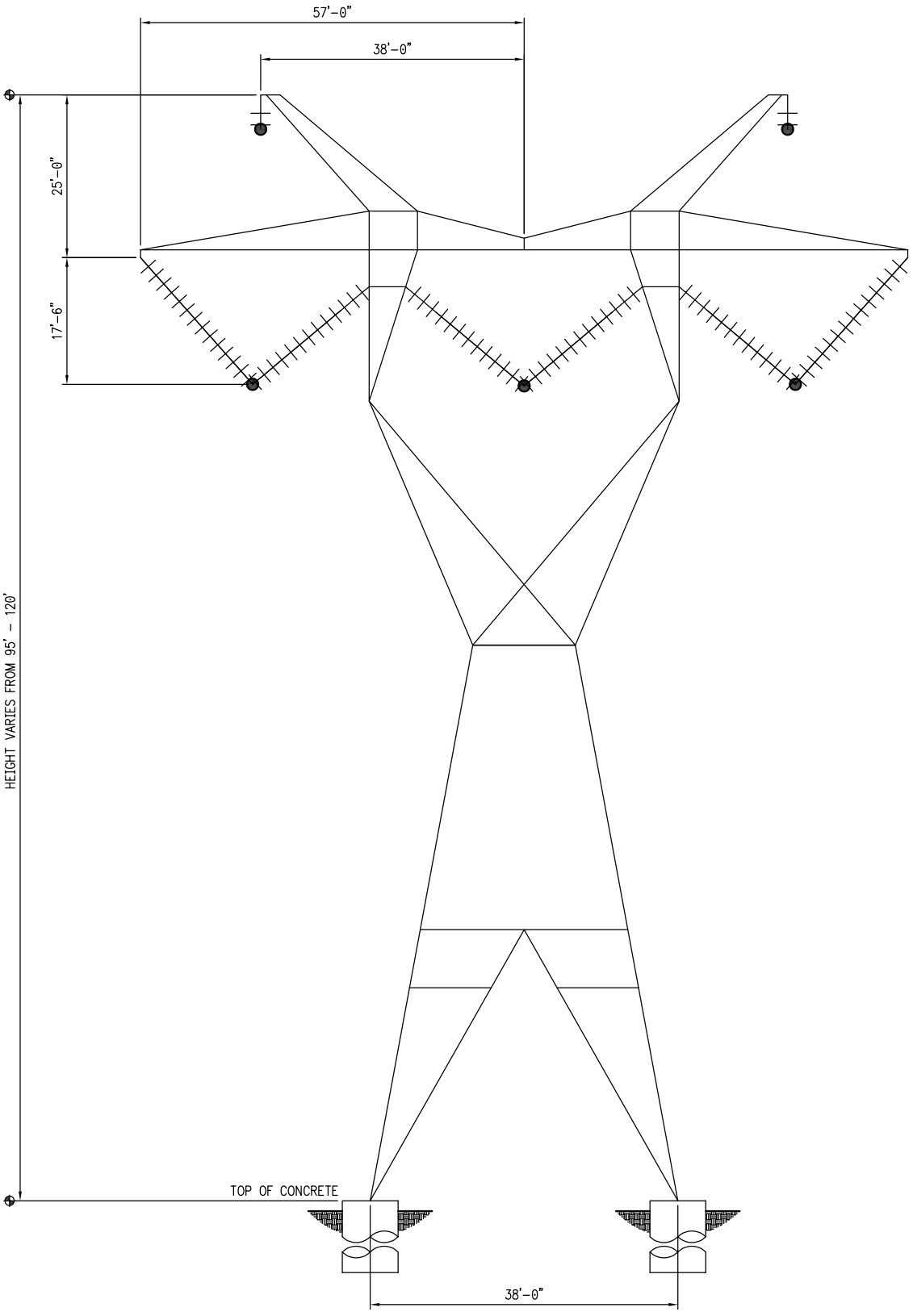
DISCIPLINE ENG. –	PROJ/ER#	PL#
	DATE: 07/20/22	
PROJECT ENG. –	ENG: J. SMITH/PEI	DES: –
	DR: J. QUINTANA/PEI	CH: –
APPROVAL ENG. –	SCALE: NONE	

CROSS–TIE 500kV TRANSMISSION LINE RESTRICTED HEIGHT COMPACT STEEL H–FRAME

SHEET		REVISION
1 of 1	A–7.1	C

TRANSCANYON

REVISED 11.01.06 D. HURLEY CAD NO.: A–7.1.dwg



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B	07/29/22	WO# ADDED DIMENSIONAL INFORMATION	J. SMITH/PEI	S. ANDERSON/PEI	–	–
A	08/05/21	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	–	–

TRANSMISSION

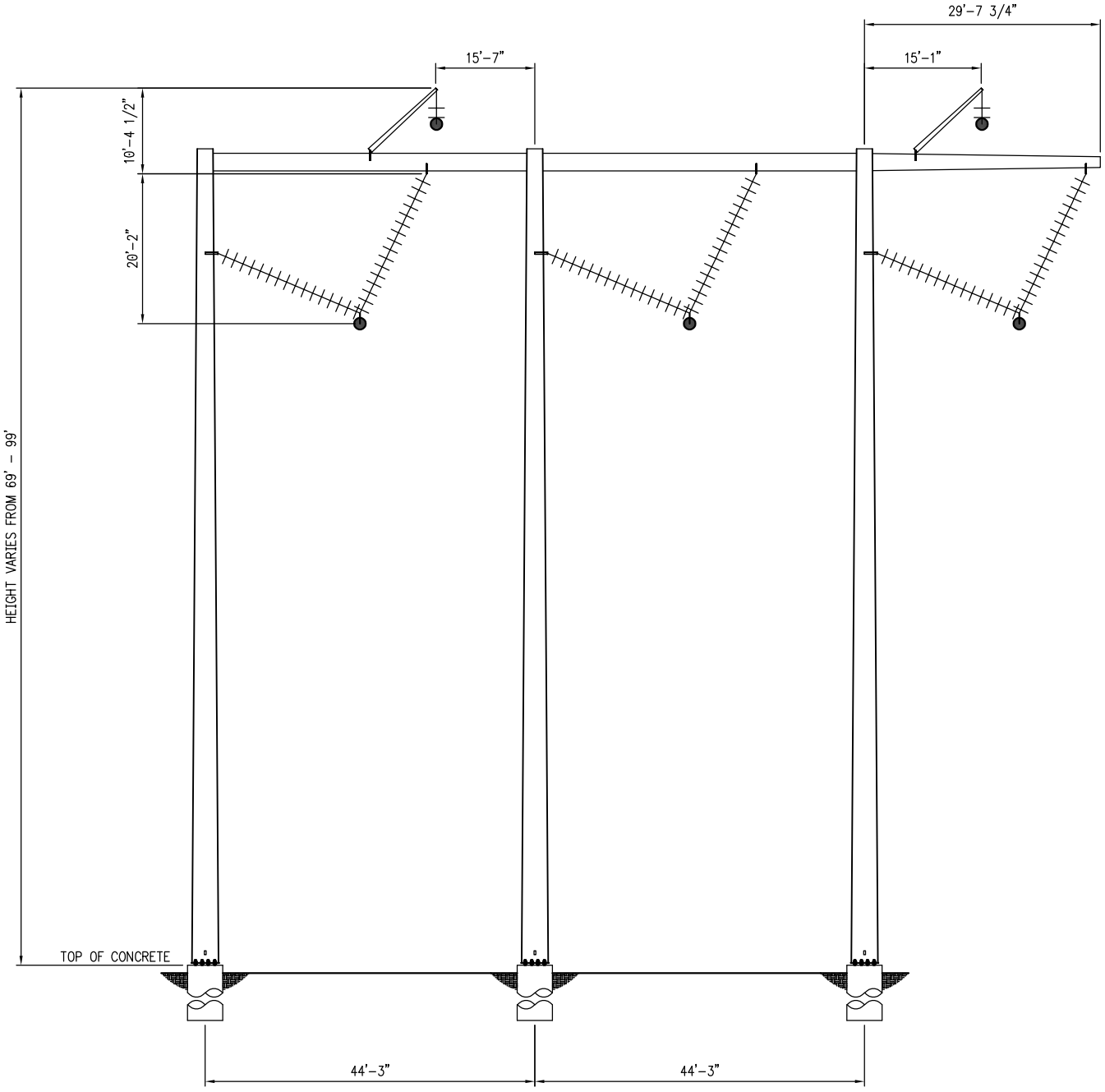
DISCIPLINE ENG. –	PROJ/ER#	PL#
	DATE: 02/03/23	
PROJECT ENG. –	ENG: J. SMITH/PEI	DES: –
	DR: J. QUINTANA/PEI	CH: –
APPROVAL ENG. –	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE RESTRICTED HEIGHT LATTICE TANGENT TOWER

SHEET		REVISION
1 of 1	A-8.1	C

TRANSCANYON

REVISED 11.01.06 D. HURLEY CAD NO.: 19ctA-8.1.dwg



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A	06/10/22	WO# ISSUED FOR REVIEW	J. SMITH/PEI	J. QUINTANA/PEI	-	-

TRANSMISSION

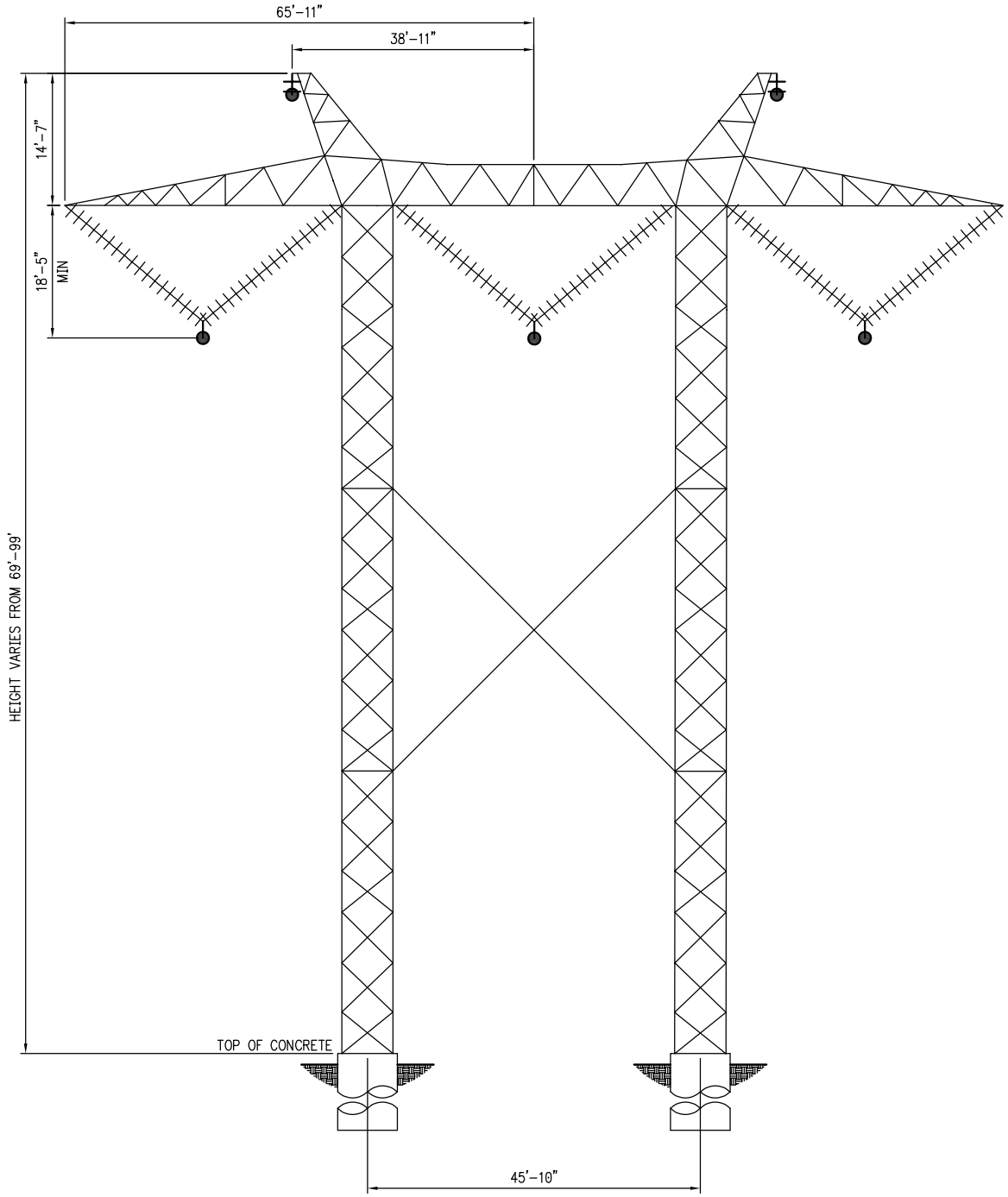
DISCIPLINE ENG. -	PROJ/ER#	PL#
	DATE: 07/20/22	
PROJECT ENG. -	ENG: J. SMITH/PEI	DES: -
	DR: J. QUINTANA/PEI	CH: -
APPROVAL ENG. -	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE
TYPICAL STEEL 3-POLE RUNNING ANGLE

SHEET		REVISION
1 of 1	A-9.1	B

TRANSCANYON

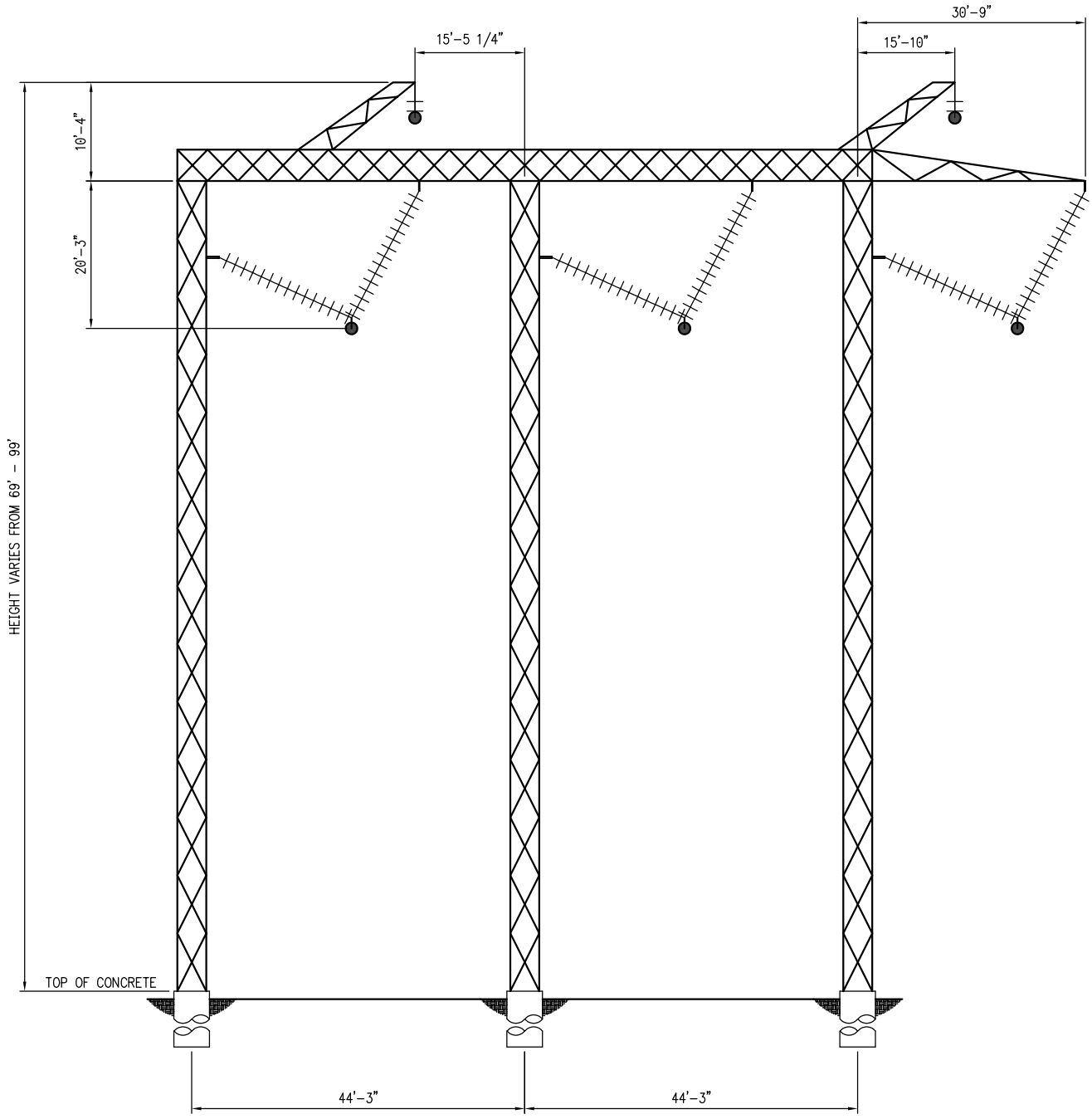
REVISED 11.01.06 D. HURLEY CAD NO.: A-9.1.dwg



NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
A	10/21/22	WO# ISSUED FOR REVIEW	J. SMITH/PEI	S. ANDERSON/PEI	-	-

TRANSMISSION		**CROSS-TIE 500kV TRANSMISSION LINE RESTRICTED HEIGHT TYPICAL LATTICE H-FRAME**	TRANSCANYON
DISCIPLINE ENG. -	PROJ/ER# PL# DATE: 09/13/22		
PROJECT ENG. -	ENG: J. SMITH/PEI DES: - DR: S. ANDERSON/PEI CH: -		
APPROVAL ENG. -	SCALE: NONE	SHEET 1 of 1 — A-10.1 — REVISION A	

REVISED 11.01.06 D. HURLEY CAD NO.: A-10.1.dwg



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A	05/05/23	WO# ISSUED FOR REVIEW	J. SMITH/PEI	S. ANDERSON/PEI	-	-

TRANSMISSION

DISCIPLINE ENG. -	PROJ/ER#	PL#
	DATE: 04/28/23	
PROJECT ENG. -	ENG: J. SMITH/PEI	DES: -
	DR: J. QUINTANA/PEI	CH: -
APPROVAL ENG. -	SCALE: NONE	

CROSS-TIE 500kV TRANSMISSION LINE TYPICAL LATTICE RUNNING ANGLE

SHEET		REVISION
1 of 1	A-11.1	A

TRANSCANYON

REVISED 11.01.06 D. HURLEY CAD NO.: A-11.1.dwg

Appendix B2. Flagging, Fencing, and Signage Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix B2. Flagging, Fencing, and Signage Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren
Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Attachments

Tables

Abbreviations

BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
Plan	Flagging, Fencing, and Signage Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-way

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Flagging, Fencing, and Signage Plan (Plan) describes the methods that will delineate the Project limits of disturbance and protect environmental resources during Project construction. (However, if and when applicable, this Plan could be implemented during operations and maintenance activities as well.) These methods are intended to ensure access for personnel from the Company, the Construction Contractor(s), the Bureau of Land Management (BLM), the U.S. Department of Agriculture Forest Service (Forest Service), the Compliance Inspection Contractor (CIC), and other entities or individuals on the Project for approved areas.

The measures described in this Plan are an integral part of the environmental compliance program for avoiding and minimizing impacts on environmental resources. This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the BLM and Forest Service record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use authorization before issuance of the notices to proceed and commencement of construction.

2 REGULATORY REQUIREMENTS

Some of the environmental protection and/or selective measures hinge on the adequate field marking of work areas and/or sensitive resource areas to avoid or reduce impacts. These measures include flagging or fencing requirements for the purpose of avoiding/minimizing impacts to vegetative cover, water quality, cultural resources, and special-status species and minimize the spread of invasive weeds located within the states of Utah and Nevada.

3 METHODS

3.1 Demarcate Project Facilities

Field markings as identified in Table 1 will be installed before the start of Project construction. Flagging, signage, and staking shall be completed by the Construction Contractor(s) and verified by the CIC for applicable Project facilities/features and sensitive resource and spatial restriction areas. All Project features that require field marking will be marked by the Construction Contractor(s) to demarcate the limits of approved work areas. If the demarcated areas will exceed the approved dimensions for Project facilities, the Construction Contractor(s) will submit a variance request and follow the variance process described in Appendix B6: Environmental Compliance Inspection Plan.

Private property owners and State lands will be given notice by the Construction Contractor(s) in advance of surveyingand staking taking place.

3.2 Environmental Exclusions

Signs, flags, and/or fencing will be used to establish work areas to protect environmental resources inthe vicinity of construction activities. A system of standardized and simplified markings, as identified in Table 1 will be used to ensure consistent field marking interpretation during construction andto minimize the risk of highlighting more sensitive types of environmental resources that could be targeted by the public. The Construction Contractor(s) shall complete the measures described in Table 1 prior to construction.

3.2.1 Signing

Signs will be used to help identify Project features. Signs will be a minimum of 8.5 × 11 inches on durable material. Signs will be installed on metal posts, wooden stakes, or attached to exclusion fencing/roping, as appropriate. Background colors will vary to enhance sign recognition from a distance.

Table 1 provides standards for marking Project features that will be needed during Project construction. Attachment 1: Typical Signage includes the size and configuration of typical sign layouts. Signs for sensitive resource areas will be oriented for visibility from both directions of likely travel.

3.2.2 Flagging

Survey flagging will be used to delineate the limits of applicable work areas. Survey flagging is typically surveyor's ribbon tied to wooden stakes, metal posts, or vegetation. Flagging tied to vegetation would only be used when the height of the surrounding vegetation blocks the view of the stakes or posts. Survey flagging may be used to temporarily demarcate environmental resource locations situated a safe distance from planned construction activities but will not be used to define resource exclusion areas proximate to planned construction activities.

The respective federal land management agencies' Authorized Officers (or their designated representatives) or the CIC, as needed, will determine whether flagging or fencing (as described below) is the appropriate protective device for a given location. Flagging color will conform to the requirements of Table 1.

3.2.3 Fencing

To delineate the limits of construction near sensitive resources requiring a high level of protection from Project disturbance, a combination of one or more of the following fencing materials will be temporarily installed and maintained by the Construction Contractor(s) based on factors such as durability and effectiveness:

- Rope (¼ inch in diameter in yellow or orange)
- Plastic or fabric tape
- Safety fencing (plastic orange or red mesh at least 24 inches wide and at least 18 inches off the ground to facilitate travel by small animals)

Roping with periodic marking by exclusionary signs or lengths of tape is a highly visible and effective exclusion device. Roping, tape, and safety fence will be installed using metal posts for increased durability and in areas with compact or rocky soils. If construction in a wetland is necessary, the boundaries of the approved disturbance area will be demarcated so impacts are limited to the area authorized. If a spatial restriction encroaches into a work area, only the portions that overlap with the

work area will be delineated and signed as an exclusion zone. The Construction Contractor(s) will be responsible for monitoring the fence condition and ensuring the fence remains in good repair. After construction, the temporary fencing will be removed by the Construction Contractor(s).

Table 1. Field Marking Scheme

Project Facility or Feature	Flagging or Sign Colors	Sign Text	What to Do
Project ROW	To be decided by Construction Contractor(s)	Not Applicable	Flag the Project ROW per the final Project design and as specified in POD Appendix A. Do not drive vehicles or equipment outside of the designated corridor.
Project centerline	To be decided by Construction Contractor(s)	Not Applicable	Install "do not disturb" survey stakes marking the edges of construction and the limits of the areas cleared to work within.
Structure work areas	To be decided by Construction Contractor(s)	Not Applicable	Flag structure work areas per the final Project design and as specified in POD Appendix A: Detailed Route Alignment Figures.
Structure locations	To be decided by Construction Contractor(s)	Not Applicable	Install "do not disturb" survey stakes marking the edges of construction and the limits of the areas cleared to work within.
Structure offsets	To be decided by Construction Contractor(s)	Not Applicable	Install "do not disturb" survey stakes marking the edges of construction and the limits of the areas cleared to work within.
Temporary work areas (wire pulling/tensioning sites, multipurpose construction yards, etc.)	To be decided by Construction Contractor(s)	Not Applicable	Flag temporary work areas per the final Project design and as specified in POD Appendix A: Detailed Route Alignment Figures.
Communication regeneration station	To be decided by Construction Contractor(s)	Not Applicable	Install "do not disturb" survey stakes marking the edges of construction and the limits of the areas cleared to work within.
Access roads	To be decided by Construction Contractor(s)	Access Road # Speed Limit X mph Cross-Tie Transmission Project	Flag and sign access roads per the final Project design and as specified in Appendices B3: Traffic and transportation Plan and B4: Project Construction Plan and depicted in Appendix A: Detailed Route Alignment Figures of the POD. Speed limits defined in the ACEPMs.

Project Facility or Feature	Flagging or Sign Colors	Sign Text	What to Do
Overland access road	To be decided by Construction Contractor(s)	Overland Access Road # – Construction Access Only Cross-Tie Transmission Project	Flag and sign overland access roads per the final Project design and as depicted in POD Appendix A: Detailed Route Alignment Figures.
Turnout areas	To be decided by Construction Contractor(s)	Turnout # Cross-Tie Transmission Project	Flag and sign approved turnout areas.
Turning radii	To be decided by Construction Contractor(s)	Not Applicable	Flag access road turning radii per the final Project design and as depicted in POD Appendix A: Detailed Route Alignment Figures.
Nonauthorized access road	To be decided by Construction Contractor(s)	Attention: Project Personnel Only Do Not Enter Not an Authorized Access Road Cross-Tie Transmission Project	Do not drive vehicles or equipment on unauthorized roads.
Parking Areas	To be decided by Construction Contractor(s)	Not Applicable	Install “do not disturb” survey stakes marking the edges of construction and the limits of the areas cleared to work within.
Sensitive environmental areas	Yellow flag or fencing to be decided by Construction Contractor(s)	Keep Out Cross-Tie Transmission Project	Flag/fence work areas adjacent to sensitive areas to avoid these items/areas. Do not drive vehicles or equipment near flagged/fenced items or within flagged/fenced areas.
Reclamation areas	Brown	Reclamation in Progress No Vehicle Traffic Allowed Cross-Tie Transmission Project	Flag and avoid these items/areas. Do not drive vehicles or equipment near flagged items or within flagged areas.
Topsoil storage	Not Applicable	Keep Off Topsoil Storage Cross-Tie Transmission Project	Store topsoil in an approved work area and install sign.
Invasive weed cleaning stations	Blue	Weed Cleaning Station # Cross-Tie Transmission Project	Signs will be posted at entry points into weed cleaning stations.

Project Facility or Feature	Flagging or Sign Colors	Sign Text	What to Do
Invasive weed treatment areas	To be decided by Construction Contractor(s)	Date of application: XX Date of safe re-entry: XX	Signs required if public notification is specified on the label of the product applied. Signs would be at least 8.5" x 11" in size.
Cadastral survey monument	To be decided by Construction Contractor(s)	Not Applicable	Protect in place.
No refueling areas	Not Applicable	No Refueling Within 328 Feet of Wetlands and Stream Banks Cross-Tie Transmission Project	Avoid refueling activities within 328 feet of wetlands and stream banks

Notes: Flagging, signage, and staking shall be completed by the Construction Contractor(s) and verified by the CIC for applicable Project facilities and sensitive resource and spatial restriction areas.
Construction Contractor(s) will stake all proposed tower center hub and footer locations, structure locations, and associated reference points and mark the centerline with stakes not to exceed 500 feet apart, as well as all road crossings.
Construction Contractor(s) will use staking intervals appropriate to the conditions observed in the field.
If maintenance of a field marking or fencing is needed in an active construction or access area, corrective action will be taken within 1 workday. The Construction Contractor(s) will be required to fix the issue within 24 hours or the situation will be deemed a noncompliance event and the noncompliance process described in Appendix B6: Environmental Compliance Inspection Plan will be followed.

4 INSTALLATION, MONITORING, AND MAINTENANCE OF FENCING, FLAGGING, AND SIGNAGE

The Construction Contractor(s) will be responsible for the installation and maintenance of the field marking of all applicable Project features and exclusion areas for the duration of construction activities. The field markings will be installed in advance of any Project construction activities, in coordination with the CIC and with the assistance of appropriate environmental monitors, to denote exclusionary zones. The CIC will be consulted if there is uncertainty as to the type or location of needed exclusion devices for a specific environmental resource.

Field marking monitoring by the Construction Contractor(s) and the CIC will include an ongoing assessment of the need for replacing or repairing field markings. Maintenance needs related to field markings and fencing will be corrected at the time of an observation or shortly thereafter. If maintenance of field markings or fencing is needed in an active construction or access area, corrective action will be taken within 1 workday. The Construction Contractor(s) will be required to fix the issue within 24 hours or the situation will be deemed a noncompliance event and the noncompliance process described in Appendix B6: Environmental Inspection Compliance Plan will be followed.

All flagging, signage, and staking will be removed by the Construction Contractor(s), and verified by the CIC, after completion of the Project as part of cleanup and reclamation activities.

5 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

This section describes practices intended to protect potential environmental and cultural resources through appropriate Project flagging, fencing, and signage to identify approved Project access and work areas, as well as sensitive resource areas where construction or access is to be excluded. To minimize the potential impacts from the Project, a suite of applicant-committed environmental protection measures (ACEPM) have been developed to address potential conflicts with environmental resources and to minimize the potential for conflicts with public health and safety. These ACEPMs can be found in Section 9 of the POD.

Attachment 1. Typical Signage

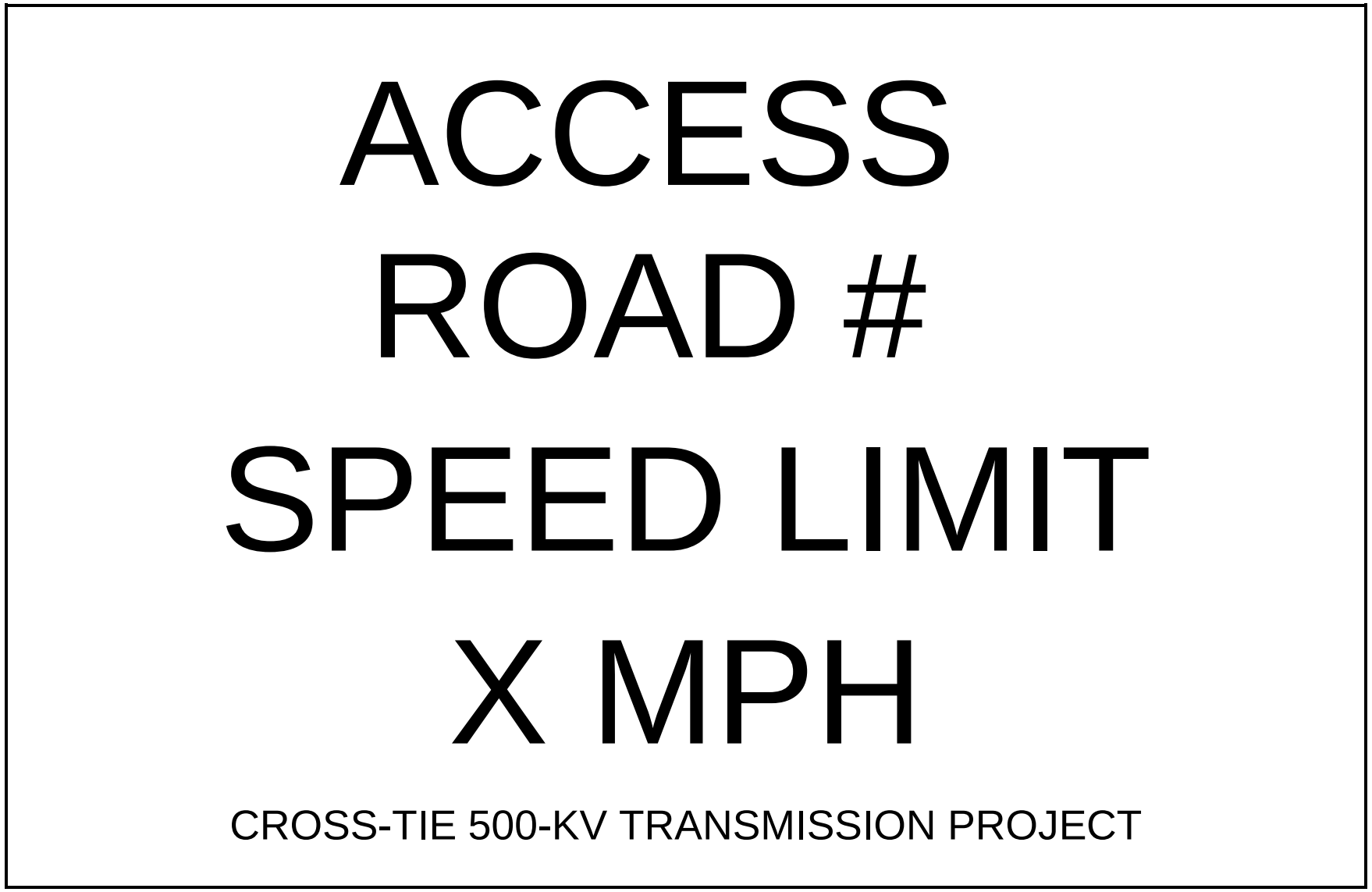

Figure B.2-1-1. Typical sign for Project access road.

Figure B.2-1-2. Typical sign for environmentally sensitive area.

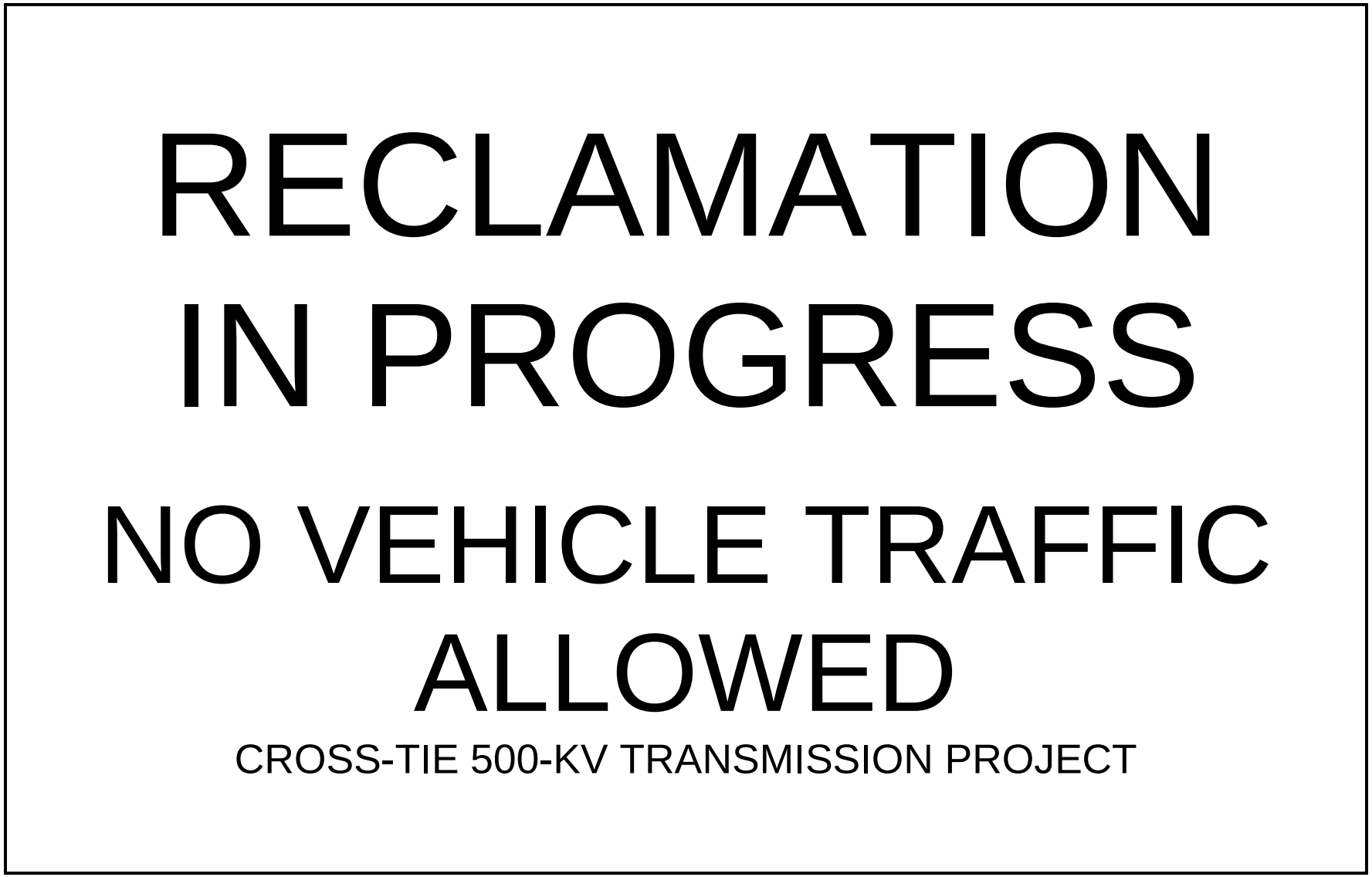

Figure B.2-1-3. Typical sign for reclamation in progress area.

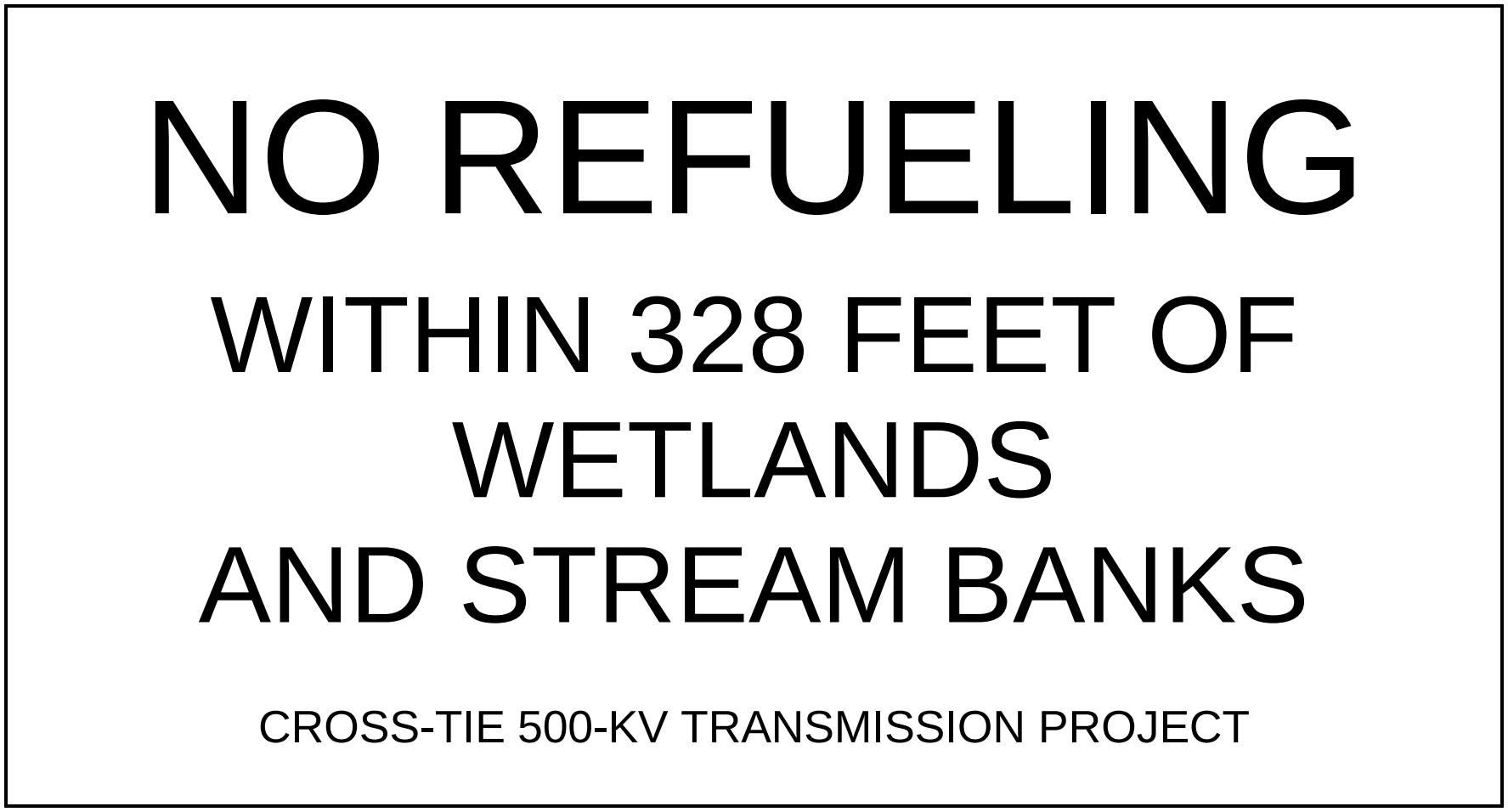

Figure B.2-1-4. Typical sign for no refueling area.

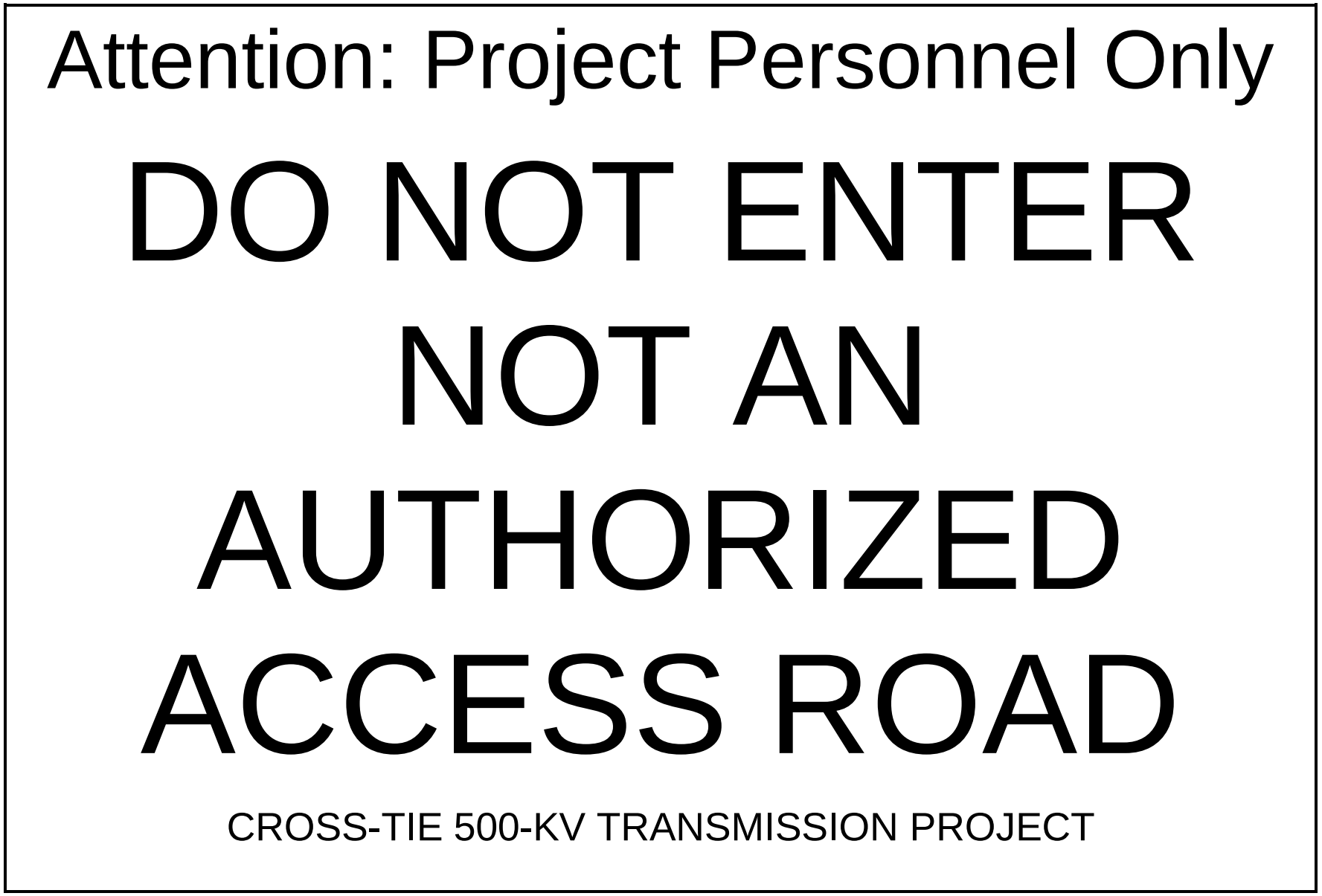

Figure B.2-1-5. Typical sign for unauthorized access road.

Figure B.2-1-6. Typical sign for weed cleaning station.

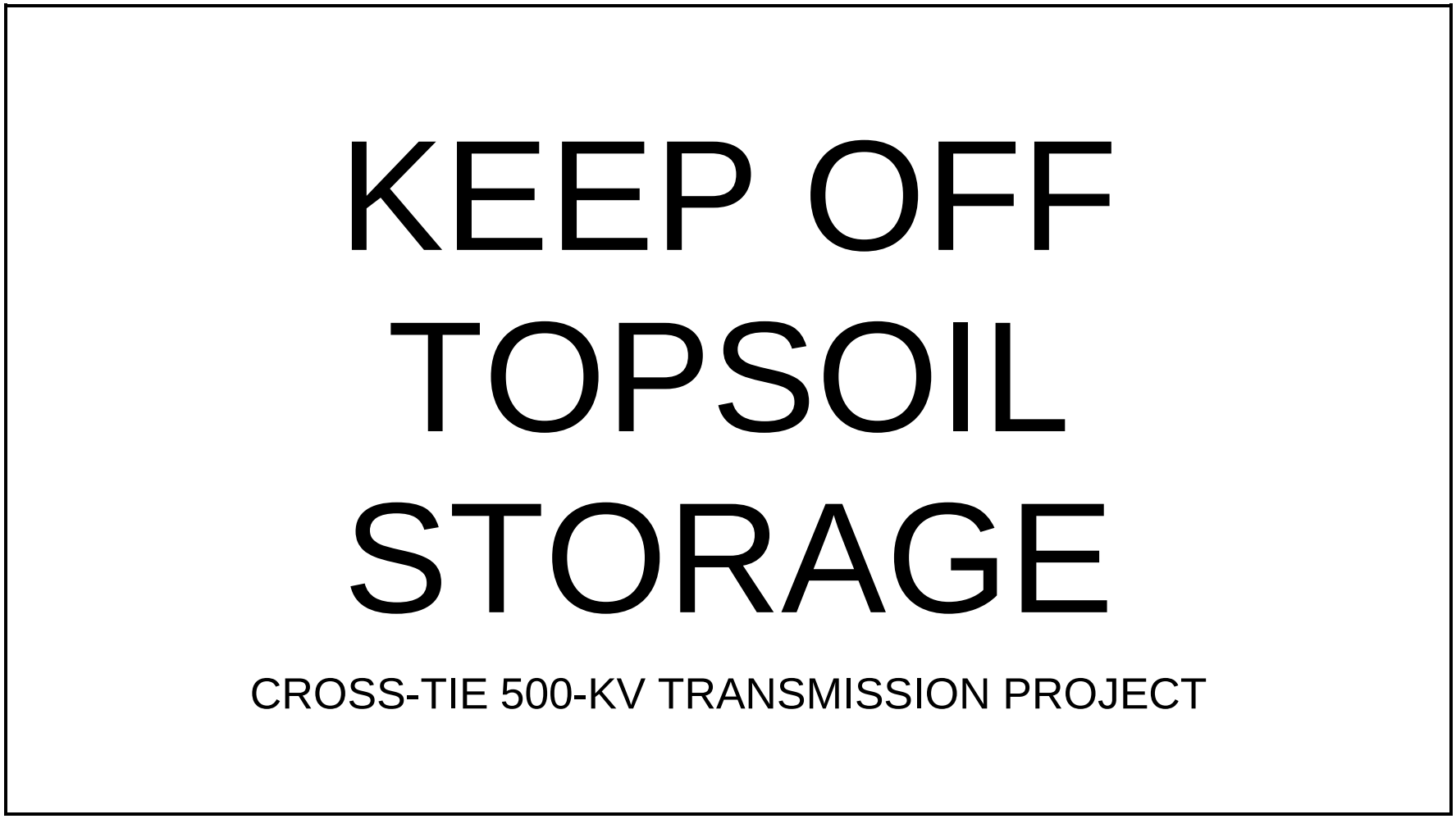

Figure B.2-1-7. Typical sign for topsoil storage.

Appendix B3. Traffic and Transportation Management Plan – DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix B3. Traffic and Transportation Management Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Tables

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measures
BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
mph	miles per hour
Plan	Traffic and Transportation Management Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-way

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Traffic and Transportation Management Plan (Plan) addresses regulatory compliance, traffic management practices, levels of right-of-way (ROW) access, and measures to help reduce impacts related to transportation and the construction of temporary and long-term access for the Project.

The measures described in this Plan are an integral part of the environmental compliance program for avoiding and minimizing impacts on environmental resources. This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM ROW grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

2 PURPOSE

The purpose of this Plan is to provide the BLM, the Forest Service, other public agencies, the Compliance Inspection Contractor (CIC), and the Construction Contractor(s) with a description of the types of access associated with the construction, operation, and maintenance of the Project. The goal of this Plan is also to minimize or avoid traffic- and transportation-related impacts from construction of the Project and associated access through applicant committed environmental protection measures (ACEPMs) on environmental resources, roads, travel, and road safety within Utah and Nevada.

3 REGULATORY

A number of agencies have jurisdiction over the traffic- and transportation-related components of the Project. At the federal level, these agencies include the BLM, the Forest Service, the Federal Highway Administration, the Federal Railroad Administration, the Federal Transit Administration, and the Federal Aviation Administration. At the state level, these agencies include the Utah and Nevada Departments of Transportation and the Utah and Nevada Highway Patrols. At the local level, law enforcement and road departments are located in the counties of Juab, Millard, and White Pine.

All appropriate traffic and transportation permitting related to the construction of the Project is required to be identified and obtained by the Company and/or the Construction Contractor(s) before the commencement of Project construction. In addition, the Construction Contractor(s) will coordinate relevant construction activities with applicable agencies and entities.

4 TRAFFIC MANAGEMENT PRACTICES

Ground travel will be the primary means of transportation supporting Project construction, operation, and maintenance. All Project-related vehicles will obey jurisdictional traffic speed regulations and the posted speed limit. On roads where speed limits are not posted, the speed limit will be 15 miles per hour (mph), unless otherwise directed by the appropriate agency and conveyed by the CIC. Helicopter-assisted construction (as described in Appendix B4: Project Construction Plan) could be used as deemed necessary

and approved by the respective federal land management agencies' Authorized Officers or their designated representatives and in coordination with the Company.

Before construction, authorized access routes will be clearly marked in the field with signs or flagging (refer to POD Appendix B2: Flagging, Fencing, and Signage Plan). The Construction Contractor(s) will review the location of proposed access routes and will be responsible for ensuring that construction travel is limited to designated areas with clearly identified limits of disturbance. Flagging will be maintained until final cleanup and/or reclamation is completed, after which it will be removed.

All field personnel will attend an environmental training program (refer to POD Appendix B5: Environmental and Safety Plan). Through this program, field personnel will be instructed to use only approved access roads, drive within the delineated road limits of disturbance, and obey jurisdictional and posted speed limits to minimize potential impacts on environmental resources.

The Construction Contractor(s), the CIC, and all environmental personnel will maintain a communications network that consists of one or a combination of the following devices: two-way radios, satellite phones, and cellular phones. This will allow for coordination of equipment traffic along existing access roads so that public safety, traffic impacts, and resource impacts are minimized.

In general, the number of construction vehicles needed for the Project is not expected to substantially increase traffic volumes. Similarly, road and lane closures are anticipated to be minimal and will occur during conductor stringing activities or blasting. If road and lane closures are needed, the appropriate regulatory agencies, affected parties, and emergency service providers will be notified in advance by the Construction Contractor(s) after approvals from appropriate regulatory agencies have been obtained and required safety requirements have been implemented. The Construction Contractor(s) will inform the public of temporary road and lane closures using Federal Highway Administration and/or BLM/Forest Service approved signs and methods, as applicable, such as flagmen or temporary barriers provided by the Construction Contractor(s) as approved by the appropriate regulatory agency and/or the BLM/Forest Service.

Project-adjacent landowners will be notified of the construction schedule via hard copy letter sent by the Company prior to the commencement of construction, although construction traffic is not expected to disrupt access to residences along the Project ROW. Signs will be posted in the Project area to notify landowners and others of the construction activity.

Construction crews will park only in designated areas approved for the Project and will be shuttled to appropriate work sites if necessary.

Information regarding access road stream crossings is included in POD Appendix C3: Water Resources Protection Plan.

5 TYPES OF RIGHT-OF-WAY ACCESS

The Project ROW and other areas needed for construction will require access for Project construction, operation, and maintenance activities. Listed below are five types of access categories that will be used for the Project. Road details providing the road name/number, access road type, improvements needed, existing maintenance level, etc. will be provided in the final POD.

All Project access roads will be improved or constructed according to the Company's published standards for road construction or per private landowner agreements (refer to POD Appendix B4: Project Construction Plan). In the event that the Company's published standards for road construction conflict with BLM, Forest Service, state, or local requirements, the Company/Construction Contractor(s) will

coordinate with the CIC (or appropriate land management agency representative in areas where the CIC does not have authority) to resolve the conflicting standards.

The Company will work with the appropriate county departments prior to construction to discuss needed improvements to county roads and, if needed enter into a county road maintenance agreement.

5.1 Type 1: Existing Roads – No Improvement

Type 1 access roads include paved or all-weather surfaced roads, including well-traversed and established dirt roads that meet the Company's construction road standards.

The term "No Improvement" signifies that no new disturbance would be created outside of an established, disturbed area. As such, the Type 1 Existing Roads – No Improvement access road type will include regular maintenance to make the road passable for construction and maintenance vehicles. Regular maintenance will include minor blading activities; repair of washed-out areas, wash boarded areas, culverts, and depressions requiring graveling; approach installation; maintenance of ingress/egress; and other minor improvements. Type 1 roads will be maintained in accordance with all applicable land management agency and County road maintenance standards.

5.2 Type 2: Existing Roads – Improvements Required

Type 2 access roads include existing roads that require improvements to meet the Company's construction road standards. The Type 2 Existing Roads – Improvements Required access road type includes existing roads that will require widening to a minimum 14-foot-wide travel surface to meet the Company's construction road standards. In areas of steep terrain, the road travel surface width could be a maximum of 22 feet to meet the Company's construction road standards, depending on the radius of curves and the slope of the terrain. As a result, total disturbance has the potential to exceed 32 feet, depending on the slope of the terrain. Disturbed areas, as a result of cut and fill slopes, would exceed the travel surface width in areas of steep terrain.

Improvements to this access road type will include blading to create a road to meet the Company's construction road standards, cut and fill activities, drainage feature reestablishment, tree removal, boulder and rock removal, bridge and culvert construction, wash crossing installation, and other improvements to provide an adequate surface to safely support construction and maintenance vehicles. Refer to POD Appendix B4: Project Construction Plan for the standards.

Improvements to this access road type will require reclamation to preconstruction conditions as determined by land management agency or landowner requirements as appropriate.

5.3 Type 3: New Roads – Bladed

Type 3 access roads include the construction of new permanent access roads where existing roads do not exist to allow access to the Project ROW. New, bladed access roads will be constructed to meet the Company's construction road standards. The Company's road construction standards include constructing roads to a minimum travel surface width of 14 feet. In areas of steep terrain, the road travel surface width could be a maximum of 22 feet to meet the Company's construction road standards, depending on the radius of curves and the slope of the terrain. As a result, total disturbance has the potential to exceed 32 feet, depending on the slope of the terrain (Table 1). Disturbed areas, as a result of cut and fill slopes, would exceed the travel surface width in areas of steep terrain. Stabilized construction entrances will be used to transition from paved surfaces to other access road types. New roads would be placed to avoid sensitive areas to the extent possible.

5.4 Type 4: New Roads – Overland Travel

Type 4 access roads include new, permanent access routes for overland travel to allow access to the Project ROW. It is intended that overland travel access be used in areas where access can be attained without constructing roads meeting the Company's access road standards. As such, overland travel will be used in areas of relatively flat topography. The result would be an access route that, after construction, would eventually become a trail, would naturally revegetate completely, or would be reclaimed in accordance with the requirements of Appendix C9: Reclamation, Revegetation, and Monitoring Plan, but still allow Company access without grading. Project design will not include any Type 4 roads; however, it is possible that the Construction Contractor(s) may utilize these types of access roads during construction, as applicable, through the variance request process.

Overland travel comprises the following two methods:

- **Type 4a: Drive and Crush** is vehicular travel to access a site without significantly modifying the terrain. This access type will have a minimum 14-foot travel surface and disturbance width. Vegetation is crushed but not cropped; soil is compacted, but some soil may be removed when moving obstacles and where grading is needed to cross side slopes or in steep areas. Even though vegetation may be damaged or destroyed, this vertical mulch on the surface soil leaves the seed bank in place. Crushed vegetation would likely resprout after the temporary use is stopped. A dozer, grader, or other type of equipment will be used to move boulders or other obstructions that prevent overland travel. Additionally, minor areas where the planned access crosses a side slope that exceeds the allowable slope for access by construction or maintenance vehicles will be graded to provide safe passage. The disturbed area will be blended, to the extent practicable, into the existing grades and revegetated according to Appendix C9: Reclamation, Revegetation, and Monitoring Plan.
- **Type 4b: Clear and Cut** is considered an above-grade removal of vegetation to improve or provide suitable access for equipment. This access type will have a minimum 14-foot travel surface and disturbance width. All vegetation is removed using above-grade cutting methods that leave the root crown intact. The vegetation root ball will be left in place wherever practical to facilitate reestablishment. Soils are compacted, but minimal surface soil is removed except where needed when crossing side slopes or in steep areas. A dozer, grader, or other type of equipment will be used to move boulders or other obstructions that prevent overland travel. Additionally, minor areas where the planned access crosses a slide slope that exceeds the allowable slope for access by construction or maintenance vehicles will be graded to provide safe passage. The disturbed area will be blended, to the extent practicable, into the existing grades and revegetated according to prescribed measures.

5.5 Type 5: Temporary Roads

Type 5 access roads can include the temporary construction of new access roads, the use of existing trails/two-track roads, or overland travel access to support the construction of the Project and access the Project ROW. This access road type does not require construction to meet the Company's road construction standards; however, these roads will be constructed to provide a safe travel way and, as such, temporary disturbance could result.

Temporary disturbance will be dictated by the underlying ground conditions, but disturbance could range from significant, such as blading/cut and fill activities, to minor, such as overland travel. Unless otherwise noted by the land management agency or landowner, this access road type requires reclamation, to the

extent practicable, to preconstruction conditions. Reclamation activities will be consistent with the requirements identified in Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

5.6 Limits of Disturbance by Access Road Type

Table 1 uses the anticipated amount of disturbance resulting from construction of the Project that was developed during the environmental impact statement to define the limits of disturbance for each access road type based on the existing topographic slope. A variance request will be prepared by the Construction Contractor(s) following the variance request process identified in Appendix B6: Environmental Compliance Inspection Plan for any access road not included in the access road design contained in the POD Map Sets (Appendix A: Detailed Route Alignment Figures) or for any access roads that require a greater limit of disturbance than what is allowed for in Table 1 below.

Table 1. Limits of Disturbance by Access Road Type

Access Road Type(s)	Existing Topographic Slope	Limits of Disturbance
2	0 to 8 percent slope	22 feet
2	Greater than 8 percent slope	32 feet
3, 4, 5	0 to 8 percent slope	18 feet
3, 5	9 to 15 percent slope	20 feet
3, 5	16 to 25 percent slope	30 feet
3, 5	Greater than 25 percent slope	32 feet

* In limited circumstances, for access roads needed on slopes greater than 25 percent, the limits of disturbance could be up to 55 feet.

5.7 Turning Radii

Access road intersections require temporary turning radii disturbance areas. These temporary turning radii disturbance areas have been identified as part of the access road design contained in Appendix A: Detailed Route Alignment Figures. Turning radii disturbance areas will not require permanent easements and will be reclaimed to preconstruction conditions. Reclamation activities will be consistent with the requirements identified in Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

5.8 Turnout Areas

Turnout areas (also referred to pullout areas) are temporary features that are required for approximately every 1,000 feet of access road length. The dimensions of turnout areas are 100 feet long × 10 feet wide. The Construction Contractor(s) will be responsible for identifying these locations based on the location of environmental resources and their construction means and methods. A variance request will not be required if turnout areas are located outside of identified environmental constraint areas that have been previously surveyed and conform to the identified dimensions and frequency. The Construction Contractor(s) will document and submit these locations to the applicable land management agency, the CIC, and the Company prior to use. In locations where environmental resources constraints have been identified, environmental resource surveys have not occurred, and/or larger dimensions are needed, a variance request will be prepared by the Construction Contractor(s) and the variance request process identified in Appendix B6: Environmental Compliance Inspection Plan will be followed. Turnout areas will be reclaimed to preconstruction conditions. Reclamation activities will be consistent with the requirements identified in Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

6 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

This section describes practices intended to protect potential environmental, traffic-related, and traffic safety–related impacts associated with access to and from the Project.

To minimize the potential impacts from the Project, a suite of ACEPMs have been developed to address potential conflicts with environmental resources and to minimize the potential impacts resulting from the transportation network for the Project and the potential for increased levels of public access associated with construction, operation, and maintenance of the Project. These ACEPMs can be found in Section 9 of the POD.

Appendix B4. Project Construction Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix B4. Project Construction Plan

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July 2023

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Abbreviations

BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
EIS	environmental impact statement
ESA	Endangered Species Act
Forest Service	U.S. Department of Agriculture Forest Service
kV	kilovolt
NFS	National Forest System
NHPA	National Historic Preservation Act
NTP	notice to proceed
OPGW	overhead optical ground wire
POD	plan of development
Project	Cross-Tie 500-kV Transmission Project
ROD	record of decision
ROW	right-of-way
SUP	special use permit

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Project Construction Plan (Plan), prepared as part of the plan of development (POD), provides an overview of the facilities and preconstruction and construction activities associated with the Project, as well as an overview of special construction techniques. The primary intent of this Plan is to describe the types of equipment and methods that will be utilized to construct the Project and the sequence of construction.

This Plan will be updated as necessary to meet any stipulations of the BLM and Forest Service record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use permit (SUP) before issuance of the notices to proceed and commencement of construction.

2 CONSTRUCTION SCHEDULE

A construction schedule for the Project will be developed at the appropriate time. The Construction Contractor(s) will be responsible for developing a detailed schedule prior to the commencement of any construction activities that will be regularly updated for the duration of the construction period.

Construction is expected to occur year-round, including throughout the winter. The Construction Contractor(s) will schedule construction activities to avoid environmental resource seasonal and spatial restrictions to the greatest extent practical. If construction activities are proposed to occur during an environmental resource seasonal restriction or within an environmental resource spatial restriction, the Construction Contractor(s) will submit a variance request according to the variance request process identified in Appendix B6: Environmental Compliance Inspection Plan of the POD. Environmental seasonal and spatial restrictions are provided in Attachment E: Seasonal and Spatial Restrictions for Biological Resources of Appendix C1: Biological Resources Conservation Plan and depicted in POD Appendix A: Detailed Route Alignment Figures.

3 PRECONSTRUCTION ACTIVITIES

3.1 Bureau of Land Management–Administered Land Notice to Proceed

Project construction, including all surface-disturbing activities on Bureau of Land Management (BLM)-administered land, except activities considered as "casual use," will be authorized by the issuance of a written notice to proceed (NTP) by the BLM. "Casual use" activities are defined under the regulations at 43 Code of Federal Regulations 2801.5(b) as causing negligible surface disturbance and do not require BLM approval or issuance of an NTP. The Company will not initiate any construction or other surface-disturbing activities on the right-of-way (ROW) without the prior written NTP being issued by the BLM. The written NTP or NTPs will authorize construction or use only as therein expressly stated and, if applicable, only for the particular location or use therein described. Geotechnical activities that will be conducted preconstruction will be approved separately. On BLM-administered land, the POD is an enforceable stipulation of the BLM ROW grant. As such, all mitigation measures and stipulations identified as applicable in the POD should be adhered to for the life of the BLM ROW grant. The BLM expects that mitigation measures and other specific stipulations and methods identified in the POD will be

implemented over the entire length of the Project, regardless of jurisdiction, while understanding that the BLM does not have the authority to enforce the POD on state and private lands. On state and private lands, the BLM's responsibilities will include ensuring compliance with the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA) and ensuring that Project impacts are consistent with the analysis in the Environmental Impact Statement (EIS) developed for the Project. The Company will be responsible for POD enforcement on state and private lands. Refusal by any private landowners related to the implementation of the POD or any portion of the POD will be documented by the Construction Contractor(s) and provided to the Company and the Compliance Inspection Contractor (CIC).

Prior to the start of construction, a BLM forester must assess the forest products removed as a result of any new construction going through a forest or woodland area on lands managed by the BLM. The BLM forester will determine if any forest products are present, if the products have market value, and if a permit is needed. If the BLM finds that the forest products have market value, a vegetative sale contract will be obtained from the BLM prior to initiation of construction and the material will be sold.

Should noncompliance issues, environmental issues, or other problems be encountered during authorized activities, the BLM may amend or rescind the NTP previously issued as described in Appendix B6: Environmental Compliance Inspection Plan of the POD.

3.2 Special-Use Authorization, U.S. Forest Service Electric Transmission Line Permit

The Forest Service will grant an SUP in the form of an electric transmission line permit for non-federal entities, and it will authorize the long-term use of the ROW. In addition, the Forest Service will grant a temporary construction permit, which will authorize temporary construction activities on National Forest System (NFS) lands outside of the ROW. The receipt of both the aforementioned authorizations will provide the permission for work to begin on NFS land, in conjunction with the issuance of the BLM NTP, which will also serve as the NTP on NFS lands.

Prior to the start of construction, a Forest Service forester must assess the forest products removed as a result of any new construction on NFS lands. The Forest Service forester will determine if any forest products are present, if the products have market value, and if a permit is needed. If it is found that the forest products have market value, a timber sale contract will be issued to the Company by the Forest Service for the removal of any merchantable timber from NFS lands under the authorities specified in 36 Code of Federal Regulations 223.

3.3 State Lands

For lands administered by the State of Utah or Nevada, the Company will obtain an easement from the appropriate State agency for the Project, which will authorize the Construction Contractor(s) to begin work on State-administered land. The Construction Contractor(s) will not begin any surface-disturbing work on State-administered land until receipt of the State-approved easement.

On state lands, the BLM's responsibilities will include ensuring compliance with the NHPA and the ESA and ensuring that Project impacts are consistent with the analysis in the final EIS. The Company will be responsible for POD enforcement on state-administered land.

3.4 Private Lands

For private lands that are crossed by the Project, the Company will obtain private landowner easements for the Project, which will authorize the Construction Contractor(s) to begin work on those lands. The Construction Contractor(s) will not begin any surface-disturbing work on private lands until Company authorization.

On private lands, the BLM's responsibilities will include ensuring compliance with the NHPA and the ESA and ensuring that Project impacts are consistent with the analysis in the Final EIS. The Company will be responsible for POD enforcement on private lands. Refusal by any private landowners related to the implementation of the POD or any portion of the POD will be documented by the Construction Contractor(s) and provided to the Company and the CIC.

3.5 Preconstruction Meeting

The Construction Contractor(s) will schedule and conduct a preconstruction meeting with the BLM, the Forest Service, the CIC, the Company, and the Construction Contractor(s) personnel. The purpose of the meeting(s) will be to provide an environmental and safety education program training before the commencement of any construction activities that will address how compliance with all Project-specific permitting documents and requirements, specifically those included in the POD, ROW grant, SUP, and record of decision (ROD), will be met. The BLM and the CIC will also explain their roles and responsibilities and provide an overview of the Project's compliance monitoring processes and key compliance-related issues.

The meeting(s) will be held by the Construction Contractor(s) prior to the commencement of construction. The Construction Contractor(s) will provide meeting materials at least three weeks prior to the meeting to the Company and the BLM/CIC for review and approval. The Construction Contractor(s) will notify the Company and the CIC of the schedule for the preconstruction meeting(s) at least 14 calendar days in advance of the preconstruction meeting so the CIC can coordinate scheduling with the BLM.

More details on the requirements for the Environmental and Safety Training Program are found in Appendix B6: Environmental and Safety Plan of the POD.

3.6 Resource and Preconstruction Surveys

The Company began conducting extensive environmental resource surveys in 2021 and 2022. The results of these and future surveys will be used as part of the Company's design process wherein Project features will be micro-sited to minimize or avoid impacts to the greatest extent possible. The applicable elements of these survey results and any related seasonal restriction areas will be depicted graphically in POD Appendix A: Detailed Route Alignment Figures and explained further in the applicable POD appendices.

Attachment A: Biological Resources Survey Requirements in Appendix C1: Biological Resources Conservation Plan of the POD lists biological surveys that will be required both pre-construction and during construction to ensure that the most up-to-date locations of these resources are used to comply with the appropriate seasonal and spatial restrictions described in Attachment E: Seasonal and Spatial Restrictions for Biological Resources of Appendix C1: Biological Resources Conservation Plan and POD Appendix A: Detailed Route Alignment Figures. Additional environmental resource surveys may be required on a case-by-case basis, specifically in support of variance requests and for Project features not incorporated into the Project design contained in POD Appendix A: Detailed Route Alignment Figures.

3.7 Surveying and Staking

Prior to the commencement of construction, the Construction Contractor(s) will conduct survey and staking of Project features in accordance with Appendix B2: Flagging, Fencing, and Signage Plan of the POD. Appendix B2: Flagging, Fencing, and Signage Plan provides more specific detail relative to the field marking of Project features and environmental resources. Implementation of the flagging, fencing, and signage plan is required before the commencement of construction.

4 ACCESS ROAD CONSTRUCTION

Construction of the Project will require access to each structure site for construction crews, materials, and equipment. Access will be by vehicle, where feasible, or may include access by helicopter (detailed in Section 7.2 below). All Project access roads will be improved or constructed according to the Company's standards for road construction; BLM, Forest Service, state and/or local requirements for road construction; or private landowner agreements. In the event that the Company's standards for road construction conflict with BLM, Forest Service, state, or local requirements, the Company/Construction Contractor(s) will coordinate with the CIC (or appropriate land management agency representative in areas where the CIC does not have authority) to resolve the conflicting standards.

The BLM considers authorized existing roads to be travel surfaces that have been modified from their natural condition specifically for access purposes. Similarly, the Forest Service considers authorized existing roads to be those identified in its current travel management plan. Unauthorized roads or two-tracks that do not meet these criteria on BLM or Forest Service lands will require approval from the appropriate land management agency to be used for construction, operation, or maintenance purposes. The completion and approval by the Company and the BLM, and the Forest Service of the POD and subsequent issuance of the NTP by the BLM will constitute the land management agency approval. In some cases, the BLM or Forest Service may prefer new access routes be built rather than using or improving unauthorized access routes.

All approved access roads are identified as part of the access road design contained in POD Appendix A: Detailed Route Alignment Figures. For the use of any access road not expressly identified and approved in the POD, a variance request will be prepared by the Construction Contractor(s), and the variance request process identified in POD Appendix B6: Environmental Compliance Inspection Plan will be followed. The Construction Contractor(s) will not use such roads unless and until a variance request is approved.

Project access roads will consist of using a combination of existing access roads that require no improvement and existing access roads that require improvements, and the construction of new access roads. All existing roads will be left in a condition that existed prior to Project activities, in coordination with the applicable land management agencies. POD Appendix B3: Traffic and Transportation Management Plan provides more specific detail relative to the types of access roads, typical design parameters, and limits of disturbance of each access road type.

Improvements to existing and new access roads will require the use of a bulldozer or grader, followed by a roller, to compact and smooth the ground. Front-end loaders will be used to move saved topsoil locally. Per the Company's construction road standards, Project access roads require a minimum 14-foot-wide travel surface for straight sections and a 16- to 22-foot-wide travel way at curves (dependent on the radius of the curve) to facilitate safe movement of equipment and vehicles.

Large construction equipment requires a large turning radius at intersections. Intersecting access roads may require the Construction Contractor(s) to construct temporary turning radii. These temporary turning radii disturbance areas have been identified as part of the access road design and are contained in the POD

Appendix A: Detailed Route Alignment Figures. These areas are temporary and will be reclaimed after completion of Project construction, and in accordance with Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

To allow for vehicles to pass safely, the Construction Contractor(s) will use and construct vehicle turnout areas (also referred to as pullout areas) at regular intervals along construction access roads. Turnout areas are temporary features that are required for approximately every 1,000 feet of access road length. The dimensions of turnout areas are 100 feet long by 10 feet wide. The Construction Contractor(s) will be responsible for flagging turnout areas in accordance with POD Appendix B2: Flagging, Fencing, and Signage Plan.

On BLM-administered land, NFS land, and State-administered lands, all approved turnout area locations are identified as part of the Project design contained in POD Appendix A: Detailed Route Alignment Figures and can be used at the discretion of the Construction Contractor(s). For the use of any turnout area not expressly identified and approved in the POD, a variance request will be prepared by the Construction Contractor(s) and processed in accordance with POD Appendix B6: Environmental Compliance Inspection Plan.

On private and/or state lands, the Construction Contractor(s) will be responsible for identifying turnout areas based on the location of environmental resources and their construction means and methods. A variance request will not be required if turnout areas are located outside of identified environmental constraint areas that have been previously surveyed and conform to the identified dimensions and frequency. The Construction Contractor(s) will document and submit turnout area locations to the Company and the CIC prior to use. For turnout area locations where environmental resources constraints have been identified, environmental resource surveys have not occurred, and/or larger dimensions are needed, a variance request will be prepared by the Construction Contractor(s) and the variance request process identified in POD Appendix B6: Environmental Compliance Inspection Plan will be followed. Environmental resource constraints will be shown in POD Appendix A: Detailed Route Alignment Figures. Turnout areas on all land jurisdictions will be reclaimed to preconstruction conditions. Reclamation activities will be consistent with the requirements identified in Appendix C9: Reclamation, Revegetation, and Monitoring Plan of the POD.

In general, erosion control and sedimentation measures, such as crossroad drainage, at-grade water bars, culverts, sediment basins, or perimeter control, will be installed per the Company's construction road standards and as required to minimize erosion during and subsequent to construction of the Project. The Construction Contractor(s) will take precautions when using erosion control and sedimentation measures to not channel or direct water onto adjacent sensitive environmental features.

For drainage crossings, the Construction Contractor(s) will cross drainages at grade, to the maximum extent possible. The Company and Construction Contractor(s) requirements for stream and wetland crossings are contained in Appendix C3: Water Resources Protection Plan and Appendix B3: Traffic and Transportation Plan. All crossing appurtenances will be completely removed, and the embankments will be reclaimed and revegetated in accordance with Appendix C9: Reclamation, Revegetation, and Monitoring Plan of the POD upon completion of the construction.

For crossings of irrigation canals and ditches on private lands, a culvert will be used if construction is to take place during periods when the canal or ditch is expected to be in operation. The culvert will be sized to pass the entire capacity of the canal without obstruction. For temporary crossings of canals on private lands using fill, all crossing appurtenances will be completely removed, and the embankments will be reclaimed and revegetated to the satisfaction of the canal operator(s) upon completion of the construction.

The Construction Contractor(s) will coordinate with the canal operator(s) to obtain required crossing permits and specific requirements.

When required by the land management agency, gates (or other barriers) will be installed by the Construction Contractor(s) on new permanent or new temporary access roads to restrict unauthorized vehicular access to the ROW and protect public safety. Attachment A: Company Transmission Construction Standards, provides information for obtaining or constructing three different types of access gates. Temporary gates or enclosures will be installed only with the permission of the landowner or the land management agency. The Construction Contractor(s) will provide access through any installed gates (i.e., keys or combinations) to the Company and the land management agencies. The land management agencies will in turn provide access to any authorized permittees. Existing fences, gates, and walls will be replaced, repaired, or reclaimed immediately to their original condition or to current specifications, as required by the landowner or the land management agency, in the event they are removed, damaged, or destroyed by construction activities. Fences will be braced before cutting. Attachment B: Bureau of Land Management Fence Standards provides required fencing and bracing details for the Project to be applied on BLM-administered land and NFS land.

While most fence crossings would be accomplished by gates, cattle guards with or without access gates will be installed where permanent access roads cross fence lines as required by the appropriate land management agency or landowner. Unless otherwise required by appropriate land management agency or the landowner, cattle guards will be constructed with all steel and with cleanouts, 14 feet by 8 feet, painted yellow, and set on rough sawn pressure-treated timbers (No. 2 or better grade) 12 inches by 12 inches by 16 feet. Cattle guards on BLM surface would meet appropriate agency standards, including HS-20 loading. All temporary fences and gates will be removed by the Construction Contractor(s) after completion of Project as part of cleanup and reclamation activities, unless otherwise requested by the landowner.

If a riparian crossing is required during wet periods with saturated soil conditions, vehicles will not be allowed to travel when soils are moist enough for deep rutting (deeper than 4 inches for a distance more than 50 feet) to occur unless prefabricated equipment pads or wood matting are installed over the saturated areas or other measures are implemented to prevent rutting.

During wet road conditions, the appropriate land management agency and/or landowner will be notified if Project activities create rutting deeper than 4 inches for a distance more than 50 feet. If rutting exceeds these thresholds, use of the access will stop, and the area will be repaired by the Construction Contractor(s) at the discretion of the appropriate land management agency and/or landowner.

After Project construction, existing and new permanent access roads will be used by operation and maintenance crew and vehicles for inspection and maintenance activities. New temporary access roads will be reclaimed after completion of Project construction, per POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

The Company road construction standards are include in Attachment A: Company Transmission Construction Standards.

4.1 Bureau of Land Management and U.S. Forest Service Access Road Requirements

The BLM and Forest Service will require the following for access to and across lands they administer:

- Where possible, the Construction Contractor(s) will use existing paved highways and improved unpaved roads, for the transportation of materials and equipment from the storage yards to the areas where they will be needed along the Project ROW. These improved roads are better suited to the transportation of large construction vehicles and heavy equipment.

- In areas where no grading will be needed to access work areas, the Construction Contractor(s) will, to the greatest extent possible, use the overland drive and crush method to access the site in areas that are relatively level and have low-growing grasses and shrubs. Drive and crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed.

- In areas where no grading will be needed to access work areas, but vegetation is large and/or dense, the Construction Contractor(s) will, to the greatest extent possible, use the overland clear-and-cut method to provide access along the approved construction zone. Clear-and-cut is the removal of vegetation to improve or provide suitable access for equipment. Vegetation is removed using aboveground cutting methods that leave the root crown intact. Methods for removal of vegetation could include mowing (brush hog flail-type mower); de-limbing and hand-clearing with small tools, such as loppers and chain saws; and back dragging a cat blade above the surface of the soil to remove surface vegetation. Soil is compacted, but no surface soil is removed. This approach will include appropriate land management agency consultation prior to vegetation removal activities. The use of heavy machinery and clearing extents may be limited in some areas on NFS land and are prohibited within Inventoried Roadless Areas (IRAs) (as shown on POD Appendix A: Detailed Route Alignment Figures).

- In areas where road improvement/construction is needed due to topography and slope considerations, the Construction Contractor(s) will make any such improvements according to the Company's standards for road construction.

- In certain areas, it could be necessary to close roads after construction to restrict future access for general and undesired use. Such areas will be identified by the land management agency. Methods for road closure or management will be coordinated with and approved by the appropriate land management agency and may include implementing physical barriers, such as locking gates, obstructing the path with earthen berms or boulders, or ripping the roadbed, in a manner consistent with reclamation practices described in Appendix C9: Reclamation, Revegetation, and Monitoring Plan of the POD. On NFS land, all temporary construction routes will be closed and reclaimed after construction. Any locked gates identified by the BLM will include an "Administrative Use Only" sign. Closed access routes would have to be reopened where right-of-access is impeded for operation and maintenance activities.

4.2 Limits of Access Road Disturbance

To reasonably predict the anticipated amount of disturbance resulting from construction of the Project, access levels based predominantly on slope characteristics are being developed during the EIS process and used to identify impacts to environmental resources. Section 5 of Appendix B3: Traffic and Transportation Management Plan of the POD provides a detailed discussion on the types of access to be used for construction, operation, and maintenance of the Project.

Table 1 depicts the anticipated limits of disturbance for each access road type based on the existing topographic slope. A variance request will be prepared by the Construction Contractor(s) and the variance request process identified in Appendix B6: Environmental Compliance Inspection Plan of the POD will be followed for any access road that is proposed (not already part of the access road design contained in POD Appendix A: Detailed Route Alignment Figures) to have a larger limit of disturbance than what is allowed for in Table 1. As required in POD Appendix B2: Flagging, Fencing, and Signage Plan, limits of disturbance will be flagged prior to construction.

Table 1. Limits of Disturbance by Access Road Type

Access Road Type(s)	Existing Topographic Slope	Limits of Disturbance
2	0 to 8 percent slope	18 feet
2	Greater than 8 percent slope	32 feet
3, 4, 5	0 to 8 percent slope	18 feet
3, 5	9 to 15 percent slope	20 feet
3, 5	16 to 25 percent slope	30 feet
3, 5	Greater than 25 percent slope	32 feet

5 TRANSMISSION LINE CONSTRUCTION

The following sections describe the transmission line construction activities and procedures for the Project. Substation site construction is described in Section 6. Various construction activities will occur during the construction process, with several construction crews operating simultaneously at different locations on four transmission line elements. Grounding systems are dependent on soil factors which are unknown at this time.

5.1 Geotechnical Investigations and Soil Boring

The purpose of the geotechnical investigations is to perform tests, to collect soil resistivity properties and to collect hydrogeologic and geotechnical soil properties and geophysical data to provide information for detailed Project engineering and design. Geotechnical investigations provide critical data that have been incorporated into the electrical and structure foundation design and the Project construction bid package. This activity is necessary to help ensure the system is designed and constructed to be safe, reliable, and cost efficient and can reduce the overall temporary and permanent land disturbance within the ROW during initial build and the life of the Project. Further geotechnical investigations may be completed during the construction phase in accordance with POD Appendix C14: Geotechnical Investigation POD.

5.2 Yards

Yards may serve as field offices; reporting locations for workers; parking spaces for vehicles and equipment; and sites for material storage, fabrication, assembly, concrete batch plants, and stations for equipment maintenance. The yards, which will be up to approximately 20 acres each will be located approximately every 40 to 50 miles along the route (POD Appendix A: Detailed Route Alignment Figures).

Helicopter fly yards (described in more detail below) have been located approximately every five to seven miles along the route where the use of helicopters is required, as identified in Appendix A: Detailed Route Alignment Figures. Each fly yard will occupy approximately five to seven acres.

These areas will be in areas not infested with noxious weeds and where possible located in previously disturbed sites, planned disturbance sites on the ROW, or in areas of minimal vegetative cover that are fairly level. Yards will be fenced, have locked gates, and have security guards stationed where needed. Lighting will be the minimum required to meet safety and security standards.

In some areas, the yards will need to be scraped by a bulldozer and a temporary layer of rock laid to provide an all-weather surface. In this case the Construction Contractor(s) will first remove and store the topsoil for use in reclamation of the site(s) in accordance with Appendix C9: Reclamation, Revegetation, and Monitoring Plan of the POD. The Construction Contractor(s) will also implement appropriate and required measures to minimize erosion of the topsoil stockpile(s) and sedimentation from reaching water sources in accordance with POD Appendix C10: Stormwater Pollution Prevention Management Plan. Rock used for any yards on BLM-administered land or NFS land will be washed and weed free. Unless otherwise directed by the land management agency or landowner, the rock will be removed from the yards upon completion of construction and the area will be reclaimed in accordance with POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

For the use of any yard not expressly identified and approved in the POD, a variance request will be prepared by the Construction Contractor(s) and processed in accordance with Appendix B6: Environmental Compliance Inspection Plan. Yard locations not approved in the POD may need to be surveyed by the Construction Contractor(s) for environmental resources prior to ground-disturbing activities.

5.3 Site Preparation

Clearing of vegetation will be required for construction purposes, clearances for electrical safety, long-term maintenance, and reliability of the transmission line. In the ROW, mature vegetation will be removed under or near the conductors to provide adequate electrical clearance as required by the National Electrical Safety Code and the U.S. Department of Energy. Clearing activities will be in compliance with POD Appendix C4: Vegetation Management Plan, or as negotiated with the agencies in specific locations.

Project features, including but not limited to structure work areas, wire pulling-and-tensioning sites, wire-splicing sites, guard structure locations, and yards, will be bladed, as necessary, to allow for safe construction and construction-related activities to occur. As necessary, the blading of Project features will be done using a bulldozer to blade only the minimum required area. On NFS land, if necessary, trees would be removed using chainsaws, slash chipped, and spread onsite or removed, and stumps would be removed or buried on site. Project feature areas will be cleared of vegetation only to the extent necessary and any removed topsoil will be segregated and stockpiled separately within the structure work area for use in reclamation and stabilized to limit erosion in accordance with the requirements of POD Appendix C7: Erosion, Dust Control, and Air Quality Plan. Vegetation cleared from a work area will be cut up, chipped, or removed to an approved disposal site as determined by the Construction Contractor(s) to keep the area clear for equipment and for safety. On NFS land cut up/chipped vegetation, if not removed, would be spread onsite to a depth of 1 to 3 inches. . Slash left in the ROW will not be placed in such a way or location that it will alter drainage, cause erosion, or impact sensitive cultural, paleontological, or biological resources.

At each single-circuit 500-kV structure location, a typical temporary construction area of approximately 250 by 250 feet, depending on slope, will be needed for construction equipment to assemble and erect each structure. This area will provide a safe working space for equipment, vehicles, and materials. At each structure site, temporary work area requirements will vary depending on the site conditions. Structure work areas may be larger and may require additional clearing and grading to accommodate

equipment used by construction and maintenance crews.. Crane pads would be approximately 30 x 30 feet and within the structure work area. Crane pads would be leveled to within 2% grade.

Additional equipment will be required if solid rock is encountered at a structure location. Rock-hauling, hammering, or blasting may be required to remove the rock. In the event blasting is required, the procedures described in POD Appendix C14: Blasting Management Plan would be followed. If blasting is to occur on BLM-administered land, NFS and, or State-land, the Construction Contractor(s) will submit blasting plan(s) to the applicable agency and the CIC for final review and approval. Blasting on private land would be coordinated with the land-owner. Rock that is too large in size or volume to be spread at the individual structure sites, as determined by the Construction Contractor(s), will be hauled away and disposed of at approved locations or at a location approved and specified by the landowner or land management agency.

In a few cases, structures that use the guyed V configuration may require guy anchors that extend outside the typical 250 by 250 feet temporary work area. In this situation structure work areas will be tailored to site-specific conditions, while keeping a similar total temporary disturbance area, to properly allow construction crews to install guy anchors. These locations are depicted in POD Appendix A: Detailed Route Alignment Figures.

All approved structure work areas and their dimensions, as well as any additional disturbance areas, are identified as part of the Project design contained in POD Appendix A: Detailed Route Alignment Figures. For the use of any area not expressly identified and approved in the POD, a variance request will be prepared by the Construction Contractor(s), and the variance request process identified in Appendix B6: Environmental Compliance Inspection Plan will be followed. All noxious weeds identified in areas to be disturbed will be treated in accordance with POD Appendix C2: Weed Management Plan. Reclamation of the work areas is described in POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

5.3.1 Bureau of Land Management and U.S. Forest Service Site Preparation Requirements

On BLM-administered land and NFS land, the BLM and the Forest Service will require the following for site preparation. In addition, Section 4.1 identifies the requirements for site access across BLM-administered land and NFS land. These standards would be applied Project wide to ensure consistency.

- In areas where no grading will be needed to prepare the sites, the Construction Contractor(s) will use the overland drive and crush method to prepare the site in areas that are relatively level and that have low-growing grasses and shrubs to the greatest extent possible. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed except for foundation preparation.

- In areas where no grading will be needed to prepare the site but vegetation is large and/or dense, the Construction Contractor(s) will use the overland clear-and-cut method to prepare the site to the greatest extent possible. Clear-and-cut is the removal of vegetation to improve or provide suitable access for equipment. Vegetation is removed using aboveground cutting methods that leave the root crown intact, such as with a brush hog or hand tools. Soil is compacted, but no surface soil is removed except for foundation preparation.

- In areas where structure sites will be graded to provide a safe, level working space for structure installation, the Construction Contractor(s) will remove and segregate topsoil. Excess soil from foundation hole excavation will be placed around the base of each structure to provide positive drainage away from the structure.

- In areas where topography and slope require cut and fill methods to provide a safe, level working space for structure installation, the Construction Contractor(s) will limit disturbance to the smallest possible area through the application of engineering alternatives and by planning to safely work with minimal equipment and equipment movements. Upon construction completion, the size of the structure work area will be reduced as much as possible. The structure work area will be recontoured to the greatest extent possible to soften the appearance of the structure work area.

The Forest Service will also require the following for site preparation on NFS land within IRAs*:*

- No new road construction is permitted in IRAs. Within IRAs, site preparation will be limited to the smallest footprint possible with all materials flown in by helicopter if existing roads do not provide the required access needed for equipment and materials. Equipment such as a "spider excavator" would be used in inaccessible terrain.

5.4 Install Structure Foundations

5.4.1 Lattice and Guyed V Steel Structure Foundations

Each 500-kV support structure requires the installation of foundations. Excavations for the foundations are completed using truck- or track-mounted equipment and/or augers of various sizes depending on the diameter and depth requirements of the hole to be drilled. Each foundation will extend approximately two feet above ground level or as specified in the design.

Self-supporting lattice structures require four foundations to be installed, one for each leg of the structure. Foundations will be selected based upon geotechnical and geologic conditions at the specific structure site. Foundation types include drilled shaft concrete piers, shallow foundations, driven steel piles with a pile cap, steel screw piles with a pile cap, micropiles with a pile cap, and steel grillages.

Excavations for shallow foundations will be completed using rubber-tired or tracked conventional construction equipment. Excavation depth will be dependent on structure type, loading, and soil conditions. For guyed structures, the excavation will be square, roughly 7 feet deep, 30 feet square at the bottom, and 10 feet square at the top. A steel and reinforced concrete footing will be placed against the soil and a concrete or steel pedestal will attach the structure to the foundation. The foundation will be backfilled using native and/or select fill material compacted in lifts.

Excavations for grillage foundations will be completed in the same way described for shallow concrete foundations, except that the foundation itself will be constructed using galvanized common steel member shapes and/or plates sized and arranged to provide the necessary capacity. Steel plates will provide attachment of the structure to the foundation. When plating is used on the bottom of the grillage, poorly graded sand will be placed under the plate to provide an even bearing surface. Similar to the shallow concrete foundation, the grillage foundation will be backfilled using native and/or select fill material compacted in lifts.

Guyed steel lattice structures require a single foundation at the centerline of the structure. The foundation can be a drilled shaft concrete pier, cast-in-place shallow foundation, driven steel piles with a pile cap, steel screw piles with a pile cap, micropiles with a pile cap or steel grillage. The structural guys will each require an anchor. The anchors can be a concrete deadman, screw anchor, or grouted anchors with or without a steel cap. Grouted anchors are drilled with a drilling slurry that is displaced once design depth is achieved. The displaced slurry is a low-strength grout which is captured in an approximately 2-foot-deep,

2-foot-wide, and 8-foot-long trench dug directly adjacent to the grouted anchor. Excess hardened grout will be removed by the Construction Contractor(s) to an appropriate permitted disposal facility.

Piles are deep foundation elements manufactured from steel shapes or pipes. The types considered for this project are driven and screw piles. Driven piles are anticipated to be steel H or pipe shapes. They are advanced using a pile-driving hammer attached to specialized tracked construction equipment. Screw piles are manufactured using steel pipe with steel plate helixes welded to the lead section. They are "screwed" into the ground using a high torque head attached to tracked construction equipment. The advantage for both types of piles is that no excavation is required for installation.

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

All pile type foundations will require multiple pile elements to be installed at each location. A cap, steel or concrete, will be required to tie the pile elements together structurally and provide the needed capacity.

In environmentally sensitive areas with very soft soils, additional equipment, such as a HydroVac, which uses water pressure and a vacuum, will be used to excavate material into a storage tank. Alternatively, a temporary or permanent steel casing may be used during drilling to hold the excavation open. Depending on the foundation and soil types, the casing may be withdrawn as the concrete or grout is placed in the hole. In areas where it is not possible to operate large drilling equipment due to access or environmental constraints, hand digging may be required.

When drilled piers or cast-in-place concrete foundations are used, reinforced-steel anchor bolt cages will be installed after excavation and before structure installation. These cages are designed to strengthen the structural integrity of the drilled pier and cast-in-place shallow foundations and will be assembled at the nearest yard and delivered to the structure site via flatbed truck or helicopter. These cages will be inserted in the holes prior to placing concrete. The excavated holes containing the reinforcing anchor bolt cages will be filled with concrete.

Excavated material (spoil material) can be used for fill where suitable, specifically on permanent Project features that do not require revegetation because spoil material is not an appropriate seedbed. Soil removed from foundation holes will be stockpiled on the structure work area within the ROW by the Construction Contractor(s) for either of the two uses described below. The Construction Contractor(s) will identify which use will be required at each structure site.

1. Topsoil will be removed from the structure base area (not just the structure foundation holes) and, in accordance with Appendix C9: Reclamation, Revegetation, and Monitoring Plan, placed in a designated segregated pile within the structure work area, and clearly labeled. The required measures to prevent or reduce erosion of the stockpile will be implemented. The structure foundations will be excavated and the spoils will be stockpiled in a designated location within the structure work area until the foundations are complete. Once the foundations are complete, the spoils will be spread over the structure base area to create a mound, which would be graded to meet the Company's standards for water drainage away from the structure foundations. Once this is complete, the segregated topsoil will be spread evenly over the top of the spoils mound.

2. An approximately 50 by 100–foot area adjacent to the structure base area will have the first 6 inches of topsoil removed, placed in a designated segregated pile within the structure work area, and clearly labeled, and the required measures to prevent or reduce erosion of the stockpile will

be implemented. The structure foundations will be excavated and the spoils will be placed evenly over the 50 by 100–foot area when sidehill conditions exist that warrant a crane pad be installed. Once structure foundation excavations and structure erection are complete, the topsoil will be spread evenly over the top of the spoils.

Typically, and because of the remote location of much of the Project, concrete will be provided from portable batch plants set up approximately every 25 to 50 miles along the Project route, typically located in multipurpose yards. Concrete will be delivered directly to the site in concrete trucks with a capacity of up to 10 cubic yards. In the more developed areas along the route and in proximity to the substations, the Construction Contractor(s) will use local concrete providers to deliver concrete to the site when economically feasible. Excess concrete from the concrete chute will be washed into the non-topsoil stockpiles, dried, within the designated footprint of the portable batch plant area and removed by the Construction Contractor(s) to an appropriate permitted disposal facility.

5.4.2 H-Frame Structure Foundations

H-frames structures will require that each leg of the H-frame be directly embedded or supported on drilled concrete piers. Holes will be drilled in the ground using a truck- or track-mounted auger. For poles that will be directly embedded, the pole is placed in the hole after excavation and native, select, flowable fill, or concrete will be used to fill the annulus around the perimeter of the hole. When backfill will be imported, material will be obtained from approved weed-free commercial sources or from areas free of noxious weed species. Similarly, where solid rock is encountered, blasting may be required. In this case, the Construction Contractor(s) will comply with Appendix C14: Blasting Management Plan of the POD and with the federal, state, and local permitting requirements for the use of explosives.

The 500-kV steel H-frame structures will require the installation of foundations, which typically are drilled concrete piers. The holes will be drilled using truck- or track-mounted augers of various sizes depending on the diameter and depth requirements of the hole to be drilled. Each foundation will extend approximately 2 feet above ground level.

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

In environmentally sensitive areas with very soft soils, additional equipment, such as a HydroVac, which uses water pressure and a vacuum, will be used to excavate material into a storage tank. Alternatively, a temporary or permanent casing may be used during drilling to hold the excavation open, after which the temporary casing is withdrawn as the concrete is placed in the hole. In areas where it is not possible to operate large drilling equipment due to access or environmental constraints, hand digging may be required.

For drilled concrete piers, reinforced steel anchor-bolt cages will be installed after excavation and prior to structure installation. These cages are designed to strengthen the structural integrity of the drilled pier and cast-in-place shallow foundations and will be assembled at the nearest yard and delivered to the structure site via flatbed truck or helicopter. These cages will be inserted in the holes prior to pouring concrete. The excavated holes containing the reinforcing anchor-bolt cages will be filled with concrete.

Excavated material (spoil material) can be used for fill where suitable, specifically on permanent Project features that do not require revegetation because spoil material is not an appropriate seedbed.

Soil removed from foundation holes will be stockpiled on the structure work area within the ROW by the Construction Contractor(s) for either of the two uses described below. The Construction Contractor(s) will identify which use will be required at each structure site.

1. Topsoil will be removed from the structure base area (not just the structure foundation holes), and, in accordance with Appendix C9: Reclamation, Revegetation, and Monitoring Plan, placed in a designated segregated pile within the structure work area, and clearly labeled. The required measures to prevent or reduce erosion of the stockpile will be implemented. The structure foundations will be excavated and the spoils will be stockpiled in a designated location within the structure work area until the foundations are complete. Once the foundations are complete, the spoils will be spread over the structure base area to create a mound, which would be graded to meet the Company's standards for water drainage away from the structure foundations. Once this is complete, the segregated topsoil will be spread evenly over the top of the spoils mound.

2. An approximately 50 by 100–foot area adjacent to the structure base area will have the first 6 inches of topsoil removed, placed in a designated segregated pile within the structure work area, and clearly labeled. The structure foundations will be excavated and the spoils will be placed evenly over the 50 by100–foot area when sidehill conditions exist that warrant a crane pad be installed. Once structure foundation excavations and structure erection are complete, the topsoil will be spread evenly over the top of the spoils.

5.5 Erect Support Structures

The 500-kV self-supporting lattice-steel and H-frame structures will be assembled on-site. Steel members for each structure will be delivered to the site by flatbed truck. Assembly will be facilitated on-site by a truck- or track-mounted crane. Subsequent to assembly, the structures will be lifted onto foundations using a large crane designed for erecting structures. The crane will move along the right-of-way from structure site to structure site erecting the structures (Figure 1).

The 500-kV guyed V steel lattice structures will be assembled either directly on-site or in a designated assembly facility near the line (Figure 2). Steel members for each structure will be delivered in packaged bundles to the structure site or to the assembly facility by flatbed truck. Assembly at the final installation site of each structure is the most common method used in transmission line construction. When assembled at the structure site, large components of the structure, such as legs, main body, or head frame, will be independently assembled on blocks with the use of a small crane. Site assembly will require several days with a crew of 10 to 14 workers. These structure sections will be located on the site convenient for erection by a larger crane.

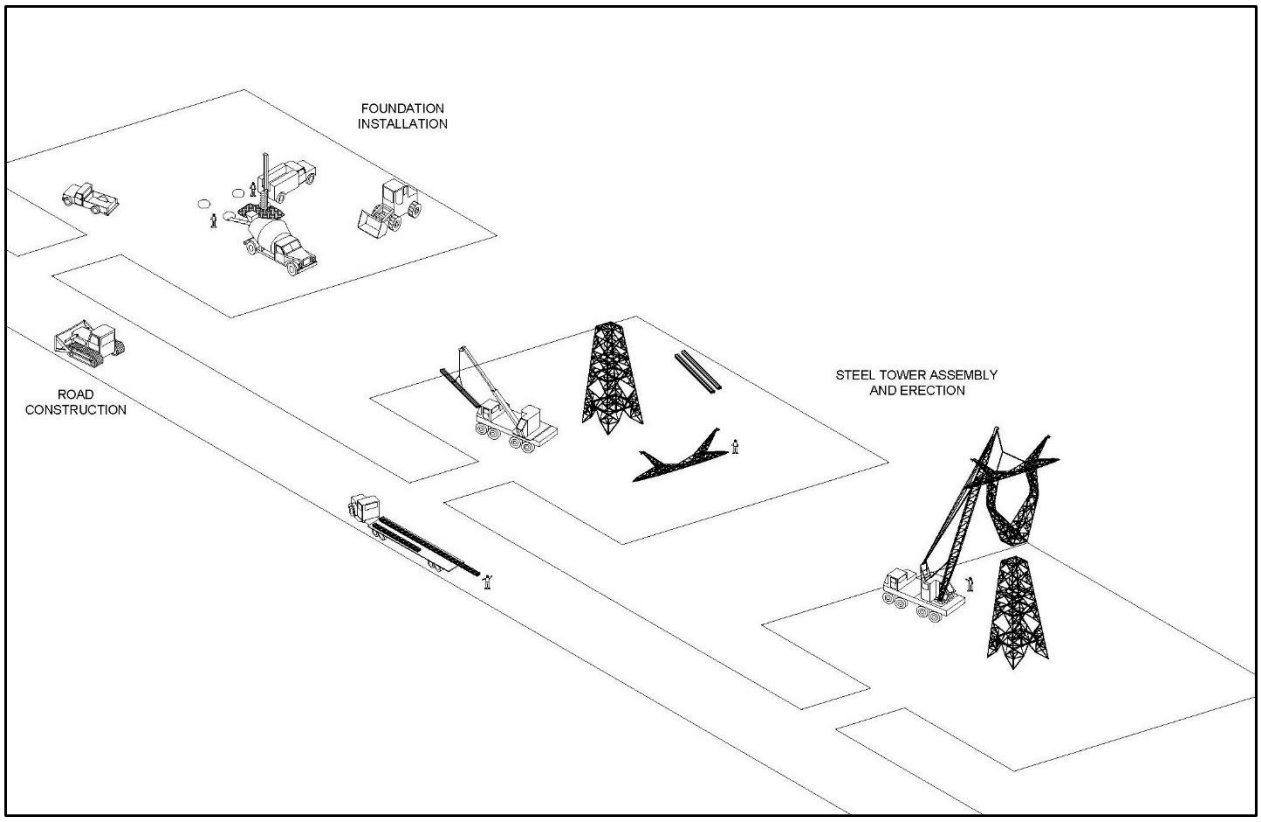


Figure 1. Transmission Line Construction Sequence – Lattice Structure

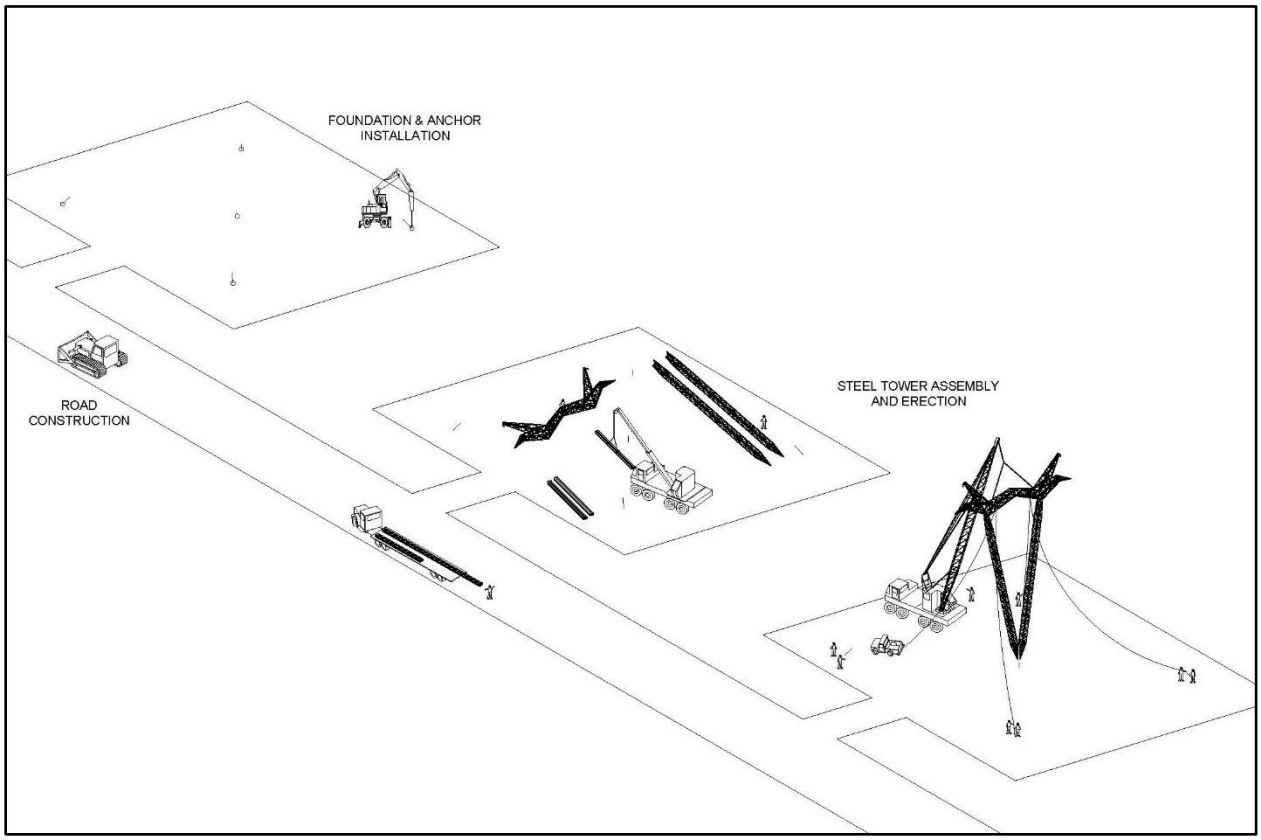


Figure 2. Transmission Line Construction Sequence – Guyed V Structure

5.6 Guard Structures

Temporary guard structures will be erected where required prior to wire-stringing activities. The Construction Contractor(s) will be solely responsible for adequately protecting persons, property and facilities crossed during wire stringing operations.

The Construction Contractor(s) will install temporary guard structures or other protective measures at crossings of facilities, including but not limited to power lines, telephone lines, railroads, highways, communication lines, and substation structures, in accordance with accepted traffic control plans, crossing permit requirements, and good construction practices.

Guard structures typically are vertical wood poles with cross arms and are erected at road crossings or crossings with other electric and communication lines to prevent the wires being pulled in from accidental contact with other lines, vehicles, buildings, or the ground during wire-stringing activities. When wood pole guard structures are used, the wood structure shall be of sufficient strength to adequately support the pulling lines or cables. The cross-arms shall be of suitable material, such as wood, protective guards, or installed with rollers or sheaves to protect the conductor from damage.

Bucket trucks, boom trucks, or any other motorized equipment could also be used as guard structures. Bucket trucks can be fitted with a traveler/sheave, batwing/goal post, or upper boom positioned horizontally to aid as guard structures. In environmentally sensitive areas, this method will be implemented in conjunction with methods to minimize ground disturbance such as monitoring, geofabric, matting, or other applicable techniques.

All approved guard structure locations (typically 75 by 150 feet) and associated temporary access roads are identified as part of the Project design contained in POD Appendix A: Detailed Route Alignment Figures. If any additional guard structure locations are needed and would occur where sensitive environmental resources constraints have been identified, environmental resource surveys have not occurred, larger dimensions are needed, and/or more frequent placement is required, a variance request will be prepared by the Construction Contractor(s) in accordance with the variance request process identified in POD Appendix B6: Environmental Compliance Inspection Plan.

The Construction Contractor(s) will notify the Company and all other applicable agencies prior to wire stringing activities over crossing facilities. As applicable, the Construction Contractor(s) will prepare and submit a traffic control plan to the appropriate agency having jurisdiction over the crossed facility. No wire stringing will occur until all required permits are obtained, traffic control is approved, and public safety measures are in place.

All conductors or shield wires being installed or removed over or under existing lines shall be considered as being strung in an "energized environment" and such crossings shall be considered as energized crossings.

Upon completion of guard structure use, the Construction Contractor(s) will immediately remove the structure, fill and compact the holes, and reclaim the area in accordance with POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

5.7 String Conductors, Shield Wire, and Fiber-Optic Ground Wire

Conductor, shield wire, and overhead optical ground wire (OPGW) will be placed on the transmission-line structures by a process called wire stringing. The first step to wire stringing will be to install insulators (if not already installed on the structures during ground assembly) and stringing sheaves. If insulators need to be installed, either a bucket truck or helicopter would be used. Stringing sheaves are rollers that are attached temporarily to the lower portion of the insulators or overhead ground wire assemblies at each transmission line structure to allow the wire to be pulled along the line. These sheaves will each have one, two, or three rollers corresponding to the number of conductors designated as a "bundle" at each phase or overhead ground wire location. All conductors of one phase will be pulled in together. Figure 3 illustrates the setup for installing conductors.

Once the stringing sheaves and guard structures are in place, the initial stringing operation will commence with the pulling of a lighter weight "sock line" through the sheaves. Typically, the sock line is pulled in via helicopter. Once the sock line has been pulled in for the determined amount of structures, the sock line is attached to the hard line, which in turn will be pulled through the sheaves. Once the hard line is pulled in, it will be attached to the conductor, shield wire, or OPGW and be used to pull these wires through the sheaves into their final location. If the sock line tension capacity is rated high enough, it could be used to pull in the OPGW and shield wire without the use of a hard line. Pulling the lines is then accomplished by attaching them to large bull wheels on a specialized wire-stringing vehicle. Following the initial stringing operation, pulling and tensioning the line will be required to achieve the correct sagging of the transmission lines between support structures.

Wire-splicing sites for 500-kV construction will be required approximately every 9,000 feet (assuming a standard reel size) along the ROW and will measure approximately 250 by 400 feet. This area is generally located within a previously determined pulling and tensioning site. Splicing of the conductors generally entails specialized equipment to clamp either side of the splice in place and join the ends using whatever technique is most appropriate for the specific conditions. The Construction Contractor(s) will be responsible for identifying and incorporating wire-splice locations that are not part of the Project design

contained in POD Appendix A: Detailed Route Alignment Figures. A variance request will not be required if wire-splice locations are located outside of identified environmental constraint areas that have been previously surveyed, are within the Project ROW, and do not exceed the dimensions identified above. The Construction Contractor(s) will document and submit these locations to the appropriate federal land management agency, the CIC, and the Company prior to use. In locations where sensitive environmental resource constraints have been identified, environmental resource surveys have not occurred, and/or larger dimensions are needed, a variance request will be prepared by the Construction Contractor(s) and the variance request process that was identified in POD Appendix B6: Environmental Compliance Inspection Plan will be followed.

Conductor pulling-and-tensioning sites will be required approximately every three to five miles along the 500-kV transmission line with typical dimensions measuring 250 by 600 feet each to accommodate required equipment. Shield wire and conductor pulling-and-tensioning sites will be in the same locations because the reel lengths are the same length. While it is typical to try and locate the OPGW pulling and tensioning sites at the conductor and shield wire pulling and tensioning sites, due to the much longer lengths per reel (often twice the length), the OPGW sites often require a different location. Equipment at sites required for pulling-and-tensioning activities will include cranes, tractors, and trailers with wire reels, and trucks and trailers with the pulling-and-tensioning equipment mounted. Depending on topography, grading may be required at some sites to create level pads for equipment. In relatively flat terrain at conductor pulling-and-tensioning sites, vegetation will typically be drive and crushed or mowed with no blading required. There will be either buried deadman or anchors installed for snubbing the conductor. Disturbance associated with conductor pulling-and-tensioning sites will be limited to the delineated boundaries as provided in POD Appendix A: Detailed Route Alignment Figures. Conductor pulling-and-tensioning sites are temporary uses and will be reclaimed in compliance with POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

The Construction Contractor(s) will be responsible for identifying and incorporating pulling-and-tensioning sites not part of the Project design contained in POD Appendix A: Detailed Route Alignment Figures. A variance request will not be required if pulling-and-tensioning sites are located outside identified environmental constraint areas that have been previously surveyed, are within the Project ROW, and do not exceed the dimensions identified above. The Construction Contractor(s) will document and submit these locations to the appropriate federal land management agency, the CIC, and the Company prior to use. In locations where sensitive environmental resources constraints have been identified, where environmental resource surveys have not occurred, where larger dimensions are needed, and/or more frequent placement is required, a variance request will be prepared by the Construction Contractor(s) and the variance request process identified in POD Appendix B6: Environmental Compliance Inspection Plan will be followed.

Finally, the tension and sag of conductors and wires will be fine-tuned, stringing sheaves will be removed, and the conductors will be attached permanently to the insulators at the support structures.

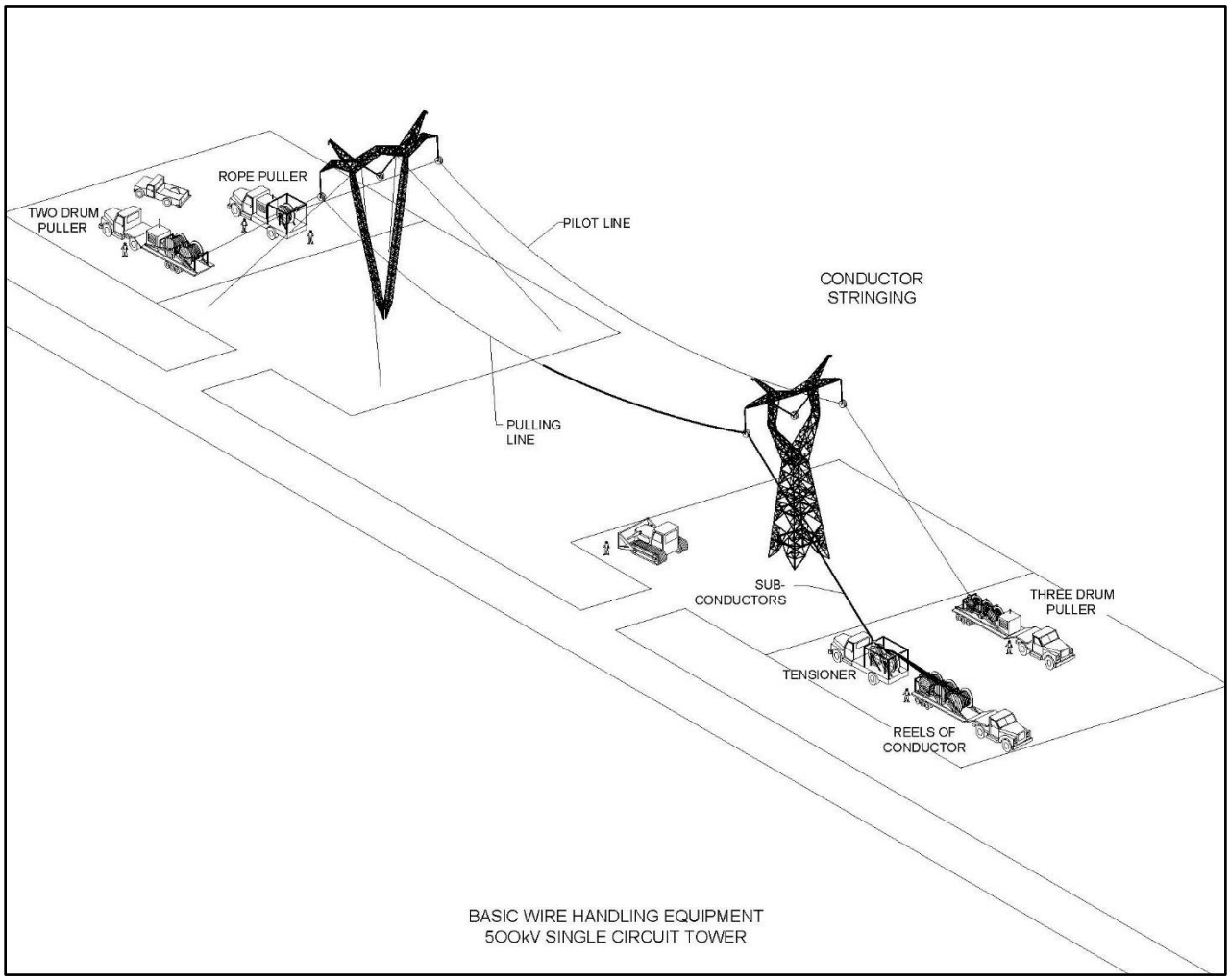


Figure 3. Conductor Installation

5.8 Site Reclamation

Upon completion of construction, all areas not needed for typical Project operation and maintenance activities will be reclaimed. This includes all temporary Project features or permanent Project features that will be partially reclaimed. These areas will be graded to blend, as near as possible, with the natural contours and reclaimed and reseeded in accordance with POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan. All practical means will be taken to reclaim the land outside the minimum areas needed for safe operation to its original contour and to restore natural drainage patterns along the ROW. All temporary features required to support construction activities, such as culverts or safety berms, will be removed, unless approved to remain in place by the Company, in consultation with the land management agency or landowner. All permanent features required to support construction activities, such as water bars and culverts, will remain and will meet Company construction standards per POD Appendix C3: Water Resources Protection Plan.

5.9 Fiber-Optic System Regeneration Stations

Fiber-optic system regeneration stations would be installed approximately every 55 to 75 miles along the ROW. The quantity and location are shown in POD Appendix A: Detailed Route Alignment Figures.

Reliable and secure communication for system control and monitoring of the transmission system is required to maintain the operational integrity of the Project and of the overall interconnected system. Primary communications will be provided via the OPGW installed on the peak of the structures, which also will act as one (total of two) of the lightning-protection shields. As the data signal is passed though the optical fiber cable, the signal degrades with distance. Consequently, signal regeneration stations are required to amplify the signals.

The fiber-optic system regeneration station will be graded, vegetation will be removed, and a layer of crushed rock will be installed. The site will cover a 100 by 100–foot area with security fence surrounding a 75 by 75-foot area, with a permanent access road leading to a designated security gate. A 12 by 24 by 9-foot-tall, prefabricated building, or equipment shelter (metal or concrete), housing electronics and generator, will be constructed on the site. The regeneration site has been located adjacent to existing service, which will be connected with a tap line. An emergency generator with a 1,000-gallon diesel-fuel tank and oil containment will be installed, in accordance with current regulations and in compliance with POD Appendix C11: Spill Prevention, Control, and Countermeasure Management Plan, at the site inside the fenced area. Two diverse communication cable routes (aerial and/or buried) will be attached to the transmission line structures and suspended overhead along the entire alignment except at the regeneration stations where the OPGW will be run underground within the approved area of disturbance.

6 SUBSTATION CONSTRUCTION

The Project includes interconnections to the existing Clover and Robinson Summit Substations. New substation equipment would be needed at the terminus points (substations) in order to interconnect the transmission line with the existing Clover and Robinson Summit Substations. All new equipment would be installed within the existing fence line of each substation. No additional areas would need to be disturbed. The design for the substation facilities, including any potential additions, will be determined from engineering and design studies.

7 SPECIAL CONSTRUCTION TECHNIQUES

7.1 Blasting

Typical 500-kV steel-lattice structure foundations normally will be installed using drilled shafts or piers. If hard rock is encountered within the planned drilling depth, blasting may be required to loosen or fracture the rock to reach the required depth to install the foundations. Precise locations where blasting could be expected are based on site-specific geotechnical investigations planned in 2022/2023 as part of detailed design. The Construction Contractor(s) will comply with the requirements of POD Appendix C14: Blasting Management Plan if blasting is to occur on the Project.

7.2 Helicopter Use

7.2.1 Typical Helicopter Construction

Typical helicopter use on the Project could include a small helicopter to move personnel, install pulling lines (called sock lines) to facilitate installing conductors and overhead ground wires, transport construction workers and equipment that will be dropped off at work areas, and/or support for the administration and management of the Project.

In addition to the stringing of conductors, helicopters may be used for construction in rough terrain where access is difficult or where access through environmentally sensitive areas needs to be avoided. The operating area of the helicopters will be limited to a radius of about 5 miles from helicopter fly yards that are part of the Project design.

When a portion of the Project requires construction using helicopter support, the fly yards, multi-purpose yards, pulling and tensioning sites, or other previously described areas will serve as a helicopter support yard for fueling, maintenance, and transporting equipment, materials, and personnel to and from the structure site locations.

Prior to helicopter operations, the CIC will notify the appropriate land management agencies of proposed closure areas. Coordination would also be required with Clover Control at Hill Air Force Base, Utah Test and Training Range when helicopter use is planned near the Military Operating Area. In addition, the Nevada Department of Wildlife would also be contacted if helicopter use will occur during the fall and winter months in Nevada to coordinate with their annual aerial surveys. The land management agency will then assist in notifying permittees and restricting public access to these defined areas during helicopter operations. Flagging, temporary road closures, traffic detours, and posted notices and signs may be used to restrict public access to construction areas. This will be in addition to general public access restrictions to protect public health and safety. A closure order would be signed in advance for any closures on NFS land. All applicable protection measures described in POD Appendix C1: Biological Resources Conservation Plan would be implemented during the use of helicopters to avoid and/or minimize the take of eagles during these operations.

The specific types of helicopters used will be based upon the Project need, the weight of the load being transported and the altitude of the flight path. The various needs will range from light loads (crew/inspector transportation and conductor stringing) to medium-to-heavy loads (equipment, tool, and material delivery/removal, and structure removal/construction activities) to heavy loads (structure erection).

7.2.2 Helicopter-Assisted Construction

Where possible, it is preferred to have access for construction of work areas, foundation activities, personnel transport, reclamation, and maintenance. However, if helicopter construction is required on portions of the Project due to rough terrain, environmental protections/restrictions or landowner restrictions, one or more of the following steps to construct a structure will be performed by helicopter:

1. A tracked excavator or dozer for construction of the structure work area will be mobilized to the site via access roads depicted in POD Appendix A: Detailed Route Alignment Figures or by helicopter if conditions allow.

2. A trackhoe equipped with a drilling auger will be mobilized to the site via the safe temporary access created by the walking backhoe or by helicopter if conditions allow. This equipment will be used to excavate the drilled shaft or alternative foundation construction.

3. Precast foundation and anchors or reinforcement cages, tied at the site or delivered assembled by helicopter, will be inserted into the excavation by helicopter or equipment in the work area. The cage and leg stub angle will be supported by the foundation reveal forms. Foundation concrete will be delivered via helicopter.

4. Several methods for helicopter structure erection can be implemented. Steel for the structures can be delivered to the site via helicopter then erected by hand using a gin, flown to the site and stacked in prefabricated sections, or weight allowing (dependent on structure type), flown and erected as a complete structure.

5. In most circumstances, the insulators and stringing sheaves will be installed by helicopter after structure erection.

6. Sock lines will be installed using helicopters. The sock line is used during the wire-stringing operations.

7. Pulling and tensioning sites with reduced to no access may be supported by helicopters. Helicopters could be used to fly in wire reels, reel stands, tensioners, and other equipment.

8. After the conductor is strung in, helicopters will support the clipping process. This process includes delivering workers, tools, and materials to the structure to permanently attach the wire to the assemblies After the clipping is completed, the helicopter will remove the stringing sheaves, tools, equipment, and workers.

9. After completion of the stringing operations, reclamation will take place. Once completed, all workers and equipment will be airlifted off-site.

7.2.3 Helicopter Fly Yards

Helicopter fly yards, approximately five to seven acres each, will be located approximately every five miles along the route and are depicted in POD Appendix A: Detailed Route Alignment Figures. Typically, helicopter fly yards will be located in relatively flat areas with easy, existing access to minimize site grading and new road construction. Each helicopter fly yard will support several structure sites and will be located no farther away from structure site locations than is within the safe round-trip flight distance limitation of the helicopter(s) being used. Helicopters may also be used to support other construction activities if circumstances allow.

Depending on the size and weight of the load, several round trips will be required from the helicopter fly yard to fully construct each structure. The typical safe round-trip flight distance for a heavy-lift helicopter is a 3- to 5-mile radius, depending on altitude and lift weight.

All approved helicopter fly yard locations are identified as part of the Project design contained in POD Appendix A: Detailed Route Alignment Figures. For the use of any helicopter fly yard not expressly identified and approved in the POD, a variance request will be prepared and submitted by the Construction Contractor(s) and the variance request process identified in POD Appendix B6: Environmental Compliance Inspection Plan will be followed.

The helicopter fly yards will need to have as level a surface as possible. In some instances, because of the presence of vegetation and/or an uneven surface, the area required for a specific yard will need to be brushed, grubbed, and/or graded, including removal of trees in some instances. Helicopter fly yards will be accessible by road to facilitate the delivery of materials.

The following are typical activities that will take place at helicopter fly yards in support of helicopter-assisted construction:

- Structure steel, bolts, fittings, and blocking will be hauled and stored for use.
- Structure sections will be preassembled using a rough terrain crane.
- Rebar for assembling cages and/or preassembled rebar cages for structure foundations will be delivered and then flown out of this yard to each structure site.
- Concrete will be staged by truck delivery or batch plant, which will generate the required concrete. The concrete will be loaded into a concrete transport bucket that will be attached to a helicopter and flown out to the structure sites.
- A fuel truck and a mechanics truck will be located at these yards for refueling the helicopter and necessary light maintenance.
- Personnel, tools, and small equipment will be transported by helicopter to and from the yards to the construction sites.
- Temporary parking for personnel may be provided.
- Helicopter yards will serve as a safe landing area for the helicopter in case of an emergency.

The identification of and meeting of all site requirements for all helicopter fly yards will be completed by the Construction Contractor(s) and coordinated with the appropriate federal land management agency or the affected private landowners.

Helicopter fly yards will be temporary disturbance areas and reclaimed after construction in accordance with POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

7.3 Construction During Winter Conditions

7.3.1 Snow Removal

The following activities will be implemented during snow removal:

- Snow will typically be blown, bladed, or pushed off access roads and/or construction work areas. The storage of snow will be confined to areas approved for disturbance and where appropriate surveys (e.g., biological, cultural, and paleontological) have been completed. Snow removal will be done typically with a motor grader, snowplow, snowblower, or dozer. If the Construction Contractor(s) proposes to move or store snow outside of areas approved for disturbance, the variance request process identified in Appendix B6: Environmental Compliance Inspection Plan of the POD would be followed to be approved for those locations.
- Prior to snow removal on NFS lands, the Forest Service Authorized Officer will be notified.
- Equipment used for snow removal will be equipped with shoes to keep the blade 6 inches off the ground.
- To accommodate big game movements, 100-foot gaps will be provided every 0.25 mile in the snow berms created as a result of snow removal.

- The Construction Contractor(s) will take special precautions where the surface of the ground is uneven and at drainage crossings to ensure that equipment blades do not destroy vegetation.

- In areas where snow fills trenches or holes, the Construction Contractor(s) will be responsible for removing it to allow visual inspection of trenches or holes prior to installing Project facilities and backfilling.

- The Construction Contractor(s) will backfill trenches with unfrozen soils.

- Snowmelt runoff will be managed to minimize erosion and prevent sedimentation from reaching water sources in accordance with POD Appendix C7: Erosion, Dust Control, and Air Quality Plan and POD Appendix C10: Stormwater Pollution Prevention Management Plan.

Access roads (excluding overland access routes) will be winterized by providing a well-drained roadway. This will be achieved by using water bars, maintaining drainage, and using any additional measures necessary to minimize erosion and other damage to the roadway or the surrounding public lands.

7.3.2 Winter Noxious Weed Control

The following activities are options that could be implemented during winter noxious weed removal. The Construction Contractor(s) will be responsible for coordinating with the CIC and the appropriate federal land management agency to find approved solutions for winter noxious weed control.

- Equipment, vehicles, and materials are to arrive on-site clean and free of weedy materials.

- Equipment that has traversed a weedy area is to be cleaned at a cleaning station prior to entering a weed-free area. This will be accomplished by washing weed material and dirt clumps from equipment, tires, and undercarriages at a weed washing station.

- The Construction Contractor(s) and all other entities on the ROW will be required to fill out a form at each cleaning station indicating their compliance with weed-free equipment requirements. The forms will be retained at each cleaning station and checked daily for tracking purposes.

- In the event a weed wash station is no longer functioning properly, the Construction Contractor(s) will replace it with a functioning weed wash station as soon as possible or the situation will be deemed a noncompliance event and the noncompliance process described in POD Appendix B6: Environmental Compliance Inspection Plan will be followed. Alternate weed wash stations would be used while the non-functioning station is under repair or awaiting replacement.

7.4 Water Use

Construction of the Project will require water. Major water uses are for concrete for structure foundations and dust control.

The required water will be procured by the Construction Contractor(s) from municipal, commercial, or previously allocated sources or under a temporary water use agreement with landowners holding existing water rights. All procured water will require written approval, which will include how much water will be used and a map and shapefile showing the location of the procurement site. Written approval will be provided to the CIC and the Company prior to procuring the water.

Construction of the Project will generate a temporary increase in fugitive dust. If the level of fugitive dust is too high in specific areas, as determined in cooperation with the landowner or the appropriate federal land management agency, water or another federal land management agency–approved palliative will be applied to disturbed areas to minimize dust. POD Appendix C7: Erosion, Dust Control, and Air Quality Plan provides Project-specific direction regarding fugitive dust control and minimization.

In the construction of foundations, water will be transported to a batch-plant site where it will be used to produce concrete. From the batch plant, the wet concrete will be transported to the structure site in concrete trucks (or helicopter, if applicable) for use in foundation installation. Generally, water use will be less when using guyed structures because there are fewer foundations necessary than for self-supporting structures and less volume of concrete will be used.

8 CONSTRUCTION WORKFORCE

The Project would be constructed primarily by contract personnel, with the Company responsible for Project administration and inspection. The construction workforce for the Project would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel who would perform the construction tasks (**Table 2**).

Table 2. Project Work Force Estimation

Work Item	Estimated Duration Weeks	Crews	Workers Per Crew	Max Total Workers
Construction Management/Supervision - Contractor	104	1	10	10
Construction Maintenance and Repairs	104	1	8	8
Construction Management - Owner	104	1	5	5
Inspection	104	1	11	11
Contractor Mobilization	16	3	3	9
Receive and Handle Materials	56	2	4	8
Survey/Stake Access Roads and Structure Pads	56	2	3	6
Construct Access Roads and Structure Pads	56	1	9	9
Survey/Stake New Structure Locations	56	1	3	3
Excavate Structure Holes	55	2	2	4
Tie and Haul Rebar	55	1	5	5
Set Forms and Pour Concrete	55	1	13	13
Batch Plant(s) and Concrete Trucks	55	1	13	13
Haul Steel and Materials	55	1	3	3
Haul Blocking and Shake Out Steel	55	1	4	4
Assemble Structures - Tangent	55	6	8	48
Assemble Structures - Dead End	55	2	10	20
Bottom Setting Crews (Legs and Body Ext)	55	1	8	8
Tower Torquing Crew	55	1	4	4
Erect Structures	56	2	8	16
Backbolt and Torque After Erection	56	2	3	6

Work Item	Estimated Duration Weeks	Crews	Workers Per Crew	Max Total Workers
Load, Haul and Spot OHGW, OPGW and Conductors	57	1	4	4
Install and Remove Guard Structures	57	1	4	4
Install OHGW, OPGW and Conductors	57	1	12	12
Sag, Dead End, Clip, Dampers, Spacers	57	6	5	30
Final Clean Up (Punch List)	44	1	4	4
Reclamation/Restoration	44	2	4	8
Total	**—**	**—**	**—**	**275**

9 EQUIPMENT

Table 3 provides a list of the anticipated equipment used during the construction and reclamation of the Project and an estimate of the total engine hours.

Table 3. Project Equipment and Duration of Use

Equipment	Common Manufacturer	Common Model	Quantity	Hours per day	Days per week	Duration (weeks)	Total Engine Hours
Project Management/Inspection							
Truck - Pickup	Ford	F150	15	6	6	104	56,160
Project Supervision - Contractor							
Truck - Pickup	Ford	F150	10	8	6	104	49,920
Maintenance - Contractor							
Truck - Pickup	Ford	F150	1	6	6	104	3,744
Truck - Flatbed 1T	Ford	F350	2	6	6	104	7,488
Truck - Mechanics 2T	Ford	F550	5	8	6	104	24,960
Survey							
Truck - Pickup	Ford	F150	1	4	6	56	1,344
Truck - Flatbed 1T	Ford	F350	1	4	6	56	1,344
Multi-Purpose Yards							
Truck - Pickup	Ford	F150	1	4	6	82	1,968
Truck - Flatbed 1T	Ford	F350	1	2	6	82	984
Truck - Flatbed 2T	Ford	F550	1	2	6	82	984
Telehandler - 12K	Cat	TL1255	2	8	6	82	7,872
Telehandler - 40K	Maintou	MHT10180	1	8	6	82	3,936
Trailer - Office	NA	NA	1	10	6	82	—
Generator - Portable (office)	Cummins	QSB7-G9	1	10	6	82	4,920
Road Building							
Truck - Pickup	Ford	F150	1	2	6	56	672
Truck - Flatbed 1T	Ford	F350	1	2	6	56	672

Equipment	Common Manufacturer	Common Model	Quantity	Hours per day	Days per week	Duration (weeks)	Total Engine Hours
Truck - Flatbed 2T	Ford	F550	1	4	6	56	1,344
Truck - Water	Freightliner	M2 106	1	6	6	56	2,016
Truck - Fuel	Freightliner	M2 106	1	4	6	56	1,344
Truck - Dump 10Y	Freightliner	108 SD	2	6	6	56	4,032
Truck - Semi Tractor	Freightliner	122 SD	2	6	6	56	4,032
Trailer - Lowboy	NA	NA	2	6	6	56	—
Backhoe - with Bucket	Cat	415	1	6	6	56	2,016
Loader - with Bucket	Cat	930	2	6	6	56	4,032
Loader - with Brusher/Grubber	Cat	930	2	8	6	56	5,376
Grader - Road	Cat	140 / 140	1	8	6	56	2,688
Dozer - with Blade	Cat	D6	1	8	6	56	2,688
Dozer - with Blade	Cat	D8	1	8	6	56	2,688
Roller - Vibratory Steel Drum	Cat	CB10	1	8	6	56	2,688
Foundations							
Truck - Pickup	Ford	F150	3	8	6	55	7,920
Truck - Flatbed 1T	Ford	F350	6	4	6	55	7,920
Truck - Flatbed 2T	Ford	F550	2	5	6	55	3,300
Truck - Water	Freightliner	M2 106	1	6	6	55	1,980
Truck - Fuel	Freightliner	M2 106	1	4	6	55	1,320
Truck - Dump 10Y	Freightliner	108 SD	2	6	6	55	3,960
Truck - Semi Tractor	Freightliner	122 SD	2	8	6	55	5,280
Trailer - Lowboy	NA	NA	1	6	6	55	—
Trailer - Flatbed	NA	NA	2	6	6	55	—

Equipment	Common Manufacturer	Common Model	Quantity	Hours per day	Days per week	Duration (weeks)	Total Engine Hours
Truck - Flatbed with Boom - 5T	Freightliner	M2 106	1	6	6	55	1,980
Truck - Concrete	Peterbilt	357	5	6	6	55	9,900
Excavator - with Heavy LoDril	Cat	330	2	8	6	55	5,280
Excavator - with Light LoDril	Cat	317	1	6	6	55	1,980
Backhoe - with Bucket	Cat	415	1	4	6	55	1,320
Dozer - with Blade	Cat	D6	1	4	6	55	1,320
Loader - with Bucket	Cat	930	1	4	6	55	1,320
Crane RT - 65T	Linkbelt	RTC-8065	1	4	6	55	1,320
Telehandler - 40K	Maintou	MHT10180	1	4	6	55	1,320
Telehandler - 12K	Cat	TL1255	1	4	6	55	1,320
Loader - Skidsteer	Cat	289	1	4	6	55	1,320
Generator - Portable (worksite)	Honda	EB3000	2	4	6	55	2,640
Trailer - Office	NA	NA	1	10	6	55	—
Generator - Portable (office)	Cummins	QSB7-G9	1	10	6	55	3,300
Material Hauling							
Truck - Flatbed 1T	Ford	F350	1	4	6	80	1,920
Truck - Flatbed 2T	Ford	F550	1	4	6	80	1,920
Truck - Semi Tractor	Freightliner	122 SD	1	8	6	80	3,840
Truck - Flatbed with Boom - 5T	Freightliner	M2 106	1	4	6	80	1,920
Trailer - Flatbed	NA	NA	6	8	6	80	—
Telehandler - 40K	Maintou	MHT10180	1	4	6	80	1,920

Equipment	Common Manufacturer	Common Model	Quantity	Hours per day	Days per week	Duration (weeks)	Total Engine Hours
Steel Assembly							
Truck - Pickup	Ford	F150	4	8	6	55	10,560
Truck - Flatbed 1T	Ford	F350	20	4	6	55	26,400
Truck - Flatbed 2T	Ford	F550	3	8	6	55	7,920
Truck - Water	Freightliner	M2 106	1	6	6	55	1,980
Telehandler - 12K	Cat	TL1255	3	4	6	55	3,960
Telehandler - 40K	Maintou	MHT10180	3	4	6	55	3,960
Generator - Portable (worksite)	Honda	EB3000	2	2	6	55	1,320
Trailer - Office	NA	NA	1	10	6	55	—
Generator - Portable (office)	Cummins	QSB7-G9	1	10	6	55	3,300
Steel Erection							
Truck - Pickup	Ford	F150	3	8	6	56	8,064
Truck - Flatbed 1T	Ford	F350	6	4	6	56	8,064
Truck - Flatbed 2T	Ford	F550	2	4	6	56	2,688
Crane RT - 110T	Linkbelt	RTC-80160	3	6	6	56	6,048
Crane RT - 160T	Linkbelt	RTC-80110	3	6	6	56	6,048
Dozer - with Blade	Cat	D6	1	4	6	56	1,344
Generator - Portable (worksite)	Honda	EB3000	6	4	6	56	8,064
Wire Installation							
Truck - Pickup	Ford	F150	6	8	6	57	16,416
Truck - Flatbed 1T	Ford	F350	10	6	6	57	20,520
Truck - Flatbed 2T	Ford	F550	2	8	6	57	5,472
Truck - Water	Freightliner	M2 106	1	6	6	57	2,052

Equipment	Common Manufacturer	Common Model	Quantity	Hours per day	Days per week	Duration (weeks)	Total Engine Hours
Truck - DE & Splicing Box	Freightliner	108 SD	1	4	6	57	1,368
Truck - Semi Tractor	Freightliner	122 SD	3	8	6	57	8,208
Trailer - Flatbed	NA	NA	4	4	6	57	—
Trailer - Lowboy	NA	NA	3	4	6	57	—
Trailer - Reel Stand	NA	NA	12	4	6	57	—
Crane - 40T with Man Basket	Altec	AC40E-152S	6	8	6	57	16,416
Crane RT - 65T	Linkbelt	RTC-8065	1	4	6	57	1,368
Puller - Triple Drum	Wagner Smith	T-3DP-200-FT4	2	4	6	57	2,736
Puller - Single Drum	Wagner Smith	T-1DP-2850	1	4	6	57	1,368
Puller - Sockline	Wagner Smith	T-4DP-130-FT4	2	4	6	57	2,736
Tensioner - Conductor	Wagner Smith	SK-3BWT-10-72H	1	2	6	57	684
Tensioner - Shield Wire	Wagner Smith	T-BWT-4-61	1	2	6	57	684
Dozer - Sagging	Cat	D8	2	2	6	57	1,368
Dozer - with Blade	Cat	D6	1	2	6	57	684
Backhoe - with Bucket	Cat	415	1	2	6	57	684
Truck - Digger Derrick	Freightliner	M2 106	1	2	6	57	684
Generator - Portable (worksite)	Honda	EB3000	2	2	6	57	1,368
Press Motor - DE & Splicing	Honda	GX160	6	4	6	57	8,208
Helicopter - Pilot Line - Small	McDonnell Douglas	500	1	8	6	57	2,736
Restoration							
Truck - Pickup	Ford	F150	3	6	6	44	4,752
Truck - Flatbed 1T	Ford	F350	3	6	6	44	4,752
Truck - Flatbed 2T	Ford	F550	1	4	6	44	1,056

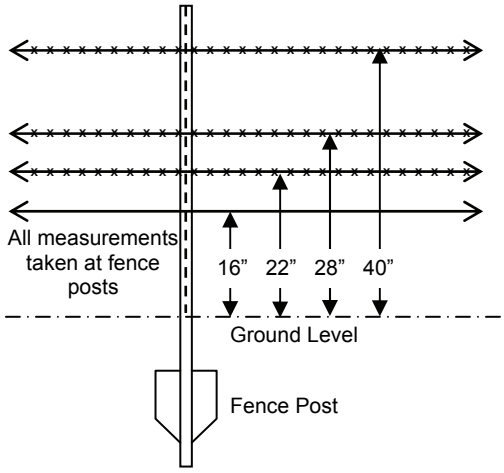
Equipment	Common Manufacturer	Common Model	Quantity	Hours per day	Days per week	Duration (weeks)	Total Engine Hours
Truck - Water	Freightliner	M2 106	2	6	6	44	3,168
Truck - Dump 10Y	Freightliner	108 SD	1	6	6	44	1,584
Truck - Semi Tractor	Freightliner	122 SD	1	6	6	44	1,584
Trailer - Lowboy	NA	NA	1	6	6	44	—
Backhoe - with Bucket	Cat	415	1	4	6	44	1,056
Loader - with Bucket	Cat	930	1	4	6	44	1,056
Grader - Road	Cat	140 / 140	1	8	6	44	2,112
Dozer - with Blade	Cat	D6	1	8	6	44	2,112
Loader - Skidsteer with Seeder	Cat	289	1	8	6	44	2,112

Attachment A.
Company Transmission Construction Standards

placeholder to be provided in final

Attachment B.
Bureau of Land Management Fence Standards

FOUR WIRE FENCE STANDARD FOR FENCE CROSSINGS*



Distance from ground level to bottom wire can vary from 16-20” between fence posts. Extra fence posts should be used to maintain the correct spacing.

All wires connect to metal fence posts with wire clips or wooden fence posts with metal staples.

All wires must be stretched and attached to appropriate support structures.

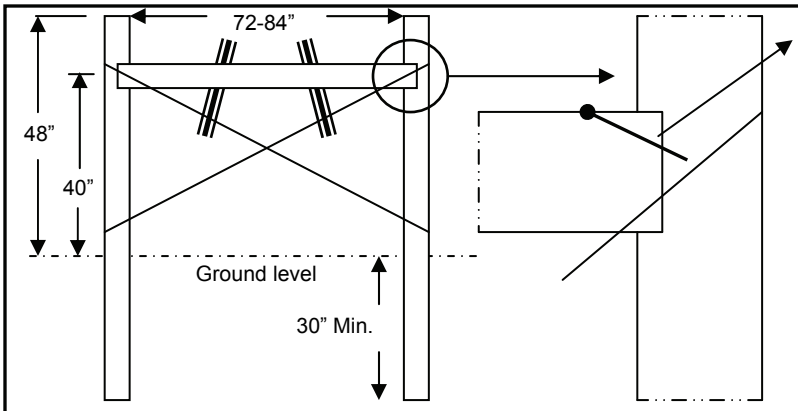
Bottom wire is always smooth – no barbs.

Combination of cattle (requiring greater restriction of livestock movements) with deer, elk, moose, or antelope.

H-1741-1 - FENCING

Drawings not to scale

HORIZONTAL FENCE BRACES*



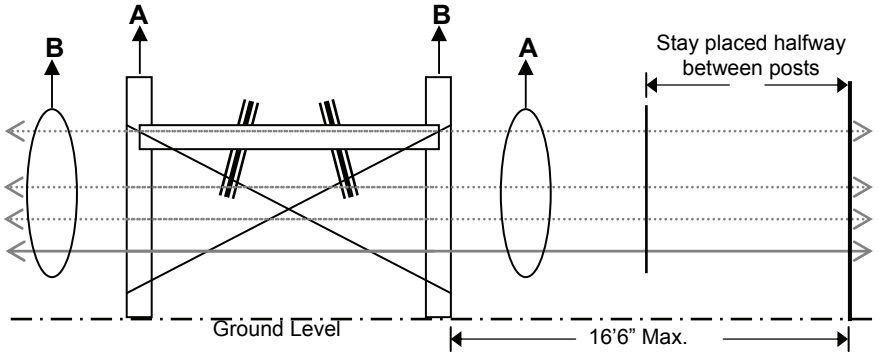
Vertical post notched 1 ½” to accept horizontal post and nailed.

Vertical posts:
6” minimum diameter*

Horizontal posts:
4” minimum diameter*

*All wooden posts must be treated to resist rot. Post size is actual dimension, not a nominal measurement

Drawings not to scale



Fence wires attach to H-braces opposite the direction of pull. Wires “A,” running to the right, attach to post “A,” on the left hand side of the brace. Likewise, wires “B,” running to the left, attach to post “B,” on the right hand side of the brace. Fence posts are spaced at no more than 16’6” (one rod) intervals with wooden or wire stays between posts. Existing fences may vary from these specifications and should not be used as an example for new construction.

Anywhere an existing range fence will be cut, a new H brace will be constructed, with the existing fence stretched and secured properly one wire at a time. Wires will not be secured to only a single post in the ground. During construction, a stock-worthy, temporary gate may be used across the right-of-way to keep the fence closed. Temporary gates must follow the same line as the existing fence and not create a stock trap. Following construction, all temporary structures will be replaced with new, permanent fence built to the correct specifications. The existing fence will not be used as a template for new fences, as existing fences may vary in age and design. New fence standards will be applied as old fences degrade and are replaced.

*These are minimum fence specifications, subject to change based on location and landowner requirements. In limited instances, such as for wildlife concerns, right-of-way holders may be asked to make alterations after a fence has been re-constructed. If any uncertainty exists as to which standard to use for fence construction, please contact the BLM office in your area. Pipeline corridors require fence construction that differs from these drawings. Deviations from these specifications must be reviewed by the approved officers’ representative prior to construction.

Appendix B5. Environmental and Safety Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix B5. Environmental and Safety Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren, Suite 350
Phoenix, Arizona 85004

July 2023

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Abbreviations

BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
OSHA	Occupational Safety and Health Administration
Project	Cross-Tie 500-kV Transmission Project
Plan	Environmental and Safety Plan
ROW	right-of-way

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Environmental and Safety Plan (Plan) has been prepared to ensure that an environmental and safety education program is developed and implemented for the Project. This program will address environmental stipulations and safety during both the construction phase and the operation and maintenance phase.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) records of decision and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

2 PROGRAM DESCRIPTION

The environmental and safety education program for the construction phase will be developed and conducted by the Construction Contractor(s), in coordination with the Company, the BLM, Forest Service, and the Compliance Inspection Contractor (CIC). This program will 1) educate and inform all Project personnel and visitors, including BLM and Forest Service personnel, on how to adhere to Project-specific environmental stipulations, and 2) support and reinforce a safe environment for Project personnel and visitors. Safety education will be applied to all aspects of the Project regarding Occupational Safety and Health Administration (OSHA) regulations, other regulatory state agencies, and industry best practices for safety. The environmental and safety education program will be submitted to the BLM and the Forest Service for review and approval prior to implementation. Signatories and Tribes participating in the programmatic agreement regarding compliance with the National Historic Preservation Act will be invited to review and comment on the cultural resources protection component of the environmental and safety education program.

The environmental and safety education program for the construction phase will be developed and conducted prior to any Project personnel or visitors, including agency personnel, being able to access the ROW. At a minimum, the program would include the following topics: biological, cultural, paleontological, and other environmental requirements and protection measures. The environmental and safety training will be conducted at the preconstruction meeting discussed in Appendix B4: Project Construction Plan. After participating in the environmental and safety education program, each participant will receive a card and hard hat sticker indicating clearance for ROW access. The Construction Contractor(s) will provide the CIC and the Company with an updated weekly list of Project personnel and visitors who have received the training. The Construction Contractor(s) will be responsible for ensuring that all Project personnel have received the required training. A noncompliance violation will be issued if Project personnel are found accessing the ROW without having completed the required training.

All construction, operation, and maintenance activities will be required to comply with OSHA regulations. The CIC will be notified by the Construction Contractor(s) of any accidents that occur on public lands during construction of the Project. Notification procedures for emergencies are described in Appendix C13: Emergency Preparedness and Response Plan Guidelines.

After construction is complete, the Company will be responsible for developing and conducting the environmental and safety education for all operation and maintenance personnel who will be accessing the Project.

Appendix B6. Environmental Compliance Inspection Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development – Draft

Appendix B6. Environmental Compliance Inspection Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

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Attachments

Figures

Tables

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measures
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Forest Service	U.S. Department of Agriculture Forest Service
NFS	National Forest System
NHPA	National Historic Preservation Act
Plan	Environmental Compliance Inspection Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
RODs	Records of Decision
ROW	Right-of-Way
SUP	Special Use Permit
WSO	work stoppage order

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

Environmental protection is a dynamic and fundamental objective of the Project. Compliance by the Construction Contractor(s) and the Company with terms and conditions intended to protect environmental resources in Utah and Nevada is a critical priority that must be respected during all phases of construction, including reclamation, and operations and maintenance. For this reason, this Environmental Compliance Inspection Plan (Plan) is a critical environmental compliance tool detailing how compliance will be tracked, documented, and adhered to.

This Environmental Compliance Inspection Plan (Plan) was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) records of decision (RODs) and the BLM right-of-way (ROW) grant and Forest Service special use permit (SUP) before issuance of the notices to proceed and commencement of construction.

2 ENVIRONMENTAL COMPLIANCE INSPECTION PLAN ELEMENTS AND AUTHORITY

This Plan is the principal guidance document intended to affirm how Project participants will uphold, document, and manage compliance with the BLM ROW grant; the Forest Service SUP; and the POD; landowner agreements; and all applicable federal, state, and local permits. As a centralized Project environmental compliance reference, it is designed to facilitate environmental compliance across the entire Project for all parties through description of the following essential elements:

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

The Plan is intended to be a control document and will be revised as needed throughout the construction process. The Plan will be applicable for multiple jurisdictional permitting entities and landowners because the Project will cross federal and state lands, as well as lands owned privately and/or under the jurisdiction of multiple agencies.

The BLM and Forest Service will be responsible for the administration of terms and conditions in their respective RODs, the BLM ROW grant, the Forest Service SUP, the programmatic agreement for compliance with the National Historic Preservation Act (NHPA), and the biological opinion.

On federal lands, the POD is an enforceable stipulation of the BLM ROW grant and Forest Service SUP. As such, all applicant committed to environmental protection measures (ACEPM) and stipulations identified as applicable in the POD should be adhered to for the life of the BLM ROW grant and Forest Service SUP.

On state and private lands, BLM's responsibilities will include ensuring compliance with the NHPA and the Endangered Species Act (ESA) and ensuring that Project impacts are consistent with the analysis in the final environmental impact statement (EIS). The Forest Service will have these same responsibilities on National Forest System land. The Company will be responsible for POD enforcement on state and private lands. Refusal by any private landowners related to the implementation of the POD or any portion of the POD will be documented by the Construction Contractor(s) and provided to the Company and Compliance Inspection Contractor (CIC).

As the lead federal agency, the BLM will have final selection authority of a third-party CIC to act on behalf of thefederal land management agencies and oversee all lands in the Project construction area and the activities occurring within. Prior to construction, the CIC will be approved by the BLM and hired by the Company.

The third-party CIC will be used to inspect all land jurisdictions to ensure adequate oversight during the preconstruction and construction phases and also for applicable activities during the postconstruction phase. On federal lands, the CIC will be authorized to enforce the BLM ROW grant, the Forest Service SUP, and the POD and will inspect and monitor construction, reclamation, and any applicable postconstruction activities. On private and state lands, the CIC will document POD compliance on behalf of the Company through the inspection and monitoring of preconstruction, construction, reclamation and any applicable postconstruction activities, and enforce requirements related to federal land management agencies' responsibilities under the NHPA and the ESA. The CIC will document disturbance across all lands associated with the Project consistent with what is analyzed in the final EIS.

In addition, the Project will require adherence to all applicable federal, state, and local permits as well as private landowner agreements (if applicable). The responsibility for compliance monitoring and enforcement of local and state conditions not identified in the POD will be determined between the Company and the landowner on a case-by-case basis.

As part of the Company's environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the ACEPMs and other specific stipulations, terms, conditions, and/or methods set forth in the POD, the BLM ROW grant, and the Forest Service SUP (as detailed in the final EIS). Records of compliance will be kept by the Construction Contractor(s). Project-specific permitting documents will be reviewed by the Construction Contractor(s) prior to any construction activities to identify and determine application of all Project-wide and site-specific requirements.

Environmental inspectors will be retained by the Construction Contractor(s) (as shown in the organizational chart in Figure 1). An environmental inspector's primary focus will be to ensure that all construction activities in all Project segments and phases are performed in accordance with the environmental commitments set forth in the RODs, the BLM ROW grant, the Forest Service SUP, and the POD; all Project-specific permitting documents; and any individual agreements. If the CIC is not present during construction on nonfederal lands, the environmental inspectors must ensure that any Project

disturbance is approved within the limits of the final EIS and then document any Project disturbance that occurs in their reporting.

The BLM, through the CIC, will have oversight of the Construction Contractor(s)' environmental compliance performance, but any specific work direction given to the Construction Contractor(s) will only come from the Company, except if the CIC issues work stoppage orders (WSOs). Communication lines identified in Figure 1 are not intended to limit communication about the Project but to demonstrate the primary channels of routine communication among parties for compliance-related issues.

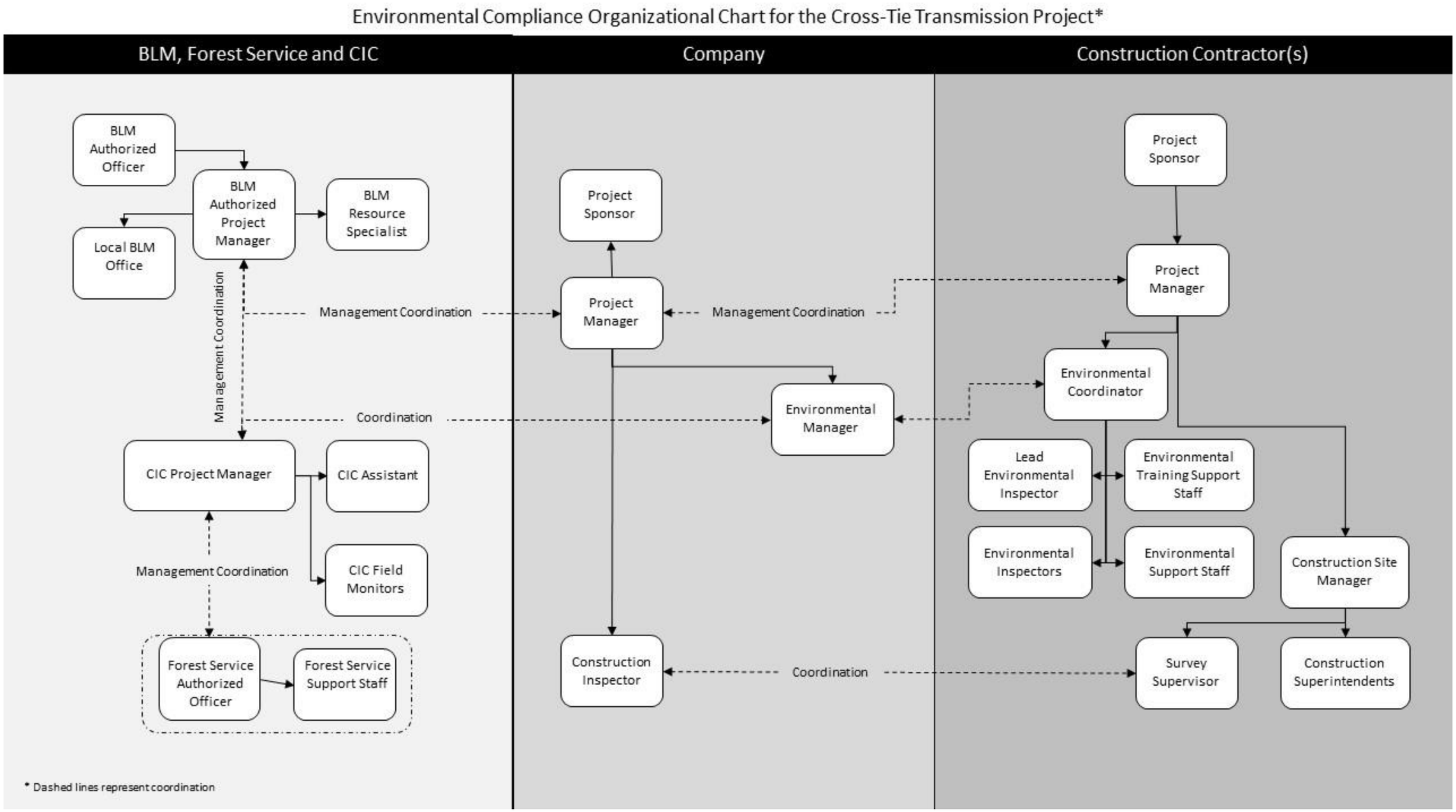

Figure 1. Environmental Compliance Inspection Plan Organization Chart.

3 ROLES AND RESPONSIBILITIES

The following section describes the responsibilities of each Plan entity and describes the reporting relationships and roles in executing the Plan (see Figure 1). If other parties become engaged in this Plan as additional participants, they will be responsible for functioning and abiding by the protocols, terms, and conditions outlined in this Plan. The roles identified below, as well as the corresponding responsibilities, are intended to be representative and not an exhaustive list of either roles or subsequent responsibilities for those roles.

This section also briefly discusses the variance request process. A more detailed variance request discussion is located in Section 4.2 of this Plan.

3.1 Company

The Company will act as holder of all grants/easements, public and private, and is the holder for the BLM ROW grant, and the Forest Service SUP. As such, the Company is ultimately accountable for adherence to the terms and conditions of the BLM ROW grant, the Forest Service SUP, the POD, and environmental permit requirements specified in the terms of its agreements and will ensure that environmental impacts do not exceed those to be analyzed in the final EIS and approved in the POD. The Company will also manage the variance process for private and state lands.

The Company will be responsible for maintaining regular and consistent communication with the BLM, the Forest Service, the CIC, the Construction Contractor(s), counties, cooperating agencies, landowners, and any other pertinent Project entities prior to, during, and following construction.

3.1.1 Company's Project Sponsor

The Company's Project Sponsor will be responsible for the following activities:

- Responsible for Project delivery.
- Ensures that effective coordination occurs between the Company's project manager and environmental manager in conjunction with the respective federal land management agency's Authorized Officer or agency-specific counterpart, including the CIC and the Construction Contractor(s)' project manager.
- Informs the Construction Contractor(s) that they are contractually bound to comply with all of the Project's environmental requirements, including implementation of the Plan.

3.1.2 Company's Project Manager

The Company's Project Manager will be responsible for the following activities:

- Responsible for all aspects of Project execution and completion.
- Enforces the Construction Contractor(s)' compliance with all environmental laws and regulations, including the terms and conditions of the BLM ROW grant, the Forest Service SUP, the POD, and all Project-specific permitting documents and landowner agreements, during the construction of the Project.
- Manages the Company's construction inspector and environmental manager.

- Reporting:
  - Reviews and evaluates weekly reports.
  - Reports environmental compliance violations to the Company's Project sponsor as needed.
- Variance Requests:
  - Reviews and approves the Construction Contractor(s)' written variance requests for submittal to the CIC, consistent with the variance request process described in Section 4.2.

3.1.3 Company's Environmental Manager

The Company's Environmental Manager will be responsible for the following activities:

- Facilitates oversight and coordination of the Construction Contractor(s)' compliance with all environmental laws and regulations, including the terms and conditions of the BLM ROW grant, the Forest Service SUP, the POD, and all Project-specific permitting documents and landowner agreements, during the construction of the Project.
- Coordinates with the Company's project manager and construction inspector (refer to Section 3.1.2 and Section 3.1.4 of this Plan), the Construction Contractor(s)' environmental inspection/compliance personnel (refer to Sections 3.3.3 through 3.3.5 and Section 3.3.7 of this Plan), and the CIC (refer to Section 3.2.3 of this Plan) on a regular basis to evaluate environmental compliance of the Project.
- Monitors completion of all preconstruction, construction, and postconstruction commitments.
- Serves as the primary Company contact regarding environmental issues.
- Communicates with the CIC regarding environmental compliance issues and tracks resolution of issues to completion.
- Reporting:
  - Provides environmental updates to the Company's project manager.
  - Reviews all environmental documentation derived from the CIC and the Construction Contractor(s), including site-specific environmental plans, variance requests, daily reports, and weekly reports.
- Variance Requests:
  - Provides review and comments of written variance requests from the Construction Contractor(s).
  - Submits completed variance requests to the Company's project manager for review, approval, and submission to the CIC consistent with the variance request process as described in Section 4.2.

3.1.4 Company's Construction Inspector

The Company's Construction Inspector will be responsible for the following activities:

- Observes and monitors the construction activities of the Construction Contractor(s) for compliance with the engineering contract documents, plans, standards, and specifications to ensure construction quality.
- Coordinates with the Company's environmental manager regarding specific work activities scheduled to occur in sensitive resource areas that may require additional environmental oversight.
- Reporting:
  - Reviews the accuracy and adequacy of applicable environmental compliance documents prepared by the Construction Contractor(s).

3.2 Bureau of Land Management and Compliance Inspection Contractor

The BLM's primary objective is to ensure compliance with the analysis and ACEPMs in the POD, the final EIS, the biological opinion, the programmatic agreement for compliance with the NHPA, and the ROW grant during the construction, operation, and maintenance phases of the Project.

The CIC will represent the BLM during the preconstruction and construction phases and also for applicable activities during the postconstruction phase (specifically reclamation) to ensure compliance with the RODs, the BLM ROW grant, the Forest Service SUP, and the POD to ensure that environmental impacts do not exceed those to be analyzed in the final EIS, as approved in the RODs. While the BLM is the primary federal entity responsible for managing the CIC, the BLM will coordinate with the Forest Service when construction occurs on National Forest System (NFS) land.

The CIC assists the BLM by providing regular and consistent field observations, documenting their findings, processing and approving Level 1 variance requests and/or other deviations for which authority has been delegated to the CIC, and working with the Company and Construction Contractor(s) to identify and resolve compliance issues and maintain compliance during the Project.

The CIC will work under the direct supervision and control of the BLM. No direction will be taken from the Company or Construction Contractor(s); however, it is understood the CIC and the Company may work together to support the Project's timely and effective construction and will document POD compliance on state and private land.

The CIC has the authority to issue an immediate temporary suspension or WSO if a specific work activity or activities are in violation; however, all efforts will be made to coordinate closely with the Company and Construction Contractor(s) to report and document compliance concerns providing an opportunity to first resolve the concerns. Every effort will be made to limit any work stoppage to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not at any time or in any way otherwise authorized to direct work undertaken by the Construction Contractor(s) with the exception of a temporary suspension or WSO. If any additional environmental compliance oversight representative is required by agencies other than the BLM, their responsibilities would be consistent with those outlined for the BLM and the CIC as described in this Plan, although their authority and enforcement would be solely applicable in their respective agency's area of jurisdiction and coordinated through the CIC and the BLM as the lead agency.

3.2.1 Federal Land Management Agency Authorized Officer (or agency-specific counterpart)

The BLM Utah State Director serves as the Authorized Officer for the Project and will sign the BLM's ROD and ROW grant. The BLM Utah State Director a delegated his/her authority to the West Desert District Manager for all aspects of the Project, including the following:

- Coordinating with the BLM Ely District and Bristlecone Field Office in Nevada, the Forest Service in Nevada, and other cooperating agencies.
- Ensuring compliance with the National Environmental Policy Act.
- Coordinating any cost recovery activities.
- Issuance and administration of the ROW grants for all public lands managed by BLM involved in the Project.
- Determining, collecting, and properly depositing all rents due for the Project.
- Monitoring construction and reclamation.
- Issuing notices to proceed.

This delegation to the West Desert District Manager will remain in effect throughout the duration of the ROW, including any future amendments and all decommissioning actions, unless modified in writing. For this reason, the term Authorized Officer refers to any employee of the respective federal agency to whom the authority to perform the duties described has been delegated.

The Forest Supervisor for the Humboldt-Toiyabe is the Authorized Officer and will sign the Forest Service ROD and SUP. After the ROD is signed, the District Ranger for the Ely Ranger District will be responsible for all aspects of the project implementation on National Forest System land including the following:

- Coordinating with the BLM West Desert District Manager and other cooperating agencies
- Ensuring compliance with the National Environmental Policy Act.
- Coordinating any cost recovery activities.
- Administration of the SUP on the Ely Ranger District
- Determining, collecting, and properly depositing all rents due for the Project.
- Monitoring construction and reclamation.
- Issuing notices to proceed.

Authorized Officer(s) duties include the following as applicable on BLM or Forest Service land:

- Are the ultimate authority and decision-makers for issues on federal lands pertaining to the future final EIS analysis, the RODs, the POD, mitigation, the BLM ROW grant, and the Forest Service SUP.
- Supervise the BLM and Forest Service to verify that environmental compliance meets the requirements of all applicable laws, permits, the RODs, the BLM ROW grant, the Forest Service SUP, the POD, and agreements.
- Determine, in coordination with others, if any environmental noncompliance events for which the Company is accountable qualify as violations of the terms and conditions of the BLM ROW grant or the Forest Service SUP.
- In accordance with 43 Code of Federal Regulations (CFR) 2807.17(a), suspend or terminate any work approvals if the Company and/or its Construction Contractor(s) do not comply with applicable laws and regulations or any terms and conditions of the ROW grant, the Forest Service SUP, the POD, or stipulations.
- Issue BLM and/or Forest Service decisions.

3.2.2 Bureau of Land Management and Forest Service Project Managers

The BLM and Forest Service Project Managers will be responsible for the following:

- If delegated such authority by the Authorized Officer, enforces compliance with all environmental laws and regulations, including the BLM ROW grant, the final EIS, the POD, the RODs, the Forest Service SUP, and federal permits during construction of the Project; otherwise monitors compliance with laws, regulations, and agency authorizations and reports to the Authorized Officer.
- Are responsible for ensuring that environmental impacts do not exceed those analyzed in the final EIS and approved in the RODs.
- Manage the third-party CIC. While the BLM is the primary federal entity responsible for managing the CIC, the BLM will coordinate with the Forest Service when construction occurs on NFS lands.
- Coordinate with respective land management agencies' resource specialists for their technical expertise and input.
- Inform the Authorized Officer and the Company of any violations/noncompliance of the RODs, applicable laws and regulations, or any terms and conditions of the BLM ROW grant, the Forest Service SUP, or the POD due to environmental noncompliance and enforces their remedy.
- Report major environmental compliance violations to the respective federal land management agency's Authorized Officer or agency-specific counterpart.
- Reporting:
- Ensures that the Project administrative record is maintained accurately.

- Variance Requests:
  - If delegated by the respective federal land management agency's Authorized Officer or their agency-specific counterpart, authorize approval of Level 2 variance requests consistent with the variance request process as described in Section 4.2. If not delegated approval of Level 2 variance requests, coordinates processing of those requests.

3.2.3 Compliance Inspection Contractor Project Manager

The CIC Project Manager will be responsible for the following:

- Represents the BLM and the Forest Service in the field for compliance activities and reports directly to the federal land management agencies' project managers (or designees).
- Manages and supports CIC field monitors and coordinates their daily activities.
- Verifies and reports Construction Contractor(s)' compliance with all environmental requirements, identifies and reports noncompliance to the appropriate federal land management agency's project manager (or designated representative) immediately, and tracks all reported noncompliance events and their resolution.
- Verifies that construction occurs as described in the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP, and within the limits of disturbances analyzed in the final EIS and approved in the RODs. Tracks all Project construction disturbances for inclusion in an End- of-Construction Project Report (Section 8.2).
- Performs compliance monitoring work. At a minimum, the CIC or designated monitors are required to be at Project work areas when activities involving the use of construction equipment have the potential to cause significant surface disturbance or harm to sensitive resources. Exceptions can be made should the CIC, using professional judgment, determine that reductions in presence would not adversely affect compliance oversight.
- Coordinates variance requests with the BLM and Forest Service project managers (or designated representatives), the Company's project manager, and the Company's environmental manager. Discusses any potential noncompliance issues with the Construction Contractor(s)' environmental inspection staff as soon as possible.
- Acts as primary intermediary between the Company's Construction Contractor(s) and the BLM and the Forest Service. Communicates and coordinates with the Company's project manager and environmental manager and the BLM project manager.
- At a minimum, meets weekly with the BLM project manager (or designee), in person or by telephone, to review construction activities and the status of compliance. Meets weekly (minimum) with the Forest Service when work is being performed on NFS lands.
- Provides recommendations to the BLM project manager on ways to prevent noncompliance issues prior to the commencement of work and ways to resolve noncompliance incidents identified during construction. Provides recommendations to the Forest Service project manager when work is being performed on NFS lands.
- Conducts the final route review to document the status of the ROW and the final amount of construction disturbance for the entire Project.

- Performs reclamation monitoring as described in POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan and as directed by the BLM, the Forest Service, and/or the Company or landowner (if requesting a different standard).

- Reporting:

  - Documents all instances of noncompliance or other problems that would reasonably be expected to result in environmental impacts and provides the report to the appropriate BLM and/or Forest Service project manager or their designated representatives, the Company's project manager, and the Company's environmental manager within 24 hours of the noncompliance incident.

  - Provides weekly summary reports of compliance inspection to the BLM and the Company via a secure but mutually exclusive website. Weekly reports will summarize the prior week's activities and will include a brief description of construction activities, variance requests, compliance issues, corrective actions taken, and any additional acreage disturbed resulting from variance requests and any foreseeable issues. Reports to the Forest Service are required when work is being performed on NFS lands.

  - Reviews CIC field monitor daily reports for completeness and accuracy.

  - Participates in all meetings that involve environmental compliance aspects of the Project. The CIC prepares meeting notes that highlight all decisions made during these meetings.

  - Provides annual reclamation monitoring reports to the BLM, the Forest Service, and the Company throughout the reclamation monitoring period. The CIC will also coordinate periodic Forest Service inspections of reclamation on NFS lands.

  - Develops and provides an End-of-Construction Project Report (Section 8.2) to the Company and to the BLM and the Forest Service.

- Variance Requests:

  - Coordinates with the federal land management agencies, the Company, and the Construction Contractor(s) to review variance requests and deliver them to the BLM Authorized Officer or agency-specific counterpart for decisions.

  - Approves or denies Level 1 variance requests.

  - Reviews Level 1 variance requests on private and state lands for compliance with the ESA and the NHPA and provides comments to the Company.

  - Reviews and provides comments on Level 2 variance requests.

3.2.4 Compliance Inspection Contractor Field Monitors

The CIC Field Monitors will be responsible for the following:

- Conducts monitoring of construction activities, as needed, for pertinent Project impacts to environmental resources.

- Represents the BLM and the Forest Service in the field for compliance activities.

- Verifies that construction occurs as described in the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP.
- Conducts daily compliance inspection activities and develop daily reports.
- Coordinates with the Construction Contractor(s)' lead environmental inspector as their primary point of contact but report directly to the CIC.
- Discusses any potential compliance issues with the Construction Contractor(s)' environmental inspection staff and the CIC project manager as soon as possible.
- Coordinates solutions for corrective action on noncompliance activities.
- Verifies that corrective action is performed for noncompliance activities.
- Has the authority to temporarily stop activities likely to damage protected or sensitive resources and/or where those resources were intended to be avoided or protected and/or for noncompliance.
- Attends safety and environmental coordination meetings to understand planned construction activities and any safety or environmental concerns.
- Performs the same duties as the CIC in the event that the CIC is not available.
- Reporting:
  - Submits daily reports to the CIC project manager to document compliance or noncompliance with the Project's environmental requirements.

3.3 Construction Contractor(s)

The Construction Contractor(s) will be contractually bound by the Company to comply with all laws, regulations, and permit requirements, including all Project-specific permitting documents (including the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP) and landowner agreements throughout all phases of the Project.

3.3.1 Construction Contractor(s)' Project Sponsor

The Construction Contractor(s)' Project Sponsor will be responsible for the following:

- Responsible for Project completion in accordance with all environmental laws and regulations, including all Project-specific permitting documents (including the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP) and landowner agreements.
- Manages the Construction Contractor(s)' project manager to ensure adequate responses to any environmental issues.
- Ensures effective coordination between the Construction Contractor(s)' project manager and/or environmental coordinator and the Company's project manager, the Company's environmental manager, the BLM and Forest Service project managers, and/or the CIC.

3.3.1.1 Construction Contractor(s)' Project Manager

The Construction Contractor(s)' Project Manager will be responsible for the following:

- Responsible for all aspects of Project execution and completion.
- Requires that all Construction Contractor(s)' and subcontractor(s)' staff adhere to compliance with all environmental laws and regulations, including all Project-specific permitting documents (including the POD, the final EIS, the RODs, the BLM ROW grant, the Forest Service SUP) and landowner agreements during construction of the Project.
- Coordinates with the Construction Contractor(s)' superintendent(s), as well as the Company's project manager and environmental manager, on a regular basis to stay updated regarding the Project's compliance with environmental laws, regulations, and Project permits.
- Manages the Construction Contractor(s)' senior-level personnel.
- Requires all superintendents and foremen to follow the directions of the Construction Contractor(s)' environmental compliance staff regarding maintaining compliance with all environmental laws, regulations, and Project permits.
- Ensures that superintendents and foremen implement measures identified to resolve noncompliance issues in a timely manner.
- Develops and distributes weekly schedules of construction activities.
- Immediately informs the Company's environmental manager and CIC of any noncompliance.
- Develops a document control system to manage distribution of all documents and revisions.
- Provides as-built shapefiles to the Company for inclusion in the End-of-Construction Project Report described in Section 8.2.
- Reporting:
  - Responsible for providing (or making accessible) daily and weekly reports to the Company and CIC on a daily or weekly basis depending on the report.
- Variance Requests:
  - Reviews and approves written variance requests for submittal to the Company, the CIC, and federal land management agencies.
  - Can delegate authority to others to submit written variance requests.

3.3.2 Construction Contractor(s)' Environmental Manager

The Construction Contractor(s)' Environmental Manager will be responsible for the following:

- Assists in tracking Project compliance with all environmental laws and regulations, including all Project-specific permitting documents (including the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP) and landowner agreements, during construction of the Project.
- Coordinates with internal Construction Contractor personnel, the Company's staff, the CIC, and other field inspection personnel on a regular basis to manage and track Project activities and ensure consistent communication Project-wide.
- Manages the Construction Contractor(s)' environmental staff.
- Determines the need for variance requests and works with internal Construction Contractor personnel to develop a formal request.
- Receives and reviews daily environmental compliance inspection reports from internal Construction Contractor environmental personnel.
- Ensures that the Construction Contractor(s)' reclamation and reclamation monitoring activities are conducted, as described in Appendix C9: Reclamation, Revegetation, and Monitoring Plan of the POD.
- Reporting:
  - Tracks and coordinates environmental issue areas and noncompliance reports and ensures that follow-up and resolution reports are provided to the Company and the CIC within 1 day.
- Variance Requests:
  - Tracks variance requests and communicates variance request status with the Construction Contractor(s)' project manager and superintendent(s).
  - Coordinates processing and archiving of variance requests.
  - Ensures completion of any required field surveys (e.g., for biology or cultural resources) and technical reports to support variance requests.
- Ensures that variance requests are complete and accurate prior to submitting to the Company's environmental manager. The Company's environmental manager will review and submit the final variance request to the CIC for review and coordination with the appropriate federal agency consistent with the variance request process as described in Section 4.2.

3.3.3 Construction Contractor(s)' Lead Environmental Inspector

The Construction Contractor(s)' Lead Environmental Inspector will be responsible for the following:

- Regularly inspects or coordinates the inspection of construction activities to ensure compliance with all environmental laws and regulations, including all Project-specific permitting documents (including the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP) and landowner agreements, during the construction of the Project.
- Has the authority to stop work when construction activities violate environmental laws and regulations or Project-specific permitting documents (including the POD, the RODs, the BLM ROW grant, and the Forest Service SUP) and landowner agreements.
- Coordinates the identification of sensitive environmental resources and areas of concern prior to upcoming construction activities and coordinates appropriate measures to protect those sensitive resources with construction personnel accordingly.
- Supervises the environmental crew in the daily installation and maintenance of erosion control devices/measures and all other design features of the Project for environmental protection.
- Ensures that all areas of the Project are in compliance with all environmental requirements/permits held by the Construction Contractor(s).
- Identifies, documents, coordinates, and oversees corrective actions to resolve noncompliance issues.
- Manages environmental inspectors.
- Acts as a resource and technical lead to environmental inspectors and construction personnel.
- Coordinates daily with environmental inspectors to discuss upcoming construction activities, potential problem areas, and areas of concern.
- Coordinates with environmental inspectors and construction personnel to provide information and facilitate regular communication among all parties.
- Serves as the primary point of Construction Contractor(s)' contact for the CIC field monitors.
- Develops a training program for the Construction Contractor(s) to facilitate compliance with all environmental laws and regulations, including all Project-specific permitting documents (including the POD, the RODs, the BLM ROW grant, and the Forest Service SUP) and landowner agreements, during the construction of the Project. Provides remedial training to individuals and crews that have been involved in noncompliant activities.
- Provides the CIC and the Company's environmental manager with a course outline and all training material at least 30 days prior to any training for approval.
- Maintains records of training for all construction personnel and submits them to the Company on a weekly basis.

- Reporting:
  - Receives and reviews daily reports from the Construction Contractor(s)' environmental inspectors for completeness and accuracy and communicates action items or follow-up items to the appropriate parties.
  - Compiles daily reports into a weekly summary report.
  - Maintains the centralized storage of daily and weekly environmental inspection reports and makes reports available at the request of BLM and Forest Service project managers and the CIC and as part of the decision file.
  - Submits weekly summary reports documenting construction activities and compliance issues to the Company and the CIC.
  - Provides reclamation monitoring reports to the Company throughout the reclamation monitoring period, as described in Appendix C9: Reclamation, Revegetation, and Monitoring Plan of the POD.
- Variance Requests:
  - Communicates variance request status to environmental inspectors and construction personnel.

3.3.4 Construction Contractor(s)' Environmental Inspectors

The Construction Contractor(s)' Environmental Inspector will be responsible for the following:

- Conduct inspections of construction activities for compliance with all environmental laws and regulations, including the POD, the final EIS, the RODs, the BLM ROW grant, the Forest Service SUP, permits (federal, state, and local), and landowner agreements, during construction of the Project.
- Conduct and document daily inspections of construction activities.
- Ensure that any Project disturbance is an approved Project work area prior to proceeding.
- Identify sensitive resources and areas of concern prior to upcoming construction activities and coordinate with construction personnel to discuss appropriate environmental measures to protect those sensitive resources.
- Act as a resource for construction personnel to explain environmental regulations and permit requirements and how they are applied in the field.
- Verify that construction work areas, access roads, and features such as wetlands or sensitive habitat, are properly marked and flagged before work is initiated in the area.
- Install and inspect erosion control devices/measures to ensure proper functionality and communicate erosion control devices/measures maintenance requirements to the environmental crew foreman.
- Follow up on the repair and maintenance of erosion control devices/measures.

- Have the authority to stop work when construction activities violate environmental laws and regulations, Project-specific permitting documents (including the POD, the RODs, the BLM ROW grant, and the Forest Service SUP), and landowner agreements.
- Inspect and document reclamation and revegetation activities for compliance with the requirements of Appendix C9: Reclamation, Revegetation, and Monitoring Plan of the POD.
- Reporting:
  - Submit daily reports to the lead environmental inspector that document construction activities and associated compliance status for that day.
  - Document the resolution of any compliance issues in daily reports.

3.3.5 Construction Contractor(s)' Superintendent(s)

The Construction Contractor(s)' Superintendent(s) will be responsible for the following:

- Manage construction activities.
- Require all contractor personnel to follow the directions of the Construction Contractor(s)' environmental staff regarding maintaining compliance with all environmental laws and regulations, including all Project-specific permitting documents (including the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP) and landowner agreements, during the construction of the Project.
- Coordinate with the lead environmental inspector and the Construction Contractor(s)' environmental inspectors to ensure that all the construction personnel for whom they are responsible abide by all applicable laws, permits, and agreements.
- Conduct regular meetings and trainings with construction personnel to review safety and environmental compliance practices.
- Ensure that measures identified to resolve noncompliance issues are communicated to construction personnel and implemented in a timely manner.
- Immediately inform the Construction Contractor(s)' project manager of any noncompliance.
- Evaluate all compliance issues and ensure that all personnel involved with any construction activities have completed the environmental training program, are immediately reported on the training list, and have a hard hat sticker.
- Variance Requests:
  - Provide data and/or support development of written variance requests for submittal to the Company and the CIC for approval.

3.3.6 Construction Contractor(s)' Civil Survey Supervisor

The Construction Contractor(s)' Civil Survey Supervisor will be responsible for the following:

- Sets initial and maintains ROW and easement boundary stakes and flagging with the agreed-on Project flagging scheme.
- Delegates survey crews when necessary to work with environmental inspectors to adjust work areas to comply with environmental constraints.

3.3.6.1 Reports And Variance Requests

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

4 PROCEDURES

4.1 Compliance Levels

Each separate activity that is inspected and documented in a daily report will be assigned a compliance level, as defined below. The Construction Contractor(s)' environmental inspectors will assess potential noncompliant activities based on the extent and nature of actual impacts on a resource, the potential for additional impacts on a resource, the intent behind the action, and the history of the occurrence.

4.1.1 Acceptable

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

4.1.2 Problem Area

A problem area is a location or activity that does not meet the definition of acceptable but is not noncompliant (refer to Section 4.1.3 of this Plan) (i.e., stormwater controls, disturbance area flagging).

If a problem area is corrected in a timely manner and the correction is agreed upon by the CIC, it will not be considered noncompliant. The Construction Contractor(s)' environmental inspectors will document problem areas and their resolutions in daily reports. Problem areas documented by CIC field monitors will be reported and discussed with the Construction Contractor(s)' environmental inspectors. A noncompliance report will be issued if the problem area is not corrected in the agreed-upon time frame, if resource damage occurs, or if similar problem areas occur repeatedly.

4.1.3 Noncompliance

A noncompliance report will be prepared and issued by the CIC when construction activities violate the Project's environmental laws and regulations, including all Project-specific permitting documents (including the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP).

If the CIC or CIC field monitors observe a noncompliant activity, they will notify the Company's environmental manager, the Construction Contractor(s)' lead environmental manager, the Construction Contractor(s)' lead environmental inspector, and the appropriate BLM or Forest Service project manager immediately to discuss the situation prior to issuing a noncompliance report. If a noncompliance report is issued, it will include the name(s) of the Construction Contractor(s)' personnel contacted and the time of

the notification. In addition, a follow-up report will be filed with the appropriate BLM or Forest Service project manager and the Company's environmental manager documenting the resolution of the noncompliance. If the Construction Contractor(s)' lead environmental manager or lead environmental inspector is not immediately available or if the severity of the situation requires immediate action, the CIC or CIC field monitor(s) will inform the Construction Contractor(s)' project manager and a temporary suspension of the non-compliant operations will be issued by the CIC or CIC field monitor(s).

If the Construction Contractor(s)' environmental inspection staff observes a noncompliant activity, they will notify the superintendent or foreman on-site immediately. The noncompliant activity will be resolved immediately or within an agreed-upon time frame that has been established by the environmental inspector and the superintendent or foreman. The Construction Contractor(s)' environmental inspector also will notify the CIC field monitors and document the noncompliance in a daily report that will be filed with the Construction Contractor(s)' lead environmental manager and the Company's environmental manager. The CIC will submit all noncompliance reports and resolution documentation reports documenting their resolution to the BLM and Forest Service project manager, the Company, and the Construction Contractor(s). Attachment A: Noncompliance Form depicts an example noncompliance form. The Construction Contractor(s)' environmental inspectors, the Company's environmental manager, the CIC and the appropriate BLM or Forest Service project manager will work together to establish the appropriate corrective actions and time frames for the resolution of a noncompliance. The Construction Contractor(s)' environmental inspector will be responsible for communicating the corrective actions to the superintendent or foreman on-site. The CIC will submit all reports documenting a noncompliance resolution to the appropriate BLM or Forest Service project manager, the Company's environmental manager, and the Construction Contractor(s).

4.1.3.1 Response to Noncompliant Activities

If the resolution of a noncompliance is not achieved through the process described above, the responses listed below will be implemented.

4.1.3.1.1 Temporary Suspension

For incidents of noncompliance by the Company or the Construction Contractor(s) that remain unresolved after the notifications described in Section 4.1.3 of this Plan, the CIC or the appropriate BLM or Forest Service project manager will issue a temporary suspension to halt specific activities or all activities in a localized work area. The temporary suspension order will be issued orally and in writing to the Company's project manager. Upon notification of the order, the Company will immediately provide notice of the temporary suspension to the Construction Contractor(s).

4.1.3.1.2 Work Stoppage Order

If necessary, a WSO to temporarily suspend all construction activities across the Project will be issued orally and in writing by the CIC or the appropriate BLM or Forest Service project manager to the Company's project manager. A WSO would be appropriate in the event of unresolved noncompliance issues that could reasonably be expected to result in a risk of death or harm to persons or violations of environmental requirements that have a substantial detrimental effect to sensitive resources.

A conference call will be held with the CIC and the appropriate federal land management agencies, the Company, and the Construction Contractor(s) within 24 hours to discuss the WSO and the remedy actions acceptable to BLM or Forest Service and to schedule a face-to-face meeting, if necessary. The face-to-face meeting will be held with all parties to discuss the WSO resolution within 24 hours of the initial conference call (excluding weekends and federal holidays). After conclusion of the conference call or

meeting, the Company and Construction Contractor(s) will resolve the issue(s) identified by the CIC or the appropriate federal land management agency. Once they have resolved the issue(s) and documented the resolution method, the Company will provide a request, in writing, to the appropriate federal land management agency to resume activities. Within 24 hours after receipt, the appropriate federal land management agency will review and respond to the Company's written request to resume activities. The federal land management agency's response will either approve the request through a notice to proceed or provide additional criteria that must be met prior to the resumption of activities. Any additional criteria must cite the applicable law(s), the final EIS, the POD, agreement(s), and/or permit requirements. No construction activities will be undertaken by the Construction Contractor(s) (except those that are emergency or safety related) until a notice to proceed is provided by the appropriate BLM or Forest Service project manager or CIC to the Company.

4.1.3.1.3 Grant Suspension or Termination

In accordance with 43 CFR 2807.17(a), the federal land management agencies may suspend or terminate the BLM ROW grant or the Forest Service SUP if the Company and/or its Construction Contractor(s) do not comply with applicable laws and regulations or any terms, conditions, or stipulations of the grant/SUP. Prior to suspension or termination on BLM-managed lands, the Company will be notified in writing and will be allowed a reasonable opportunity to correct any noncompliance pursuant to 43 CFR 2807.18(a). The Company has the right to appeal a BLM decision of noncompliance under 43 CFR 2801.10, and, in accordance with 43 CFR 4, the Company has the opportunity to file a motion for a hearing with an Administrative Law Judge. On NFS lands, the procedures described under 36 CFR 251 would be used.

4.2 Variance Request Procedures

It is understood by the BLM, the Forest Service, and the Company that unforeseen circumstances will occur during construction. The need for modifications to the locations of Project features or deviations from the POD, the final EIS, the RODs, the BLM ROW grant, and the Forest Service SUP descriptions, direction, and/or restrictions may arise.

Where Project modifications occur on federally administered land, the appropriate federal agency will review and process variance requests in accordance with Sections 4.2.1 through 4.2.3 below. In addition, Attachment C: Wildlife Variance Management Plan of POD Appendix C1: Biological Resources Conservation Plan will be implemented for wildlife variance requests on federally administered land in conjunction with the direction contained in this appendix.

Where Project modifications occur on private and/or state lands, the Company will review and process variance requests in accordance with Sections 4.2.1 and 4.2.2 below. For wildlife variance requests on private and state lands, the Construction Contractor(s) will be responsible for coordinating wildlife variance requests to any state-imposed wildlife restrictions with appropriate state agencies, as applicable, and to obtain any necessary state agency approvals for wildlife variance requests. The CIC and/or the BLM will be responsible for reviewing private and state land variance requests to ensure compliance with the NHPA and the ESA and consistency with the analysis in the EIS (Tables 1 and 2) but will not approve private and state land variance requests. In addition, written approval of any Project feature change must be obtained by the Construction Contractors(s) from the affected landowner and provided to the Company and the CIC, who will include the approval in the Project record and End-of-Construction Project Report.

Variance requests will be prepared by the Construction Contractor(s) and provided in writing to the Company and the CIC for concurrent review and comment and then processed in accordance with Sections 4.2.1 through 4.2.3 below. The CIC will be responsible for providing the appropriate federal land management agency with the variance request and any supporting documentation for its review and for providing an on-the-ground perspective of the requested variance. The variance request processes are also shown in Figures 2 through 7. The CIC is responsible for communicating with the Company regarding variance request status, and the Company is responsible for communicating with the Construction Contractor(s) before modifications are made on the ground. An approved variance request may be implemented in the field as soon as the approved variance request is received by the Construction Contractor(s). The CIC will be responsible for maintaining a complete record of all variance requests as part of the decision file.

A variance request form to be used on the Project is included as Attachment B: Variance Request Form of this appendix. The variance request form and its use will be incorporated into the preconstruction environmental training program developed by the Construction Contractor(s).

Table 1. Summary of Variance Request Procedures on Federally Administered Land

Variance Request Level	Potential Use	Responsibility to Review and Approve
Level 1	Minor field adjustments	CIC
Level 2	Modify POD	Appropriate federal agency
Level 3	Amend BLM ROW grant or Forest Service SUP	Appropriate federal Authorized Officer

Table 2. Summary of Variance Request Procedures on Private and State Lands

Variance Request Level	Potential Use	Responsible to Review and Process
Level 1	Minor field adjustments	Company and CIC
Level 2	Modify POD	Company and CIC with concurrence of the BLM*
Level 3	Not applicable on private and state lands	Not applicable on private and state lands

* BLM/CIC review related to compliance with the NHPA and the ESA and consistency with the analysis in the final EIS.

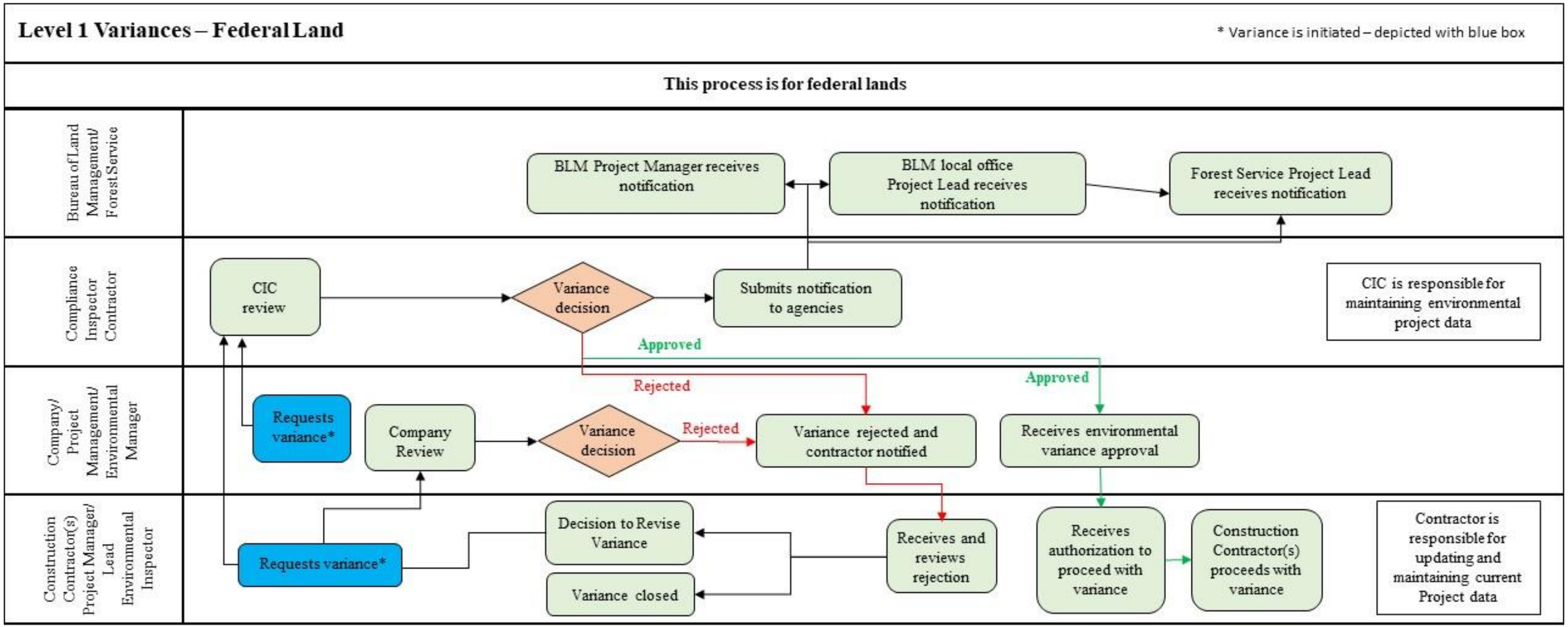

Figure 2. Level 1 Variance Request Process – Federal Land.

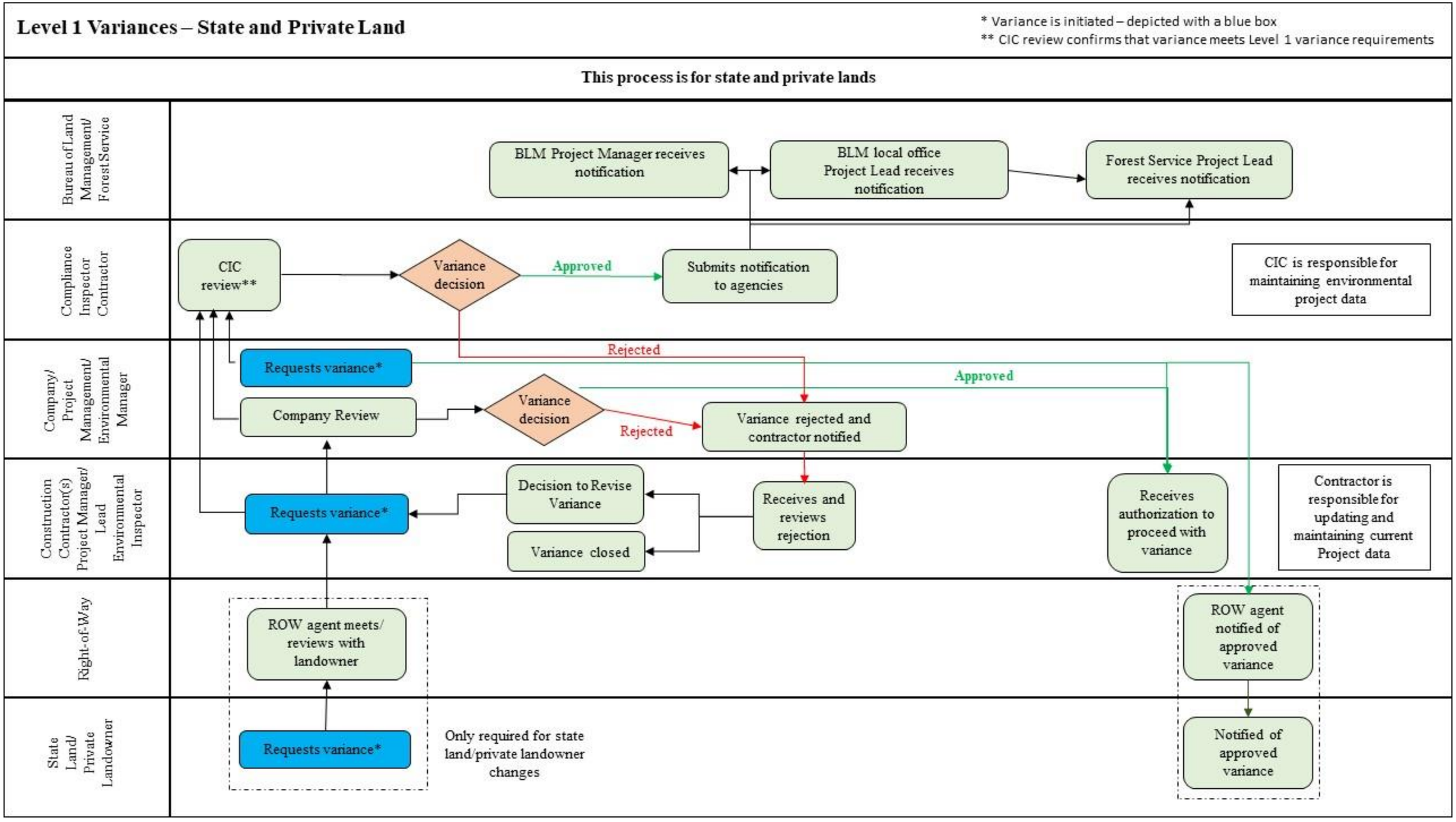

Figure 3. Level 1 Variance Request Process – State and Private Land.

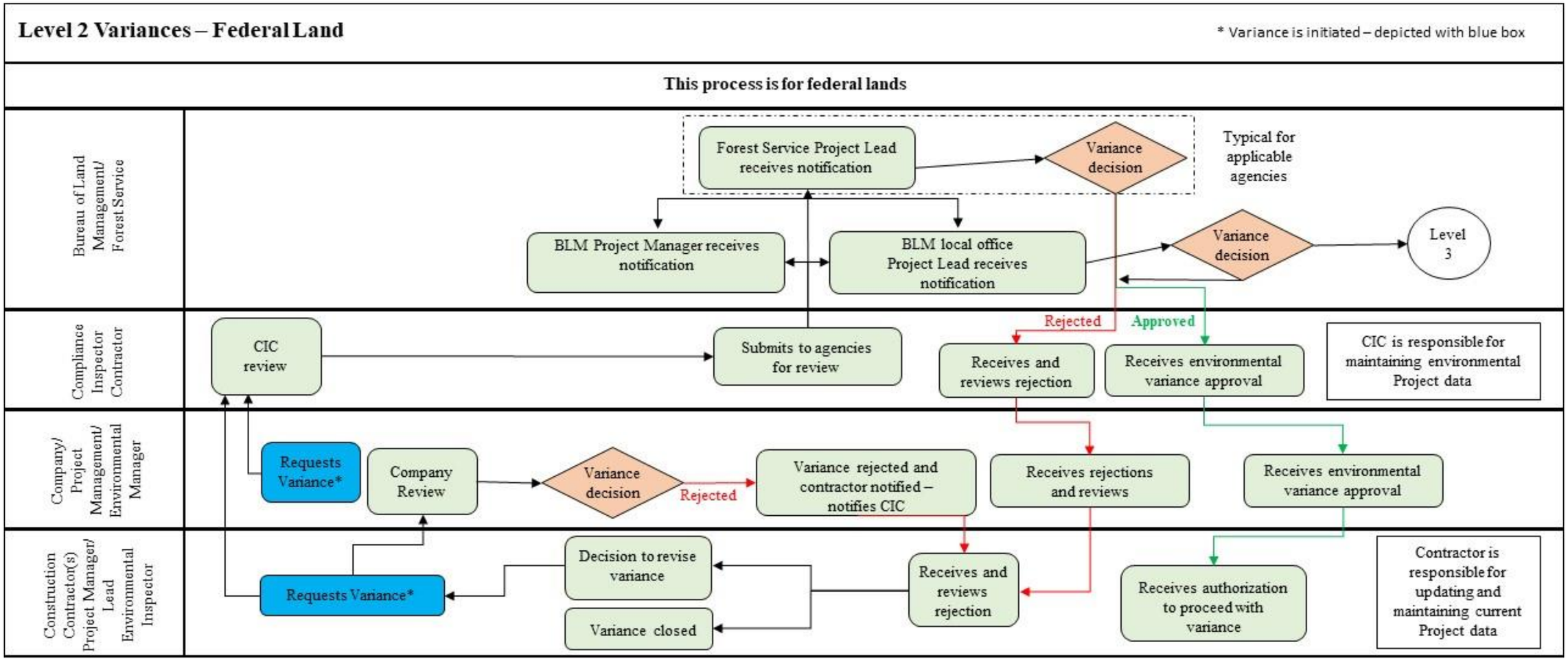

Figure 4. Level 2 Variance Request Process – Federal Land.

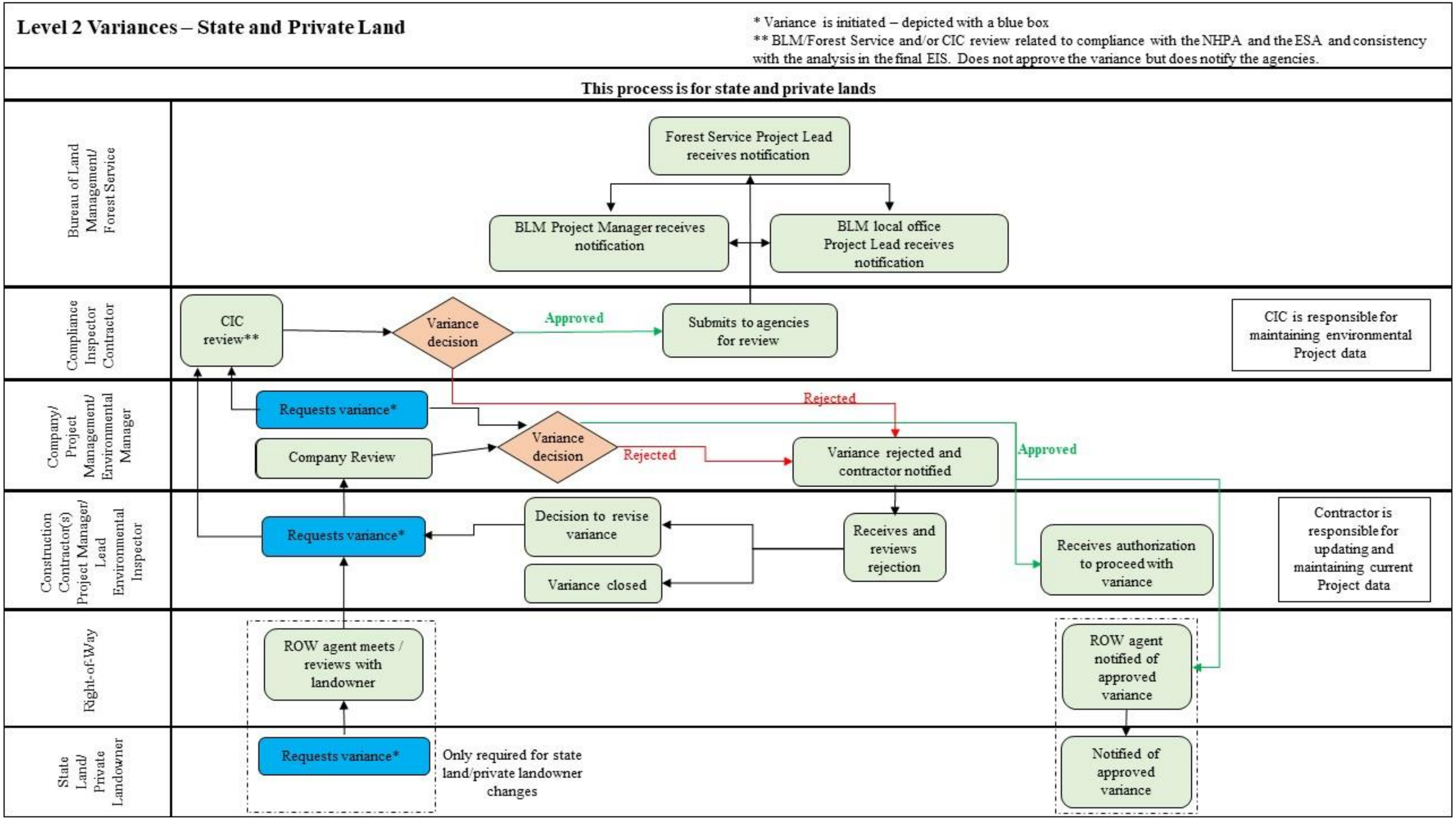

Figure 5. Level 2 Variance Request Process – State and Private Land.

Figure 6. Level 3 Variance Request Process (to be updated).

Figure 7. Stop Work Process (to be updated).

4.2.1 Level 1 Variance Request

A Level 1 variance request is a minor adjustment (e.g., a slight change of a project feature location due to engineering constraints) that is located within the approved BLM ROW grant or Forest Service SUP. A Level 1 variance request must meet the following criteria:

- The area of activity or change lies in the approved ROW area on all jurisdictions.
- The area of activity or change was analyzed in the final EIS.
- The area of activity or change does not result in an increase in disturbed acres greater than what is identified in the POD.
- The variance request does not increase the impact on resource values relative to the original location and activity.

A Level 1 variance request will be prepared by the Construction Contractor(s) and submitted in writing to the Company for concurrent review and comment. The variance request will include any necessary supporting documentation.

4.2.1.1 Level 1 Variance Request Approval Or Denial

The CIC will approve or deny Level 1 variance requests on federal agency–administered land. The Company will process Level 1 variance requests on private and state land. Level 1 variance requests will be approved if the criteria identified above are met. A Level 1 variance request can be implemented in the field as soon as it is approved.

In some cases, verbal approval can be given. If a Level 1 variance request is approved verbally in the field, follow-up documentation as described above will be prepared and provided by the Construction Contractor(s) and submitted to the Company and the CIC. The CIC will be responsible for submitting the follow-up documentation to the appropriate federal agency for variance requests on federally administered land.

If a Level 1 variance request is denied, the Construction Contractor(s) may choose to resubmit the request as a Level 2 variance request.

4.2.2 Level 1 Variance Request Distribution

The CIC will be responsible for distributing all approved or denied Level 1 variance requests to the Company and the Construction Contractor(s), and the CIC will track and keep records of all Level 1 variance requests.

4.2.3 Level 2 Variance Request

Level 2 variance requests are requests that typically exceed the criteria identified in Section 4.2.1 or are required for Project features identified as having seasonal or spatial restrictions on surface occupancy.

Level 2 variance requests also may be submitted for Project changes that would extend beyond the previously surveyed areas for environmental resources, but, in these situations, additional resource surveys would be required/completed per the established procedures included in the POD. If sensitive biological, historic, or archaeological resources are encountered during the additional surveys, documentation of coordination with applicable agencies must be provided with the variance request. The

Construction Contractor(s) will be responsible for conducting any appropriate resource surveys. A Level 2 variance request will include the resource survey results, and wildlife surveys will be conducted no more than 2 weeks prior to the proposed commencement of the construction activity to ensure that conditions during construction are consistent with those evaluated.

For Level 2 variance requests on federally administered lands, any required coordination with other agencies must be done in conjunction with and, where applicable, led by the BLM. All BLM-approved terms and conditions and, if applicable, the terms and conditions of the biological opinion (to be developed) and the programmatic agreement for compliance with the NHPA (to be developed) must be adhered to for the variance request to be approved. In addition, Attachment C: Wildlife Variance Plan of POD Appendix C1: Biological Resources Protection Plan will be implemented for Level 2 wildlife variance requests on BLM-administered land in conjunction with the direction contained in this appendix.

For Level 2 wildlife variance requests on private and state lands, the Construction Contractor(s) will be responsible for coordinating wildlife variance requests to any state-imposed wildlife restrictions with appropriate state agencies, as applicable, and to obtain any necessary state agency approvals for wildlife variance requests. The CIC and/or the BLM will be responsible for reviewing private and state land variance requests to ensure compliance with the NHPA and the ESA and consistency with the analysis in the final EIS but will not approve private and state land variance requests. In addition, written approval of any Project feature change must be obtained by the Construction Contractors(s) from the affected landowner and provided to the Company and the CIC, who will include the approval in the Project record and End-of-Construction Project Report.

Level 2 variance request will be prepared by the Construction Contractor(s) and submitted in writing to the Company and the CIC for concurrent review and comment. The variance request will include all required supporting documentation. Upon concurrent review and comment by the Company and CIC, the CIC will submit the variance request to the appropriate federal land management agency for review and/or approval. Level 2 variance requests on federally administered land require approval by the BLM Authorized Officer or the appropriate federal agency counterpart and may require agency resource staff review or field examinations. Level 2 variance requests on private land will require BLM and/or CIC review to ensure compliance with the NHPA and the ESA and consistency with the analysis in the final EIS but will not require federal agency approval. The Company will be responsible for processing Level 2 variance requests on private and state lands.

4.2.3.1 Level 2 Variance Request Approval or Denial

For Level 2 variance requests located on federal agency–administered land, the BLM or Forest Service will make a good faith effort to review and make a decision on a Level 2 variance request within 2 weeks of receipt of a complete variance request to allow for orderly construction mobilization. For Level 2 variance requests located on private and/or state land, the BLM and/or the CIC will make a good faith effort to provide comments within 1 week of receipt of a complete variance request. Upon receiving BLM and/or CIC comments, in addition to any applicable state agency coordination and approvals, the Company can complete processing a Level 2 variance request on private and/or state land.

4.2.3.2 Level 2 Variance Request Distribution

The CIC will be responsible to distribute all approved or denied Level 2 variance requests to the Company and the Construction Contractor(s), and the CIC will track and keep records of all Level 2 variance requests.

4.2.4 Level 3 Variance Request

The appropriate federal land management agency and the CIC will work with the Company and Construction Contractor(s) in determining whether a significant proposed change that is outside of the approved BLM ROW grant or Forest Service SUP would necessitate a ROW grant or SUP amendment, or whether the change could be handled as a Level 2 variance request. If it is determined that a ROW grant or SUP amendment would be required, this change would be processed as a Level 3 variance request.

Any proposed construction modification that the appropriate federal land management agency and the CIC have determined to involve substantial deviations from the BLM ROW grant and the Forest Service SUP will require a BLM ROW grant or a Forest Service SUP amendment in accordance with 43 CFR 2807.20. A Level 3 variance request requiring an amendment to the BLM ROW grant or the Forest Service SUP, requires completion of a ROW application on Standard Form 299 (BLM) or SUP application (Forest Service), and a decision by the BLM Authorized Officer or Forest Service agency-specific counterpart. The decision will include whether additional National Environmental Policy Act analysis is required. The Company will prepare the appropriate application with applicable supporting documentation, including a POD and map of the variance request area (1:24,000 scale), and will provide it to the appropriate BLM Authorized Officer or Forest Service agency-specific counterpart. The BLM or the Forest Service, will process the amendment application pursuant to 43 CFR 2800, 36 CFR 251, and/or 25 CFR 169, respectively. The BLM or the Forest Service may request additional information, or a modification of the request, before the amendment can be analyzed and a decision made.

A BLM ROW grant or Forest Service SUP, application will be reviewed by BLM or Forest Service staff, who will consult with other federal, state, and local agencies as needed. BLM ROW grant or Forest Service SUP amendment approvals or denials will come directly from the BLM Authorized Officer or Forest Service agency-specific counterpart. Approval of a BLM ROW grant or Forest Service SUP amendment will also require issuance of a notice to proceed by the BLM and/or appropriate federal agency, which allows the implementation of the amended BLM ROW grant or the Forest Service SUP.

5 COMMUNICATIONS

Communication between all parties will be critical to maintain environmental compliance throughout the Project. Communication will help maintain a consistent understanding of the Project's environmental requirements throughout construction. As specified in POD Appendix B3: Traffic and Transportation Management Plan, the Construction Contractor(s), the CIC, and all environmental personnel will maintain a communications network that consists of one or both of the following devices: two-way radios or cellular telephones (or satellite telephones if necessary). This will allow real-time coordination between all parties, which will facilitate resolution of any questions and/or monitoring requirements prior to construction activities.

5.1 Primary Interparty Communication Channels

The primary interparty communication channels are identified in Figure 1. The chart is not intended to limit communication on the Project but to demonstrate the primary channels of routine communication among parties for compliance-related issues.

5.2 Daily Communications

The Construction Contractor(s) will conduct daily morning meetings to review the location and extent of each day's construction activities. Discussion will highlight safety and environmental issues, including a summary of activities that require monitoring by environmental inspectors and coordination with the CIC. Evidence of proper approvals must be furnished for any activities scheduled to occur outside designated areas. Attendees should include the CIC, the Construction Contractor(s)' lead environmental inspector or environmental inspectors, superintendent(s), and foreman (foremen), and the Company's construction inspector.

6 TRAINING

6.1 Preconstruction

As discussed in Appendix B5: Environmental and Safety Plan, all personnel regardless of affiliation will receive environmental training prior to accessing the Project ROW. Training will emphasize compliance with all environmental laws, including the stipulations in the POD, the BLM ROW grant, Forest Service SUP, and Project-specific permitting documents. Roles and responsibilities of all pertinent parties, flagging methodology, specific landowner issues, environmental resources and disturbance limits will be some of the major topics covered in the training. The environmental training will be developed by the Construction Contractor(s) and reviewed and approved by the Company, the CIC, and the BLM.

The Construction Contractor(s) will maintain a master list of all Project personnel and visitors who have completed the training and will provide the list as part of weekly reporting to the Company or CIC. Hard hat stickers demonstrating attendance at the training will be issued to attendees. Refer to POD Appendix B5: Environmental and Safety Plan for additional details and training requirements.

6.2 During Construction

The Construction Contractor(s) will ensure that all contractor personnel who arrive after construction has begun will attend environmental training, and upon completion of the timing will be immediately added to the master list (shared with the CIC) and will be required to wear a hard hat with a proof-of-training sticker.

The Construction Contractor(s) will provide remedial training to individuals and crews that have been involved in noncompliant activities before those individuals or crews are allowed to return to work on the Project. This training will focus on the requirements pertaining to the noncompliance as well as measures to follow intended to prevent further noncompliance situations. This training may be performed in the field or in a more formal setting to be determined by the Construction Contractor(s)' environmental training coordinator and the CIC.

The Construction Contractor(s) shall hold environmental training for visitors as the need arises.

7 REPORTING AND DOCUMENTATION

Multiple environmental forms and reports will be completed by the Construction Contractor(s) and the CIC on a regular basis during the course of construction. These will be kept as part of the decision file. The reports and forms will include the following:

- **Daily Inspection Reports.** Environmental inspectors and CIC field monitors will fill out daily reports to record site visits. The reports will document construction activities observed with respect to environmental compliance. The daily reports will also include a section addressing problem areas and noncompliance issues in which photographic documentation will be required. A separate noncompliance resolution report may be required if the noncompliance is not resolved on the same day.
  - Environmental inspector reports will be submitted to the Company and the CIC and will be available to the BLM upon request.
  - CIC field monitors' reports will be submitted daily to the BLM. Refer to Attachment C: Daily Inspection Form for an example form.
- **Weekly Reports.** The Construction Contractor(s) will produce a weekly report documenting the week's activities and compliance issues to be submitted to the Company and the CIC. The CIC will submit a weekly compliance report to the BLM and the Company to be delivered to secure, but mutually exclusive, websites.
- **Variance Request Forms.** Variance requests will be produced by the Construction Contractor(s), reviewed by the Company, and submitted to the CIC for review before submittal to federal land management agencies for a decision. The Construction Contractor(s) will track, distribute, and archive all approved and denied variance requests. Refer to Attachment B: Variance Request Form for an example form.
- **Weekly Training Log.** The Construction Contractor(s) will maintain a master list of all Project personnel who have completed the training and provide it as part of weekly reporting to the Company or the CIC.

Forms and reports will be submitted by the responsible entities with appropriate supporting documentation, as necessary to a secure but mutually exclusive website.

8 PROJECT CLOSEOUT

8.1 Reclamation and Postconstruction

Upon notification of completion of work by the Company and the Construction Contractor(s), the CIC will coordinate with the BLM project manager and resource staff to conduct any final on-the-ground inspections. Final on-the-ground inspections must also be coordinated with the Forest Service for areas on NFS lands. Inspections will take place within 30 days of the notification of completion of work to ensure that work was completed in accordance with the POD and any approved variance requests.

The BLM and/or Forest Service will also meet with the CIC to determine if any further reclamation work is required. If no further reclamation work is required, the postconstruction reclamation monitoring period will begin, as described in POD Appendix C9: Reclamation, Revegetation and Monitoring Plan. The Company will retain the CIC (or a third-party contractor approved by the BLM), for the postconstruction reclamation monitoring activities described in POD Appendix C9: Reclamation, Revegetation and Monitoring Plan.

8.2 End-of-Construction Project Report

Within 60 days of construction completion, the CIC will submit an End-of-Construction Project Report (electronically in PDF format) to document all pertinent environmental information that was prepared by or tracked by the CIC during the construction of the Project. The End-of-Construction Project Report will include, at a minimum, the amount of actual temporary and permanent acreage disturbed compared with the original temporary and permanent disturbance acreage (from the final EIS and POD), as-built shapefiles (provided by the Company in the form of geographic [GIS] shapefiles), electronic compilations of all daily compliance reports (including digital photographs), variance requests (including approval/denial), temporary suspensions, and WSOs (including documentation of resolution). The Construction Contractor(s) will coordinate with the CIC to provide all applicable documentation for inclusion in the End-of-Construction Project Report. Completeness of this report will be verified by the BLM. The End-of-Construction Project Report will be distributed by the CIC to the Construction Contractor(s), the Company, and all the federal agencies.

8.3 Construction Closeout Meeting

As required by federal land management agencies, the CIC will coordinate, schedule, and hold a construction closeout meeting with the BLM, the Forest Service, the Company, the Construction Contractor(s), and other affected agencies (e.g., state and/or local) to document that all Project requirements have been met, to determine areas of improvement, and to ensure that all issues have been satisfactorily resolved.

Attachment A. Noncompliance Form

Cross-Tie 500-kV Transmission Project
Noncompliance Report

Inspector:_____ Date (yr/mm/dd):_____Day/Time (hh/mm): _____

Structure IDs:_____ mN/mE:_____ PLSS (T/R/S): _____

Organization(s)/Crew(s):_____Resources Directly Affected: _____

Description (On-site conversation records and photographs required)

Compliance Inspection Contractor (CIC) Recommendations

Did the noncompliance result in surface disturbance?	☐Yes	☐ No
Was the activity within an area previously analyzed in the final EIS?	☐Yes	☐ No

Attachment B. Variance Request Form

CIC USE ONLY

VARIANCE REQUEST FORM
Cross-Tie 500-kV Transmission Project

Variance Request Number:
Click here to enter text.
Date Received by CIC:

Section A – Owner/Contractor to Complete

Descriptive Title: _____ Requested Start Work Date: _____

Variance Level: ☐ Level 1 ☐ Level 2 ☐ Level 3

Location:

Land Jurisdiction: ☐ BLM Fillmore FO ☐ Other: _____
☐ BLM Bristlecone FO _____
☐ Forest Service ☐ Private: _____
☐ State _____

UTMs: _____

Township and Range: _____

Structure(s), Access Road(s), Other: _____

POD Map Set and Panel Number: _____

Purpose and Need Statement:

Description of Request (Include requested construction or maintenance activities, expected timing and duration of activities, and type and number of equipment and personnel required):

Alternatives Considered:

Resource Analysis:

The affected area is analyzed within the EIS: ☐ Yes ☐ No Document Citation: _____

Biological Resources

Activity requires a wildlife exception request: ☐ Yes ☐ No

Activity is within previously surveyed areas: ☐ Yes ☐ No

Activity is within a seasonally or spatially restricted area: ☐ Yes ☐ No

Impact to sensitive resource: ☐ Yes ☐ No Weeds present: ☐ Yes ☐ No

VARIANCE NUMBER:

Brief Summary (for non-wildlife variance requests only):

Proposed Mitigation:

For wildlife variance requests only, provide the following information:

Resource Type:

- ☐ Special-status wildlife habitat (include species): _____
- ☐ Raptor (include species, if known): _____
- ☐ Non-raptorial migratory bird (include species, if known): _____
- ☐ Big game habitat (include species and habitat type): _____

Habitat Affected by Variance Request:

- ☐ Vegetative status: _____
- ☐ Current climatic trends: _____
- ☐ Presence of non-Project-related disturbance factors: _____
- ☐ Amount of habitat affected: _____
- ☐ Availability of other habitats: _____
- ☐ Extent of topographical and/or vegetative natural sight screening: _____
- ☐ Availability of water: _____

Current and Reasonably Foreseeable Use of Habitat:

- ☐ Ocular observations (e.g., pellet counts): _____
- ☐ Climatic trends: _____
- ☐ Anticipated seasonal movement: _____
- ☐ Availability and use of other habitats: _____
- ☐ Response to other disturbance factors: _____

Potential Effects of Granting Variance Request and Use of Affected and Adjacent Habitats:

- ☐ Direct effects: _____
- ☐ Indirect effects: _____
- ☐ Cumulative effects on habitat values, individuals, and/or groups of animals: _____

VARIANCE NUMBER:

Support Materials:

Provide a map (required), supporting graphic, information, and resource reports that support or explain the proposed activity, as needed.

☐ Map/Drawing ☐ Photos ☐ Additional Resource Reports ☐ Engineering Drawing

Owner Authorization of Variance:

☐ TransCanyon confirms that the request made in this variance provides a prudent alternative means to support the Project, provides updated Project documentation, and/or reduces resource impacts of the Cross-Tie 500-kV Transmission Project. It has been thoroughly vetted for completeness and addresses potential impacts to resources analyzed in the EIS.

Attachment C. Daily Inspection Form

Cross-Tie 500-kV Transmission Project
CIC Daily Inspection Report

Location _____

Inspector: _____ Date: _____

Segment: _____

Structures/Yards: _____

Topic or Activities Inspected: _____

Type of Inspection: ☐ Construction ☐ Biology ☐ Cultural ☐ Paleo ☐ Other _____

Summary of Compliance Checklist (Further details must be provided if not checked.)

Compliance with Construction, Plan of Development (POD), and Other Approved Plans

☐ Construction personnel are trained—hard hat sticker
☐ Construction components/dimensions match POD
☐ Matches approved site-specific plans
☐ Project documents: POD & Special Use Permit (SUP)

Flagging/Ground Disturbance

☐ Flagging/signage are appropriate—condition/location
☐ Construction is within approved workspace
☐ Access roads—POD designation/widths/ruts

Biological/Cultural/Environmental Mitigation

☐ Biological resources are addressed—flagging, fencing, and/or monitors
☐ Cultural resources addressed—flagging/ discoveries/monitor
☐ Noxious weeds—treatment/wash stations
☐ Wetlands/aquatic resources addressed
☐ Erosion control measures—present/condition
☐ House cleaning—oil leaks/trash/fueling monitors present at sensitive sites

Field Observations:

Attachments: ☐ Photo Log ☐ Non-Compliance ☐ Variance

Date:

Photograph	GPS Coordinates:
	Aspect:
	Photo Number:
	Structure/Access Road #:
	Description:
Photograph	GPS Coordinates:
	Aspect:
	Photo Number:
	Structure/Access Road #:
	Description:

Appendix B7. Operation and Maintenance Plan – DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix B7. Operation and Maintenance Plan

Prepared by:

TransCanyon
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Attachment

Tables

Abbreviations

ANSI	American National Standards Institute
ATV	all-terrain vehicle
BLM	Bureau of Land Management
Company	TransCanyon, LLC
FERC	Federal Energy Regulatory Commission
Forest Service	U.S. Department of Agriculture Forest Service
GIS	Geographic Information System
IVM	Integrated Vegetation Management
kV	kilovolt
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-way
SUP	Special Use Permit
WECC	Western Electricity Coordinating Council

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Operation and Maintenance Plan (Plan), prepared as part of the plan of development (POD), provides information describing the operation and maintenance activities that will occur on Bureau of Land Management (BLM)-administered land and U.S. Department of Agriculture Forest Service (Forest Service) National Forest System land, as well as all other lands on the Project upon construction completion.

This Plan will be updated as necessary to meet any stipulations of the BLM and Forest Service records of decision and the BLM right-of-way (ROW) grant and Forest Service special use permit (SUP) before issuance of the notices to proceed and commencement of construction.

2 REGULATORY FRAMEWORK

The goal of the Company is to provide needed new transmission capacity between the Intermountain West (Utah/Wyoming) region of NorthernGrid and the Desert Southwest portion of WestConnect and CAISO. This additional transmission capacity would facilitate access between the significant existing and planned renewable resources, primarily wind in Wyoming and wind or solar resources in central Utah and eastern Nevada, to the diverse utility load profiles in the Desert Southwest/California. The Project would strengthen the electrical interconnection between the PacifiCorp and the NV Energy transmission systems while supporting interregional power transfers and increased transmission capacity and reliability within and through the NorthernGrid planning region.

This Project would result in lowering the cost of Renewable Portfolio Standards (RPS) compliance for the Desert Southwest/California while enhancing opportunities to balance renewable resource mix between the Desert Southwest/California and the Intermountain West. It is also anticipated that the Project would enable a significant reduction of solar curtailments along with some reduction in battery storage needs in California and other states in the Desert Southwest.

The Cross-Tie Project would meet regional needs within the NorthernGrid planning area and support the CAISO future RPS requirements. The primary Regional Needs are “Public Policy” and “Economic” in each of the regions. While the Project would enhance the overall reliability of the Western Interconnection by strengthening the interconnection between two geographically diverse regions (east-central Nevada with central Utah, and, by extension, neighboring inter-connected regions, such as CAISO), “Reliability” benefits of such an interconnection would be considered a secondary benefit for the overall Project. Additionally, the Project is expected to provide reduced congestion on other transmission paths throughout the region.

The design, operation, and maintenance of the Project meets or exceeds applicable criteria and requirements outlined by the Federal Energy Regulatory Commission (FERC), the Western Electricity Coordinating Council (WECC), the National Electrical Safety Code (NESC), and the U.S. Department of Labor Occupational Safety and Health Standards for the safety and protection of landowners and their property and the general public. The NESC (American National Standards Institute [ANSI] C2) governs the design and operation of high- voltage electric utility systems.

In 2005, Congress passed the Energy Policy Act of 2005, which provided a regulatory basis for the implementation of specific incentives (and penalties) for maintaining reliable service, among other issues. As a result of the passage of the Energy Policy Act of 2005, FERC selected the North American Electric Reliability Corporation (NERC) to act as the enforcement agency for compliance with electric utility reliability and operating standards, among other issues. The Company is required to be in compliance with the various reliability standards promulgated through the implementation of NERC policies and procedures. Additionally, the Company is governed by the WECC standards that will be additional or more stringent than those currently required by NERC. In response, the Company has prepared internal operation and maintenance policies and procedures designed to meet the requirements of NERC, WECC, and the Utah Public Service Commission and Nevada Public Utilities Commission, while remaining in compliance with the applicable codes and standards with respect to maintaining the reliability of the electrical system.

3 COMPATIBLE USES

Land uses compatible with applicable regulations are able to be permitted in and adjacent to the Project ROW. Compatible uses of the Project ROW on federally administered land will have to be approved by the appropriate agency. Permission to use the Project ROW on private lands will have tobe obtained from the Company. Land uses that comply with state and local regulations are able to be permitted adjacent to the Project ROW.

4 SYSTEM INSPECTION, MAINTENANCE, AND REPAIR

Inspection of the Project is critical for safe, efficient, and economical operation. Responsibly conducted maintenance activities are anticipated to have minimal impact and are usually authorized under Project easements, the BLM ROW grant, and the Forest Service SUP. The Company and/or its contractor(s) will adhere to Company standards, requirements, and guidelines contained in other sections of the Project POD, the Project environmental impact statement, the BLM ROW grant, the Forest Service SUP, protection measures identified in the applicant-committed environmental protection measures, any applicable management plans, and any additional requirements identified in the decision documents while implementing operation and maintenance activities. An operating plan specific to the Forest Service will be prepared and made an attachment to the SUP.

The Company will coordinate with the respective federal land management agencies' Authorized Officers or their designated representatives prior to initiating scheduled inspection, maintenance (including vegetation management), and/or repair activities unless an emergency maintenance activity is required (refer to Section 4.3 of this Plan for more information). This coordination could occur annually in late fall/early winter at the agencies request. If an issue is encountered in the field, the Company and/or its contractor(s) will notify the respective federal land management agencies' Authorized Officers or their designated representatives prior to initiating work on the activity and/or during the activity.

The following sections provide information describing operation and maintenance activities and also describe the typical activities the Company will use for the inspection and maintenance of the Project. The different activities can be categorized in three primary groups, as follows:

- Section 4.1: Maintenance Activities
  - Section 4.1.1: Inspection Activities
  - Section 4.1.2: Maintenance Activities
  - Section 4.1.3: Vegetation Management Activities

  - Section 4.1.4: Right-of-Way Maintenance and Access Maintenance/Construction Activities
  - Section 4.1.5: Communication Regeneration Site Maintenance Activities
- Section 4.2: Major Maintenance Activities
- Section 4.3: Emergency Maintenance Activities

4.1 Operations and Maintenance Activities

4.1.1 Inspection Activities

The Project will typically be inspected annually to identify any maintenance requirements, a minimum of once a year by helicopter and/or drones and once every other year by driving patrol. The Project will be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other existing or potential mechanical problems. The need for vegetation management also will be determined during inspection patrols. The inspection cycle may be adjusted in the future by the Company, as necessary.

4.1.1.1 Aerial Inspections

Aerial inspection is critical during the spring or fall each year based on weather conditions, equipment availability, and the statutory requirements of the states served by the Company. Aerial inspections are conducted to identify conditions that pose an immediate hazard to the public or employees or that risk immediate loss of supply or damage to the electrical system. Any conditions identified are to be resolved prior to peak demand in the summer and winter months.

Aerial inspections will use drones, helicopters, or a plane so an observer can be placed in an observation position above the Project. The observer assesses the condition of the Project's hardware to determine whether any components need to be repaired or replaced or if other conditions exist that require maintenance or modification activities. Conducting aerial inspections is dependent on weather, flight control restrictions, and the extent of the damage assessment required. The Company will notify the appropriate land management agency at least 30 days prior to initiating aerial inspections to coordinate on flight control restrictions. The Clover Control at Hill Air Force Base, Utah Testing and Training Range would also be contacted prior to flights within their range.

The spring aerial inspection is typically performed anytime between March 1 and May 31; however, the Company will normally perform the spring aerial inspection prior to April 15 to avoid potential conflicts with avian species. The fall aerial inspection is typically performed between October 1 and November 30.

Company employees will be trained to adhere to avian management practices for all maintenance activities, including aerial inspections. Aerial inspections are also used to identify nest locations and mark those locations for on the ground activity checks. Overflight maintenance activities are conducted at a distance and speed that should not result in disturbance to avian species or nests but are conducted safely. All aerial inspections will follow applicable guidance listed in POD Appendix C1: Biological Resources Conservation Plan, Attachments B, D, and E as well as applicable aerial survey protocols from the 2010 Interim Golden Eagle Monitoring Protocols (USFWS 2010) to the extent the protocols can be implemented safely (i.e., helicopter speeds) while conducting the inspections. The aerial inspections will also identify unauthorized encroachments and trash dumping in the ROW.

In the unlikely event aerial inspections are determined to potentially disturb birds, the respective federal land management agencies' Authorized Officers or their designated representatives will notify the Company to collaborate with the agency and devise a solution acceptable to the agency to conduct the

required inspection and remain in compliance with all applicable laws. If relocation or removal of nests of a protected species is required, the Company will contact the U.S. Fish and Wildlife Service to obtain the appropriate permit(s). If the nest is located on BLM administered land and/or National Forest System land, the BLM and/or the Forest Service, will be notified and provided a geographic information system (GIS) shapefile that provides time, date, place, species information, and associated metadata related to the affected nest. Data will be provided to the appropriate agency wildlife biologist prior to any disturbance to the nest. Details on nest removal procedures are included in Appendix C1: Biological Resources Conservation Plan.

4.1.1.2 Ground Inspections

Ground inspections will be conducted using approved access on BLM-administered land and National Forest System land and along the Project ROW, as appropriate.

The inspector will access each of the structures and will check all equipment and other components that could require repairs. Inspectors will use conventional four-wheel-drive trucks, four-wheel-drive all-terrain vehicles, or snowcats or will walk depending on terrain and access.

The biennial ground inspection will be conducted at a time deemed appropriate based on the weather conditions, results of aerial inspections, and other conditions subject to change on an annual basis. The Company will perform minor repairs during its ground inspections, such as installing new informational signs, installing/repairing ground wire, or performing other minor tasks that do not involve a long duration, specialized equipment, or large work crews.

Both aerial and ground inspections will note any unauthorized encroachments and trash dumping on the ROW that could constitute a safety hazard.

Environmental resources surveys will not occur as part of the ground inspections; however, the Company will conduct ground inspections outside of the avian nesting season, as feasible, to minimize or eliminate completely any potential impact on nesting birds. Ground inspections will follow applicable guidance listed in POD Appendix C1: Biological Resources Conservation Plan and travel would stay on existing and/or approved access roads to minimize disturbance and spread of noxious weeds.

4.1.2 Maintenance Activities

Maintenance activities include the replacement of individual structures, components, cables, lines, insulators, and other facilities that, due to obsolescence, age, or wear, are in need of replacement or repair. It is important to note that the term “maintenance activities” does not include the repair or replacement of any equipment or facility that is not in working order and necessitates replacement immediately for the safe and efficient operation of the Project. This type of activity is described in Section 4.3 of this Plan.

Typically, maintenance vehicles and equipment will remain within the permanent long-term operation and maintenance work area (i.e., the permanent ROW or SUP area), which surrounds the structure, and no new ground disturbance will be required. If maintenance activities and/or equipment are required beyond the permanent long-term operation and maintenance work area, maintenance crews will first coordinate with the respective federal land management agencies’ Authorized Officers or their designated representatives to obtain any required approvals/permits to complete the work. In such cases, reapplication of reclamation treatments, as prescribed in Appendix C9: Reclamation, Revegetation, and Monitoring Plan, will be required after completion of maintenance activities, as determined by the respective federal land management agencies’ Authorized Officers or their designated representatives.

The following two types of maintenance activities will be performed by the Company:

- "A" condition activities are those maintenance activities where the transmission line or its components must be repaired within a short period of time, typically within 90 days of discovery, to ensure that an outage does not occur or cause safety concerns.
- "B" condition activities are those routine maintenance activities where the Company's transmission line or its components will be repaired during detailed ground or outage-caused inspections or will be scheduled to occur at any time within a 12-month period. Maintenance activities for "B" conditions, such as replacing structures and conductors that require larger crews or large/specialized equipment, are targeted to be performed between April 15 and October 15.

If the Company determines that extensions of the time periods to perform these activities are needed, or that they need to be performed during other periods of the year, the Company will consult with the appropriate land management agency's Authorized Officer or their designated representative and request approval for such changes.

Table 1 shows the Project's maintenance activities and the typical equipment needed.

Table 1. Project Routine Maintenance Activities

Typical Activity	Description of Example	Equipment Needed	Frequency [1]
Aerial inspection	Aerial survey of transmission line	Helicopter/fixed-wing or Drone	Annual
Ground inspection [2]	Visual and physical inspection of lines and structures to detect any problems	All-terrain vehicle (ATV), four-wheel-drive truck, pedestrian, and/or equestrian access	Every other year
Insulator replacement [3]	Replacement of an insulator upon failure	ATV, four-wheel-drive truck, large equipment	As needed
Anchor wire/anchor replacement [3]	Replacing anchor wires or anchors	Four-wheel-drive truck, track hoe, otherequipment	As needed
Vegetation management	Clearing trees from the ROW that are under or within 50 feet of the lines, clearing all vegetation within 25 feet of structures, and clearing within 5 feet of guy anchors	ATV, four-wheel-drive truck, chainsaws, mower, track-mounted cutter/chipper	As needed but typically every 2 to 5 years
Weed control	Treatment of noxious weeds in the ROW	ATV, four-wheel-drive truck, backpack, or handheld sprayer (herbicide) in most instances; high-volume spray trucks in limited instances	As needed
Road maintenance [3]	Vegetation removal, water bar installation, culvert installation, etc.	Four-wheel-drive truck, bulldozer, grader, excavator	As needed

Typical Activity	Description of Example	Equipment Needed	Frequency [1]
Hardware tightening [3]	Tightening of existing hardware on structures	Four-wheel-drive truck, boom truck	As needed
Structure replacement [3]	Access to site, creating lay-down area, digging new structure holes and anchor holes, framing structure, anchoring guy wires, and removing old structure	Four-wheel-drive truck, boom truck, excavator, bulldozer or other tracked vehicle, line truck, helicopter	As needed

1. Frequency and duration of activities is dependent on the specific needs of the activity.
2. Ground inspections will be conducted using Project-approved access on BLM administered land and National Forest System land and along the Project ROW, as appropriate.
3. This activity will require access to a transmission line structure and therefore will also include site-specific road maintenance activities to facilitate access.

The type of equipment used to perform maintenance activities varies depending on the extent of the work to be performed. Typical equipment used for these kinds of activities includes four-wheel-drive trucks, man hauls, aerial lifts, material flatbed trucks, line trucks, concrete trucks and pumping equipment, cranes, snowcats, tractor trailers, low and high-reach boom trucks or manlifts, and bulldozers.

Where construction of new access is required to be constructed across BLM administered land or National Forest System land for maintenance of the Project, the Company will consult with the appropriate land management agency's Authorized Officers or their designated representative to determine if an agency approval or permit is needed or if the agency has any requirements to construct the access. Once the Company obtains any required agency approval(s), the Company will construct the access in a safe, usable condition and in coordination with the federal land management agency's Authorized Officers or their designated representatives. Equipment required for this work may include four-wheel-drive trucks, material flatbed trucks, low-reach boom trucks, high-reach boom trucks, bulldozers, or aerial lifts. This work is scheduled and is typically required due to issues found during inspections. Typical items that will require periodic replacement on a structure include insulators, hardware, and tower members. It is expected these replacements will be required infrequently (every 5 to 10 years) or as determined by inspection.

High-reach boom trucks, along with other equipment, are used to conduct these activities. For the 500-kV structures, this requires that adequate space be available at each structure site so the high-reach boom truck can be positioned to one side or the other of the structure and reach up and over the lower phases to access the upper and center phase for live-line maintenance procedures.

The term *routine maintenance activities* does not include the repair or replacement of any equipment or facility that is not in working order and necessitates replacement immediately for the safe and efficient operation of a given transmission line. This type of activity is described in Emergency Maintenance Activities below. The Company will consult with the appropriate federal land management agency Authorized Officer or their designated representative prior to initiating maintenance activities. This coordination will identify which environmental resources, if any, will require surveys and/or studies to be completed prior to initiating maintenance activities.

4.1.2.1 Long-Term Operation and Maintenance Work Area

The Company plans to conduct maintenance on the Project using live-line maintenance techniques, which allow the lines to remain energized during maintenance activities. Maintenance on the transmission lines can be completed safely using live-line techniques, thereby avoiding an outage to the critical transmission line infrastructure. The Company plans to conduct such maintenance activities on the Project primarily using high-reach boom trucks, but other equipment will be required.

Live-line techniques require adequate space be available at each structure site so the high-reach boom truck can be positioned to one side or the other of the structure and reach up and over the lower phases to access the upper and center phase for live-line maintenance procedures. The primary criterion to determine if a long-term operation and maintenance work area is needed for a specific structure is to establish whether a boom truck will have a sufficiently flat area to work on. The necessity of a sufficiently flat area is that the boom component of a boom truck is not operable if on too steep a grade.

The size and location of these required long-term operation and maintenance work areas vary depending on the side slope and existing access route at each structure site but are generally anticipated to occur within the ROW. The long-term operation and maintenance work areas will be revegetated per Appendix C9: Reclamation, Revegetation, and Monitoring Plan, as needed, after any maintenance activities are completed. The long-term operation and maintenance work areas will be cleared of any vegetation regrowth, to the extent needed, to safely complete the work.

4.1.3 Vegetation Management Activities

The Company will use the Integrated Vegetation Management (IVM) approach, a multi-interdisciplinary methodology that ensures all pertinent operational and environmental resources are considered and accounted for during vegetation management activities. This approach will include appropriate land management agency consultation prior to vegetation management activities as well as the identification of any required environmental resource surveys and/or studies. If there is a conflict between the requirements of the land management agency or landowner requirements and the Company's standard procedures for vegetation management, the land management agency or landowner requirements will be followed. Vegetation management generally occurs in the summer and fall seasons.

The Company must maintain work areas adjacent to electrical transmission structures and within the ROW for vehicle and equipment access necessary for operations, maintenance, and repair, including live-line maintenance activities, as described in Section 4.1.2 of this Plan. Shrubs and other obstructions will be regularly removed near structures to facilitate inspection and maintenance of equipment and ensure system reliability. At a minimum, trees and brush will be cleared within a 25-foot radius of the base or foundation of all electrical transmission structures, within a 5-foot radius of guy anchors, and to accommodate equipment pads in order to conduct live-line maintenance operations.

Within or adjacent to the ROW, mature vegetation will be removed under or near the conductors to provide adequate electrical clearance, as required by the NERC and the U.S. Department of Energy.

Typically, only large trees or fast-growing vegetation will be pruned or removed. If it is necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation will be removed selectively in a manner that protects biological and aquatic resources as much as possible. Vegetation management practices along the ROW will be in accordance with Appendix C4: Vegetation Management Plan and Company-published standards for vegetation management and the Reclamation, Revegetation, and Monitoring Plan (Appendix C9: Reclamation, Revegetation, and Monitoring Plan). Vegetation

management must reduce hazardous fuels to improve or maintain wildfire mitigation conditions and must avoid adverse effects on historic properties found in the ROW.

Periodic (every 2 to 5 years) mechanical treatment of trees and woody vegetation in the ROW will occur. The duration of activities and the size of the crew and equipment required will be dependent on the amount and size of the vegetation to be trimmed or removed. Vegetation will be removed using mechanical equipment, such as chainsaws, weed trimmers, rakes, and mowers. Pruning will be accomplished using pruning saws, power saws, nippers, bow saws, or crosscut saws. Limbs will be pruned flush with the trunk of the tree, except for portions of overhanging limbs. The use of axes for pruning will be prohibited. Clearing efforts in heavy growth areas will use equipment such as a Hydro-Ax excavator-mounted brush mower or similar. Slash, or cut material, will be left in place or disposed of in accordance with the requirements of the appropriate land management agency or the landowner. On National Forest System land, slash and bole wood would be chipped and broadcast to a depth of 4 inches or less or hauled to an approved facility. Bole wood too large to be chipped would be placed near roads where the public could remove with a fuel wood permit. No heavy equipment for vegetation management activities will be used in riparian areas; only hand tools will be permitted.

Where necessary, tree removal will be accomplished by cutting as near to the surrounding grade as possible and will not exceed 8 inches above grade, unless a more stringent requirement exists from the appropriate land management agency/landowner, when measured on the downhill side of the tree, and 2 inches on the uphill side of the tree. Where tree removal is necessary through dense stands of timber, feathering of the edge will occur in selective areas to visually soften the edge between the cleared and remaining trees, as approved by the appropriate land management agencies. Where feasible, felled merchantable timber shall be transported and stacked at the most convenient publicly accessible area.

This area must not impede traffic or present a danger to persons, property or present a potential fire hazard.

In selected areas, to meet vegetation management objectives, herbicides will be used to control noxious weeds or incompatible tree species that have the potential to grow into the minimum conductor-vegetation clearance requirements (see Appendix C4: Vegetation Management Plan) that regenerate from the root systems after removal. All pesticide and herbicide applications will be performed in accordance with federal, state, and local regulations and in compliance with the appropriate land management agency and/or landowner requirements, including obtaining a pesticide use proposal if herbicide is used on agency-administered land.

Removal of snags also will be avoided where possible. Snag trees are large, often dead trees that provide wildlife habitat created by voids in the trunk. Raptors, in particular, can be found nesting in these trees. All vegetation removal would follow all applicable guidelines and protocols for the protection of avian species as described in POD Appendix C1: Biological Resources Conservation Plan.

4.1.4 Wire Zone–Border Zone Technique

Trees and other vegetation will be removed selectively using the wire zone-border zone technique described below and in Appendix C4: Vegetation Management Plan.

Over 55 years of research on transmission ROWs has demonstrated that IVM applied to creating distinct, compatible plant communities not only effectively manages vegetation on ROWs but also enhances wildlife habitat, at least in forested areas (Yahner 2004). The wire zone–border zone technique was developed by W.C. Bramble and W.R. Byrnes (Bramble et al. 1991) as part of the research effort. The wire zone is the ROW portion directly under the wires and 10 feet to the field side of the outside phases.

The border zone ranges from 10 feet outside the outer phases to the ROW edge. Properly managed, wire zone–border zone linear corridors not only effectively protect electric facilities but also can become an asset for forest ecology and forest management (Bramble et al. 1991; Yahner 2004; Yahner et al. 2001).

The wire zone is managed to promote a low-growing plant community dominated by grasses, herbs, and small shrubs (under 3 feet in height at maturity). The border zone is the remainder of the ROW; it is managed to establish small trees and tall shrubs (under 25 feet in height at maturity).

The wire zone–border zone technique features vegetation cover type conversion to low-growing plant communities within the wire zone, where the line is less than 50 feet from the ground. Land management agency–approved seed mixes will be applied to establish an understory of grasses, forbs, and/or low-growing shrubs to stabilize the ROW.

Small trees and tall shrubs (under 25 feet in height at maturity) in nonurbanized areas can be grown in the border zone and throughout the ROW where conductor clearances are 50 to 100 feet from the ground. In the appropriate vegetation communities, timber species will be allowed to mature throughout the ROW, where conductors are over 100 feet from the ground, as long as the appropriate conductor clearance is maintained. Tree and shrub removal will only occur within authorized areas and the selection of danger and hazard trees, or trees to be removed, will be coordinated with the appropriate land management agencies. Trees to be thinned, or selectively cleared, will be identified by the Company and/or its contractor(s) and coordinated with the appropriate land management agency.

4.1.5 Right-of-Way Maintenance and Access Maintenance/Construction Activities

Repairs to the ROW or access will be scheduled as a result of inspections or will occur in response to a significantly degraded condition or an emergency situation.

ROW and access repairs include the grading or repair of long-term operation and maintenance work areas and existing maintenance access roads, spot repair of sites subject to erosion, slumping of side slopes, and inadequate drainage, flooding, or scouring. In some cases, cut and/or fill will be required to repair the access roads into suitable condition for safe travel of maintenance repair vehicles, such as high-reach boom trucks. If foreign materials are required for fill, these materials will be clean (i.e., weed free with no hydrocarbons). If repair or maintenance actions are located on federal lands outside POD-approved disturbance areas, the Company will coordinate with the appropriate land management agency to determine any necessary requirements.

When ROW or access repairs need to occur, heavy equipment appropriate for the required work will be used, in coordination with the appropriate land management agency's Authorized Officers or their designated representatives. Typical equipment may include a grader, a backhoe, a four-wheel-drive truck, loader or bulldozer and other associated earth moving equipment as necessary to perform the work. The loader has steel tracks, whereas the grader, backhoe, and truck typically have rubber tires. Any berms or boulders that were in place to limit access will also be reclaimed or replaced, as appropriate, after completion of maintenance work. Repairs to the ROW, access, or long-term operation and maintenance work areas will be scheduled as a result of line inspections or will occur in response to an emergency situation.

Where construction access is required for maintenance of the Project located on federally administered land outside POD-approved disturbance areas, the Company will coordinate with the appropriate land management agency to determine any necessary requirements. The Company will maintain approved

access in a safe, usable condition and in coordination with the appropriate land management agency's Authorized Officers or their designated representatives.

Where the ground is uneven at drainage crossings, special precautions will be taken to ensure that equipment blades do not destroy vegetation or destabilize the banks of the channel. As needed, maintenance crews will scarify and reclaim newly disturbed areas to preexisting conditions, in conformance with Appendix C9: Reclamation, Revegetation, and Monitoring Plan. Any berms or boulders that were in place to limit access will also be reclaimed or replaced, as appropriate, after completion of maintenance work. All work would conform with spatial restrictions around sensitive water resources as described in the Section 9 of the POD.

If access roads are wet and rutting occurs, procedures identified in Appendix B4: Project Construction Plan will be followed. Where the ground is uneven at drainage crossings, special precautions will be taken to ensure that equipment blades do not destroy vegetation or destabilize the banks of the channel.

If snow removal is necessary, the following general procedures will be followed, as applicable.

- Snow will typically be blown, bladed, or pushed off the roads and construction area but within the ROW.
- The storage of snow will be confined to areas approved for disturbance and where appropriate surveys (e.g., biological, cultural, and paleontological) have been completed. Snow removal will be done typically with a motor grader, snowplow, snowblower, or dozer. The Company and/or its contractor will use the proper equipment (i.e., extended blade shoes or other equivalent methods), modified as necessary, to not allow any additional soil disturbance during snowplowing operations.
- The Company and/or its contractor(s) will take special precautions where the surface of theground is uneven and at drainage crossings to ensure that equipment blades do not destroy vegetation.
- In areas where snow fills trenches or holes, the Company and/or its contractor(s) will be responsible for removing it to allow visual inspection of trenches or holes prior to installing Project facilities and backfilling.
- The Company and/or its contractor(s) will backfill trenches with unfrozen soils to the extent practicable to minimize the potential for ditch line settlement resulting from voids between frozen chunks of backfill.
- If sufficient settlement occurs, resulting from using frozen chunks of backfill, and warrants additional backfill be placed into the trench or hole, the Company and/or its contractor(s) will install the required surface coverage when conditions are improved to meet the provisions of the specifications.

Access roads (excluding overland access routes) will be winterized by providing a well-drained roadway. This will be achieved by using water bars, maintaining drainage, and using any additional measures necessary to minimize erosion and other damage to the roadway or the surrounding public lands. The Company and/or its contractor(s) will comply with the requirements of Appendix C10: Stormwater Pollution Prevention Management Plan.

The Company will coordinate with the appropriate land management agency's Authorized Officers or their designated representatives prior to initiating maintenance activities. This coordination will identify which environmental resources, if any, will require surveys and/or studies to be completed prior to

initiating maintenance activities. All maintenance and future road improvements will need to avoid adverse effects to historic properties and be in compliance with Section 106 of the National Historic Preservation Act, and in consultation with the appropriate land management agency's Authorized Officers or their designated representatives.

The Company will follow BLM guidance regarding routine operations and maintenance activities to reduce risks of wildfire, such as Instruction Memorandum 2023-034 (BLM 2023) (Attachment A: Bureau of Land Management Instruction Memorandum IM-2023-034). If the Company determines that operation and maintenance work is necessary to prevent or suppress wildfires, the Company will notify BLM field offices in advance and request BLM provide to the Company any updated guidance but will not be required to obtain any additional notice(s) to proceed or other forms of prior approval.

4.1.6 Regeneration Station Maintenance Activities

Regeneration stations serve to amplify signals between substations from deterioration and are generally required every 55 to 75 miles. Regeneration station monitoring and control functions are performed remotely by the Company. Unauthorized entry into regeneration stations is prevented with the provision of fencing and locked gates. Warning signs will be posted and entry to the operating facilities will be restricted to authorized personnel. In general, regeneration stations will not be staffed continuously; however, a remotely monitored security system will be installed. Several forms of security are planned for each location, although the security arrangements at each of the regeneration stations will differ somewhat. Security measures will include fire detection in the control building via the remote monitoring system; alarms for forced entry; and a perimeter security system coupled with remote sensing infrared camera equipment in the fenced area of the station to provide visual observation/confirmation to the system operator of disturbances at the fence line.

Regeneration station sites will have monthly inspections performed with maintenance activities scheduled to address any issues identified. Safety lighting will be provided inside the perimeter fence for the purpose of emergency repair work. The safety lighting will normally be turned off because night activities are not expected to occur more than once per year. Safety lighting would be down shielded. One floodlight, mounted near the entry gate to safely illuminate the entry gate and on a timer, will be left on during nighttime hours, as necessary.

Maintenance activities include equipment testing, equipment monitoring and repair, and review of emergency maintenance procedures for service continuity and preventive maintenance.

All regeneration stations are designed to have defensible space created and maintained at a minimum of a 30-foot clearance of vegetation on 0 to 10 percent slopes from all structures. If the slope exceeds 10 percent, the clearance on the downhill side will be increased.

4.2 Major Maintenance Activities

Major maintenance activities will be relatively large-scale efforts that are infrequent in their occurrence, but require construction scale equipment, materials, and personnel. Major maintenance activities require planning and budgeting and will involve BLM and/or Forest Service coordination in advance. Major maintenance activities will involve larger work crews than maintenance activities described in Section 4.1 of this Plan, as well as a variety of equipment, including heavy equipment, and will usually require several days or longer to complete (Table 2).

Table 2. Project Major Maintenance Activities

Typical Activity	Description of Example	Equipment Needed
Structure relocation	Access to site, creating landing pad and structure lay-down area, digging new structure holes and anchor holes, framing structure, anchoring guy- wires, removing old structure	Four-wheel-drive truck, boom truck, excavator, bulldozer or other tracked vehicle, line truck, helicopter
Conductor replacement	Replacing conductor typically associated with a nonemergency structure change-out	Four-wheel-drive truck, boom truck, line truck, large equipment, helicopter
Access route reconstruction and relocations	Altering the alignment of any existing access routes, creating replacement access routes, grading, culvert installation	Four-wheel-drive truck, bulldozer, grader, excavator

The Company will identify major maintenance activities and notify the appropriate land management agency as soon as the activities are known. The Company and the appropriate land management agency will identify what, if any, ROW grants or SUP (Forest Service) amendment, exceptions, special notification or additional clearance approvals, including the identification of environmental resources surveys and/or studies, if any, are required prior to conducting the proposed major maintenance activities.

The Company will ensure that major maintenance activities adhere to all standards and guidelines contained in the POD, the BLM ROW grant, the Forest Service SUP, and any other applicable requirements.

4.3 Emergency Maintenance Activities

The continued operation and maintenance of the Project will reduce or prevent, to the greatest extent possible, any emergency activities (defined as situations that could threaten life, property, or resources). Even so, unforeseen emergency conditions will arise.

Examples of emergency maintenance activities include activities necessary to restore power to a transmission structure or as a result of a conductor failure due to a natural hazard, fire, or human-caused damages. Such work is required to eliminate a safety hazard, prevent imminent damage to the Project, or restore service if there is an outage. In an emergency, the Company must respond as quickly as possible to restore power.

In practice, as soon as an incident is detected, dispatchers will notify the responsible operations staff in the area(s) affected, and crews and equipment will be organized and dispatched to respond to the incident. In these cases, emergency maintenance activities require immediate access; therefore, the Company will verbally notify the designated contact for the appropriate land management agency who is concurrently responding to the emergency with available information on the location and nature of the incident and the Company's planned emergency response actions. The Company understands that it would not be required to obtain formal written approval from the appropriate land management agency or conduct any resource surveys before commencing any surface disturbance for emergency maintenance activities. The Company will take every reasonable action to minimize environmental impacts without affecting the ability to immediately respond to the incident and without endangering employee safety. The Company will coordinate with the appropriate federal land management agency to ensure that all parties responding to the emergency are aware of each other's activities and will coordinate to the extent feasible to ensure their safety.

The appropriate land management agency's Authorized Officers or their designated representatives may elect to have a representative present during emergency maintenance activities and/or to conduct a post-event site visit to evaluate the Company's response, assess impacts, and to determine remedial measures that the agency will require. The Company will adhere to the same constraints identified for maintenance and major maintenance activities to minimize impacts to resources, when possible, as well as the requirements and stipulations identified within the Project POD.

The equipment necessary to carry out emergency repairs is similar to the equipment necessary to conduct maintenance activities, in most cases. An emergency response to an outage will require additional equipment, similar to the equipment necessary for major maintenance activities, to complete the repairs. For example, where the site of the outage is remote, helicopters will be used to respond quickly to an emergency.

The Company's employees and contractor(s) will be equipped with approved fire suppression tools and equipment. The Company or its contractor(s) will follow the protocol identified in the Project POD if a Project-related fire occurs within or adjacent to a construction or emergency response area. If the Company becomes aware of an emergency situation caused by a fire on or threatening federally administered land that could damage the Project or its operation, the Company will immediately notify the appropriate land management agency contact (refer to Appendix C8: Fire Precaution and Response Plan and Appendix C13: Emergency Preparedness and Response Management Plan for a complete list of appropriate emergency contacts).

In the event of an outage or interruption in the transmission of electricity or other failure, the Company will perform detailed inspections of the Project to determine the cause. It is important to note that the Company does not anticipate that emergency maintenance activities will be a significant or widespread issue.

In conjunction with the direction provided in Appendix C4: Vegetation Management Plan, the Company and/or its contractor(s) are authorized to cut hazard trees on BLM-administered land in an "emergency condition" without prior BLM approval, per Division O of the Consolidated Appropriations Act, 2018 (Public Law 115–141, commonly referred to as the 2018 Omnibus), as follows:

> *"(e) Emergency Conditions — If vegetation or hazard trees have contacted or present an imminent danger of contacting an electric transmission or distribution line from within or adjacent to an electric transmission or distribution right-of-way, the owner or operator ofthe electric transmission or distribution lines—*
>
> *(1) may prune or remove the vegetation or hazard tree—*
>
> *(A) to avoid the disruption of electric service; and*
>
> *(B) to eliminate immediate fire and safety hazards; and*
>
> *(2) shall notify the appropriate local agent of the Secretary concerned not later than 1 dayafter the date of the response to emergency conditions (Consolidated Appropriations Act 2018)"*

4.3.1 Emergency Maintenance Access

On federally administered land, all areas designated as temporary in the Project's POD that were constructed in support of the Project will, upon Project completion, be removed or reclaimed to the extent feasible. Accordingly, during an emergency situation, construction of access may be required to reach that portion of the Project needing emergency maintenance, and this access development could involve significant earthwork that could occur on BLM administered land or National Forest System land to gain access to the Project ROW and necessary structures.

In constructing access to an area that requires emergency maintenance activities, the Company will take every reasonable action to minimize environmental impacts without affecting the ability to immediately respond to the incident and without endangering employee safety. The Company will use the least environmentally disturbing methods reasonable along the most efficient but safe route, using existing access to the extent feasible. This will include assessing the ability to use previous access routes that were reclaimed following construction of the Project. The Company will adhere to the same constraints identified for maintenance and major maintenance activities to minimize impacts to resources, when possible.

As provided in the POD, surface disturbance associated with required emergency maintenance activities will be temporary and reclaimed to the standards identified in the POD. The appropriate land management agency's Authorized Officers or their designated representatives may elect to have a representative present during emergency maintenance access development and/or to conduct a post-event site visit to evaluate the Company's response, assess impacts, and to determine any additional remedial measures that the agency will require.

5 LITERATURE CITED

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Attachment A. Bureau of Land Management Instruction Memorandum IM-2023-034

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
https://www.blm.gov

March 28, 2023

In Reply Refer To:
2800 (350) P

EMS TRANSMISSION 03/30/2023
Instruction Memorandum No. 2023-034
Expires: 09/30/2026

To: All Field Office Officials

From: Assistant Director, Energy, Minerals and Realty Management (HQ-300)

Subject: Routine Operations and Maintenance to Reduce Fire Risk on Utility Rights-of-Way

Program Area: Lands and Realty, Biological and Cultural Resources, Forestry, Wildland Fire Management, and National Environmental Policy Act.

Purpose: This Instruction Memorandum (IM) establishes policy regarding routine operations and maintenance activities on electric utilities' rights-of-way (ROW) to reduce the risk of wildfire.

Administrative or Mission Related: Mission.

Policy/Action: Electric transmission and distribution facility ROW holders have the authority to conduct routine operations and maintenance (O&M) activities within their ROW, 43 CFR 2805.14(a). ROW holders must also do everything reasonable to prevent and suppress wildfires on or adjacent to the ROW area, 43 CFR 2805.12(a)(4), and comply with project-specific terms, conditions, and stipulations, including any requirements to control or prevent damage to property, and public health and safety, 43 CFR 2805.12(a)(8)(iii). Field Offices should encourage ROW holders to conduct routine O&M activities including inspections to reduce wildfire risk from and to their facilities on public land. In taking such actions, ROW holders are responsible for ensuring that their activities comply to the maximum extent practicable with all applicable State and Federal laws, 43 CFR 2805.12(a)(1). Field Offices should also be aware of BLM IM 2022-036, "Standard Stipulations for Fire Prevention and Control for Electric Transmission and Distribution Rights-of-Way (ROWs)."

To facilitate and expedite O&M activities necessary to reduce the risk of wildfire, the BLM affirms that ROW holders are authorized and responsible to carry out O&M work including inspections to prevent wildfire. The BLM will encourage ROW holders to provide the Authorized Officer prior

oral or written notification of O&M activities. The BLM Field Office will request that ROW holders notify the appropriate BLM Field Office within 30 days of completing such work unless this timeframe conflicts with applicable law and regulation. If the ROW holder determines that O&M work is necessary to prevent and suppress wildfire, then Field Offices should not generally require the ROW holder to obtain any additional notice to proceed or other form of prior approval before conducting the O&M work. However, the BLM Field Office will request that any ROW holder planning and authorized to use prescribed fire notify the BLM office with jurisdiction to first determine feasibility and discuss requirements and personnel qualifications to implement prescribed fire on BLM-managed lands (see BLM Handbook 9214-1, Chapters 3 and 5, Fuels Management and Community Assistance). To the extent the terms and conditions of a ROW grant generally require a notice to proceed or other form of prior approval before a ROW holder conducts O&M, inspections, and other activities, such provisions should not be construed to apply to actions that have already been authorized in a grant or approved operations and maintenance plan, including those required under 43 CFR 2805.12(a)(4), 43 CFR 2805.12(a)(8)(iii), 43 CFR 2805.14(d), or other applicable laws and regulations.

ROW holders should be encouraged to provide the Authorized Officer prior oral or written notification of O&M activities. Prior notification ensures O&M activities will not conflict with other uses on public land and assists the Authorized Officer with inquiries from the public. Notification does not require follow-up or approval for the ROW holder to complete the activity.

When coordinating with ROW holders, the BLM will request that any holder undertaking emergency O&M activities to prevent wildfire identify, as soon as practicable, the location of the ROW and the O&M activities undertaken (legal description, maps, etc.); access route(s); type of treatment work; acreage of treatment area; equipment used; start and end dates; biological data, and cultural survey data (cultural resource data must be submitted in a confidential folder supplied by each BLM office); species, height, and exact diameter of trees cut greater than 8 inches (diameter breast height); best management practices used; the utility company point of contact; and the BLM serial number for the ROW. Field offices will upload this data to the applicable BLM State Office SharePoint site and provide access to the BLM Headquarters for data mining. Data collected will be incorporated into ongoing efforts to streamline ROW processes as well as facilitate ROW renewals and consolidations, where appropriate.

Field offices will follow direction as set forth in Section 512 of the Federal Land Policy and Management Act (FLPMA) for ROW holders controlling vegetation associated with electric transmission or distribution lines, including hazard trees. In most situations, FLPMA requires that the United States receive fair market value for vegetative resources; a vegetative sale contract may need to be prepared after work has been completed if the treatment results in marketable timber.

This guidance does not supersede or negate any requirements imposed by State or Federal law.

The BLM will work with ROW holders to identify any follow-up actions or modifications that may be required to implement this policy.

Timeframe: Effective immediately through expiration.

Budget Impact: The policy will have minimal budget impact, as ROW regulations allow the BLM to collect cost recovery fees from the ROW holder to cover the costs of monitoring O&M activities of permanent or temporary facilities on public land.

Background: In recent years, the number, scope, and magnitude of wildfires across the western United States has increased substantially due to several factors, including population growth in fire-prone areas, drought, and climate change. This destructive wildfire trend emphasizes the need for effective vegetation management and facilities maintenance to reduce the threat of wildfire in association with electrical transmission and distribution lines.

The Fuel Break categorical exclusion (CX) established in Section 40806 of the Infrastructure Investments and Jobs Act (Public Law 117-58), informally known as the Bipartisan Infrastructure Law (BIL), recognizes the need for fuel breaks in forests and other wildland vegetation in limited situations with the creation of a new statutory categorical exclusion.

Secretarial Order 3372, "Reducing Wildfire Risks on Department of the Interior Land Through Active Management" (01/02/2019) builds upon Executive Order 13855, "Promoting Active Management of America's Forests, Rangelands, and Other Federal Lands to Improve Conditions and Reduce Wildfire Risk." The intent of these Orders and law is to implement active vegetation management to reduce the risk of catastrophic wildfire.

Section 211 of Title 2 of Public Law 115-141 amended the FLPMA to add Section 512 titled "Vegetation Management, Facility Inspection, and Operations and Maintenance Relating to Electrical Transmission and Distribution Facility Rights-of-Way." This FLPMA amendment acknowledges that it may be necessary to address conditions outside a ROW to prevent wildfire.

Previously issued BLM Instruction Memorandum WO IM 2018-070 emphasized that routine vegetation maintenance is the responsibility of the electrical utility facility owners, and, to the extent feasible, the BLM will address vegetation management issues without the need for additional authorizations and processes.

Manual/Handbook Sections Affected: This IM transmits national policy that will be incorporated into BLM Manuals MS-2800 through MS-2809 during the next revision. This IM will replace the following state IMs:

State	IM	State	IM
AK	AK-2020-003	MT	MT-2021-004
AZ	AZ-2021-004	NV	NV-2020-009
CA	CA-2021-003	NM	NM-2021-002
CO	CO-2021-003	OR	OR-2020-004
ES	ES-2020-004	UT	UT-2021-004
ID	ID-2020-006	WY	WY-2020-006

Coordination: BLM HQ-300, FA-100.

Contact: Questions may be directed to Erica Pionke, Realty Specialist Program Lead for Powerlines and Energy Corridors, (202) 570-2624 or epionke@blm.gov or Steve Fusilier, ROW Branch Chief, (202) 309-3209 or sfusilie@blm.gov.

Signed by:

Benjamin E. Gruber
Acting Assistant Director
Energy, Minerals and
Realty Management

Authenticated by:

Ambyr Fowler
Division of Regulatory Affairs and Directives (HQ-630)

Appendix B8. Geotechnical Investigation Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix B8. Geotechnical Investigation Plan

Prepared by:

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July 2023

Contents

Figures

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measures
ATV	All-terrain vehicle
BLM	Bureau of Land Management
CPT	Cone Penetration Testing
FEMA	Federal Emergency Management Agency
g	gravitational acceleration
H	high
HSA	hollow-stem augers
HVAC	High voltage alternating current
kV	kilovolt
L	low
M	moderate
ODEX	brand name for under-reamer type drilling
POD	plan of development
Project	Cross-Tie 500-kV Transmission Project
psi	pounds per square inch
ReMi	refraction micro-tremor
ROW	right-of-way
TransCanyon	TransCanyon, LLC
USGS	United States Geological Survey

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Geotechnical Investigation Plan (Plan) describes geotechnical exploration activities that would be conducted in support of the Project. This Plan has been prepared to provide details how geotechnical exploration activities would be conducted to support the Project. As needed, specific geotechnical exploration activity locations would be determined at a later date and provided to the Bureau of Land Management (BLM) for issuance of a temporary right-of-way (ROW) and other applicable land management agencies for permit approval, as necessary.

Geotechnical investigations are a required step in the Project planning process that provides necessary information to be able to complete detailed engineering and design of the proposed transmission line, access roads, and other ancillary facilities. Geotechnical investigations would consist primarily of geotechnical drilling with some geophysical surveys and geologic hazard assessments. This Plan describes the general geotechnical investigation program and includes detailed information on the drilling methodology, selection of the locations of boreholes, drilling equipment to be used at each borehole, access to the boreholes, and anticipated disturbance at each work area.

1.1 Purpose and Need

The need of geotechnical activities is to perform tests to collect hydrogeologic and geotechnical soil properties and geophysical data to provide information for detailed transmission line and ancillary feature engineering and design to support the Project. Geotechnical investigations provide critical data that would be incorporated into structure foundation design and the Project construction bid package. Information obtained from the geotechnical investigations would help to ensure the Project is designed and constructed to be safe, reliable, and cost effective.

2 GOVERNMENT AGENCIES INVOLVED AND POTENTIAL PERMITS

Depending on the locations of the geotechnical activities, permits and approvals from various land management agencies or private landowners would be needed to initiate drilling. These would be identified and obtained prior to drilling.

Additional permits may be required to conform with air and water quality standards and will vary by state and local requirements. Surface area disturbance permits, including stormwater management, dust control permits, waste discharge permits, and other permits may require additional plans be developed for geotechnical activities, depending on the regulating agency. These permits would be identified and obtained prior to the initiation of activities.

Access to the geotechnical investigation locations would be from existing roads and/or roads for the construction of the Project. Where access requires overland travel from a state, local or county highway or road, an encroachment permit or break in access permit may be required by the highway or road managing agency such as the Utah Department of Transportation, Nevada Department of Transportation, or the managing county highway departments. The use of existing roads may change depending on final negotiations and the obtainment of entry rights with landowners or lease holders.

3 GEOTECHNICAL EXPLORATION DESCRIPTION, STANDARDS, AND REQUIREMENTS

3.1 Geotechnical Exploration Plan

3.1.1 General Requirements

Geotechnical exploration would consist primarily of geotechnical drilling with some geophysical surveys and geologic hazard assessments. Geotechnical drilling may be accomplished using a variety of drilling methods, including hollow-stem augers (HSA), mud rotary, continuous diamond coring, air hammer (e.g., overburden drilling with eccentric bit or ODEX), sonic drilling technologies, or by Cone Penetration Testing (CPT) equipment (also known as rigs), depending on the type of soil and rock expected within the completion depth of the borehole. In addition to geotechnical drilling, less invasive refraction micro-tremor (ReMi) geophysical surveys can be conducted in environmentally sensitive areas (e.g., sensitive plant or wildlife habitat areas, significant cultural resource areas); in remote areas that cannot be easily accessed by a drill vehicle; and in areas of highly erosive soils or fragile locations that are subject to puddling, compaction or extensive removal of protective ground cover resulting in long-term disturbance.

The boring depths would typically be 30 to 50 feet below the ground surface. The borehole depth may be a maximum of 100 feet below ground surface if soil conditions dictate. Truck mounted drill rigs may be used where borings are located directly adjacent to existing roadways. Where overland travel is required, an all-terrain vehicle (ATV)-mounted or similar large rubber tire or tracked drill rig would be used to minimize the ground bearing pressure. At select steep terrain locations track-mounted drill rig may be required. The type of drilling vehicle to be utilized depends on the accessibility of each borehole location and which specific drilling techniques are practical at said location.

The borings would be approximately 4 to 8 inches in diameter and may be advanced with continuous flight HSA, mud rotary, air rotary, sonic, down-hole air hammer, or CPT. Whenever bedrock is encountered, standard coring techniques would be used. Samples would be collected by driving a sampling device into the undisturbed soils just below the augers. Where necessary, rock core samples would also be taken using a rock coring barrel. Upon completion and before leaving each site, the soil boring would be backfilled to existing grade with the cuttings removed during drilling, bentonite, or grout as required by federal, state, and local drilling requirements. All holes would be fully backfilled before moving to the next boring.

3.1.2 Temporary Ground Disturbance

Temporary ground disturbance associated with the implementation of geotechnical investigation activities would consist of two primary components, which are the boring work areas and the access routes required to reach the boring work areas. The temporary disturbance of the boring work areas and access routes would include overland travel and the subsequent crushing of vegetation as the drilling equipment moves overland to and from the borehole location.

3.1.2.1 Boring Work Areas

A temporary work area of approximately 50 feet by 50 feet (2,500 square feet or 0.057 acre per drill site) would be required at each boring location (Figure 1: Geotechnical Boring Work Area). If authorized, the boring would be fully contained within the temporary work area and would generally be located within the future transmission line ROW for the Project or along existing access roads. Surface disturbance within the temporary work area may occur as a result of moving the drilling vehicles, support vehicles,

and associated equipment. Additional foot traffic would also occur around the drill vehicles as the drill crew moves between the drill and support vehicles, causing temporary disturbance.

No site-specific staging areas are proposed outside of approved temporary work areas. Generally, the drilling vehicle and any other related equipment would be left at the last completed boring location until it's moved to the next boring location. Drill crews would travel to and from the boring location by pick-up or 4-wheel drive vehicles. The drilling rig and support equipment would drive overland within the 2,500-foot area centered on the staked borehole. The landscape would not be altered other than compaction of soil under the vehicle tires/tracks and the vegetation crushed. If necessary, vegetation would be trimmed with the root system left in place either using hand or mechanical methods depending on the type of vegetation that would need to be trimmed.

The top 6 to 8 inches of soil material of the borehole area in an area approximately one foot in diameter would be stripped mechanically and/or by hand and set aside to avoid being disturbed prior to drilling. The actual ground disturbance where bare soil would be exposed would be contained within an approximately 3.0-foot-diameter circle relative to the borehole. At the completion of the boring, the borehole would be backfilled with the cuttings removed during drilling, bentonite, or grout, as required. The hole would then be compacted and the previous stripped topsoil would be placed over the backfilled boring to existing grade.

The average estimated drilling time at each site is approximately one-half day or six hours, although conditions in the field may increase and/or decrease the actual required time. Figures 3 through 6 show typical site conditions before drilling and typical site conditions after drilling. The borehole locations in the photographs are marked with an orange stake.

Temporary surface disturbing activities would include driving to and from the drill site for staking and to check for accessibility, for environmental clearance surveys as appropriate, and for environmental monitoring, drilling and reclamation activities.

3.1.2.2 Access Routes

Access to the borehole's temporary work areas would be from existing roads and along overland travel routes originating from existing roads, with drilling occurring immediately adjacent to the existing roads to the extent feasible. Access not on existing roads would utilize "drive and crush" (overland) methods, where access routes are utilized without vegetation clearing or exposing of underlying soils. A Fire Precaution and Response Plan is included in Appendix C8. Overland travel would be executed only after any appropriate environmental and cultural surveys have been completed. Overland travel would occur in specific areas where no roads currently exist. Existing access roads and overland travel used for the geotechnical activities would coincide with anticipated access routes proposed for construction of the Project to the extent feasible. Grading for access to geotechnical exploration sites is not anticipated to be required. In areas where conventional drill or exploration vehicles cannot access exploration sites due to unforeseen constraints not previously identified during access field review and confirmation, an alternate exploration method would be used. Access to each drill site would be considered in selecting preliminary borehole locations. Locations that could be accessed utilizing existing roads would be selected where available to minimize the length of overland travel. Overland access routes are anticipated to be approximately 12 to 15 feet in width.

Overland travel would occur along one alignment leading to each work area, with support and rig vehicles following the same path to and from each work area. To determine overland travel routes, initial access would be by surveyors accompanied by environmental monitors as necessary that would establish overland travel routes with lathe or flagging. In most cases, the drill or exploration rig, and support

vehicles would make one trip in and one trip out to the boring location. In some cases, other vehicles may come and go from the boring location to deliver water or other supplies, but these would be limited to the extent necessary. Each work area is anticipated to be visited three to four times, typically: once for staking and to check for accessibility, a second time for environmental and cultural clearance surveys as appropriate, and a third time for environmental monitoring, drilling, and reclamation activities. A fourth visit may be necessary to conduct reclamation based on the timing of the drilling activities and the optimal seeding results. Boreholes would be backfilled immediately after drilling.

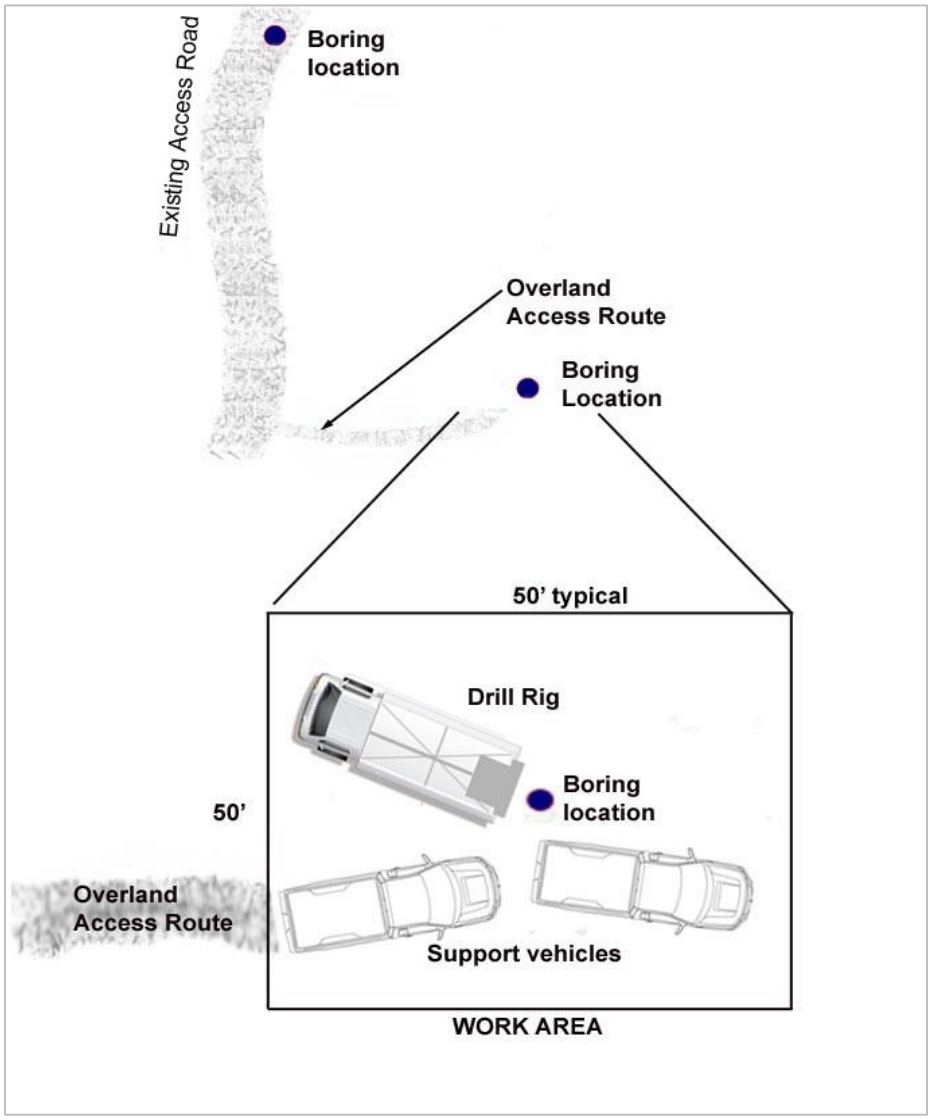
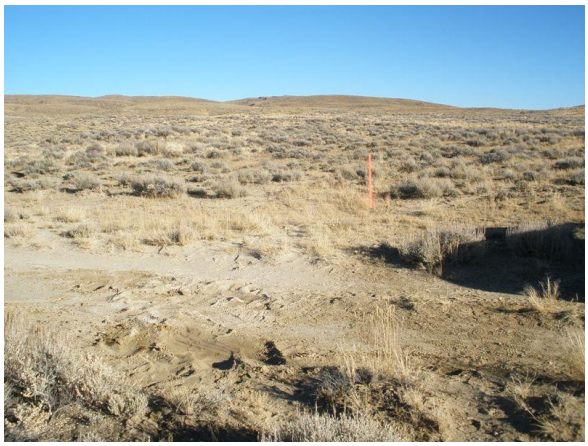


Figure 1. Geotechnical Boring Working Area

Pre-Drilling



Post-Drilling

Figure 2. Photo Set 1 of Soil Disturbance: Pre and Post Drilling

Pre-Drilling

Post-Drilling

Figure 3. Photo Set 2 of Soil Disturbance: Pre and Post Drilling

Pre-Drilling

Post-Drilling

Figure 4. Photo Set 3 of Soil Disturbance: Pre and Post Drilling

Pre-Drilling

Post-Drilling

Figure 5. Photo Set 4 of Soil Disturbance: Pre and Post Drilling

3.2 Engineering Surveys

3.2.1 Identifications of Geotechnical Exploration Sites

Criteria for selection of geotechnical site locations and access routes are provided below as well as a description of typical pre-drilling site conditions and post drilling site conditions.

3.2.1.1 Overview of Exploration Site Locations and Selection Criteria

Due to access constraints, some boreholes may not be located at structure locations, however they would still be located within the proposed disturbance areas associated with construction of the Project. The access routes, equipment types, and disturbance would be identified prior to drilling; however, should be considered approximate because refinement on these sites will occur as environmental and cultural surveys are completed, engineering advances, and field conditions affecting accessibility can change prior to the initiation of drilling activities.

Borehole locations would be selected based on the standard of practice for transmission lines and the results of a preliminary geotechnical report that identified expected geological conditions and associated hazards.

In accordance with the standard of practice, geotechnical borings shall comply with the following requirements and scenarios:

1. Maximum boring spacing equal to or less than three miles.

2. If a geotechnical engineer anticipates or evaluates a change in foundation type within the 3.0-mile boring spacing due to significant change in soil and/or subsurface conditions (groundwater or geologic conditions), additional borings within the 3.0-mile section shall be conducted to evaluate the foundation parameters and constructability of the foundations.

3. At least one boring shall be conducted at every angle structure and deadend structure within the proposed transmission line alignment.

4. If side slopes of the boring locations are greater or equal to 25%, borings shall be moved to a relatively flat portion of the proposed alignment. The geotechnical engineer shall verify that the soil conditions within the steeper portion of the proposed transmission line would not significantly impact the design of foundations.

5. Additional borings may be deemed necessary by the geotechnical engineer. These additional borings may include the need to verify shallow bedrock and/or areas with known geological hazards in order to verify subsurface conditions for design purposes.

Known sensitive environmental resources would be avoided to the extent possible. The following drilling strategy options would be used, as appropriate, to avoid or mitigate impacts to environmental resources: 1) survey geotechnical exploration area for environmental resources, 2) adjust drilling date outside of any seasonal restrictions as required, 3) use alternative access or drilling type, 4) relocate borehole to avoid resources, and/or 5) abandon the borehole location.

Less invasive ReMi geophysical surveys would be completed if necessary. These surveys can be conducted in environmentally sensitive areas (e.g., sensitive plant or wildlife habitat areas, significant cultural resource areas); in remote areas that cannot be easily accessed by a drill vehicle; in areas of highly erosive soils; or in fragile locations that are subject to ponding, compaction or extensive removal of protective ground cover resulting in long-term disturbance. Borehole locations where ReMi surveys are an option and appear to be more environmentally appropriate would be determined once drilling activities are initiated and final field conditions can be determined. ReMi testing provides an approximation of the subsurface conditions but is not an adequate alternative to drilling as the results from ReMi surveys must be correlated to a nearby boring in order to provide reliable design parameters. Refer to Section 3.3.3 for additional details on the ReMi survey.

A drilling schedule would be developed prior to activities and is dependent primarily on issuance of the permits and approvals, environmental clearance survey completion, location and extent of required surveys, and the availability and number of contracted drillers during the time of drilling. The type of drilling vehicle used would depend on the accessibility of borehole locations and the practicality of using specific drilling techniques at each location. The number of operational drill rigs at any one time is dependent on schedule urgency. A typical drill crew consists of one drill rig operator, and one to two helpers. The equipment for each drill crew may include truck-mounted, track-mounted, or all-terrain mounted drilling rigs; a water truck; a 4-wheel drive support vehicle used to haul equipment, supplies, and personnel; and a 4-wheel drive vehicle for the geotechnical engineer. Refueling will typically occur offsite but may occur in existing disturbed areas such as paved roads or existing access roads. No refueling will occur within 100 meters of drainages or wetlands.

3.2.1.2 Access Routes and Existing Roads

Principal access for geotechnical investigations would be by existing access roads or by overland travel routes that would utilize the “drive-and-crush” method of access. Access roads and overland routes anticipated to be used for the geotechnical investigation would also coincide with those to be used for the Project as much as feasible. Existing access roads and overland routes would be classified into categories:

- Existing Paved Road
- Existing Unpaved Road – may require maintenance, but not improvement
- Overland Travel (temporary; drive and crush)

For the geotechnical investigations, "Existing (Paved and Unpaved) Roads" are anticipated to be easily accessed by truck-mounted drilling rigs. Localized areas of unpaved roads (i.e., previously graded) may require minor road maintenance to allow the safe passage of geotechnical vehicles. Road maintenance would include using existing material within the existing previously graded footprint of such roads, if needed, and would be conducted in accordance with applicable land management agency road standards. There would be no new disturbance (i.e., widening or improvement) from road maintenance activities. Overland Travel Routes are considered to require access via "drive and crush" techniques and therefore the use of tracked or all-terrain drilling rigs is anticipated, however truck-mounted drilling rigs may be used for overland travel depending on the terrain.

It should be noted that the classifications are to be considered approximate because final use permissions, rights-of-entry, field conditions, and environmental resource field survey results may require modification of access (and borehole) locations. If any changes to the proposed locations are needed as a result of new information, the applicable agency would be contacted and TransCanyon would work with the agency to address these changes and to ensure that the required environmental clearances and approvals are complete.

3.2.2 Identification of Potential Geohazards

3.2.2.1 Overview of Geologic Hazards

A geologic hazard (or geohazard) is a geological condition that has the potential to cause structural damage. The presence of potential geohazards can therefore represent significant risks to the operation of the Project. Geohazards can be widespread phenomena that are influenced by both geological and environmental conditions and involve short-term and/or long-term processes. Human activities can exacerbate existing geohazards and subsequently increase risk. While some geohazards occur on a relatively small scale, such as localized rock-fall events, larger geohazards can have devastating effects. The potential impacts of various geohazards should therefore be investigated as they can affect the overall planning and economics of a project.

Geologic information is important in the early planning stages of a transmission line project because it can be used to avoid or anticipate and plan for problematic areas. The failure to understand anticipated geologic conditions and understand the risk associated with the conditions can lead to costly transmission line redesigns and potential reroutes that could have been easily avoided in early planning stages.

The review of geological hazards would consist of a preliminary geotechnical desktop study. Due to the size and underground nature of most geohazards, not all geohazards can be field verified. The desktop study would summarize surficial geology and geologic hazard information as it pertains to construction of the transmission line and planning of subsequent geotechnical field explorations along a 2.0-mile buffer zone (corridor) on either side of Project.

The desktop study would be based only on published and available geological information so it should be considered limited. This information would be compiled into a GIS database for analysis as it pertains to the Project. Information in the GIS database would include geologic maps, geohazards data, soils information, and Federal Emergency Management Agency (FEMA) data. Geological and geotechnical information would be reviewed within a 4.0-mile corridor (two miles on each side of alignment). The hazards would be ranked using L = Low; M = Moderate; or H = High to indicate presence and/or impact as discussed below. While a desktop analysis can provide important information during initial project planning, all geologic conditions identified during desktop analysis should be confirmed via geotechnical investigations. The following is a general discussion of potential geohazards to be identified during the desktop analysis that may be encountered along the alignment.

3.2.2.1.1 Slope Failure

Landslides

Slopes may fail depending on topography (steep slopes), existing or proposed construction activities, geology, water content, the type of earth (soil) material involved, and local environmental factors including ground temperature, seismic activity, and ambient weather. For the desktop study, slope failure would include landslides, mass wasting, and debris flow data from published sources as well as aerial imagery interpretations. The potential for failure can be identifiable, and therefore forewarning may be possible, but the actual timing of failure cannot be accurately predicted. Climate and seasonal changes may accelerate or slow the natural rate of slope failure through changes in precipitation and/or in the vegetation cover that binds loose slope material. Field investigation would be required to assess the risk associated with each suspect slope and its possible impacts on the alignment.

The United States Geological Survey (USGS) landslide inventory would be reviewed for the alignment. Landslide risk ratings would be categorized as follows:

- Low (L): No landslides mapped in the area.
- Moderate (M): Landslides mapped within two miles, but away from alignment.
- High (H): Alignment traverses identified and/or mapped landslide(s).

3.2.2.1.2 Expansive and Collapsible Soils

The causes of soil expansion or collapse are related to the type of deposit including soil type, structure, and density. Soils may form in-place by weathering of rocks, or they can be transported and deposited by gravity, water, or wind. A change in the moisture content of a soil can cause soils to swell or to lose strength and consolidate.

The presence of expansive and collapsible soils can be detected by direct observation during geotechnical investigation activities and laboratory testing. Polygonal soil cracking (mudcracks) or popcorn texture in exposures is indicative of shrink/swell clayey soils. The phenomenon of hydrocompaction or collapsible soils often consist of loose, dry, low-density materials that collapse and compact under the addition of water or excessive loading. These soils are typically found in areas of young alluvial fans, debris flow sediments, playas, and loess (wind-blown sediment) deposits. Soil collapse occurs when the land surface is saturated at depths greater than those reached by typical rain events. This saturation eliminates the bond holding the soil grains together. Collapsible soils are geologically young material, such as Holocene-age alluvial-fan and debris-flow sediments, and some windblown silts. In areas where expansive and/or collapsible soil are suspected and/or anticipated, a thorough field investigation program followed by subsequent laboratory testing program would be necessary to further characterize the areas. Drilled pier foundations have been used in Utah, and Nevada to reduce expansive soil damage, however foundations must be sufficiently imbedded below the zone of anticipated moisture fluctuation.

Expansive and collapsible soil risk ratings would be categorized as follows:

- L: No expansive or collapsible soil mapped within two miles.
- M: Expansive and/or collapsible soil mapped within two miles, but not along the alignment.
- H: Alignment traverses mapped expansive and/or collapsible soils.

3.2.2.1.3 Karst Features

Karst features are distinctive surficial and subterranean features developed by solution of carbonate and other rocks characterized by closed depressions, sinking streams, and cavern openings. The term is typically used to define surface features derived by solution of carbonate rocks, but subsequent use has broadened the definition to include sulfates, halides, and other soluble rocks. The term has been expanded also to cover interrelated forms derived by solution on the surface in the subsurface. When used in its broadest sense, the term encompasses many surface and subsurface conditions that cause problems in engineering geology. The USGS Digital Engineering Aspects of Karst Map identifies areas with known problems in engineering geology caused by karst and pseudokarst features in the United States. Most of these problems are associated with subterranean karst and pseudokarst features that affect foundations, tunnels, reservoir tightness, and diversion of surface drainage (Weary and Doctor 2014).

Pseudokarst is terrain with features similar to karst, but formed in nonsoluble rock, as by melting of permafrost or ground ice, collapse after mining, and by outflow of liquid lava from beneath its solidified crust. Pseudokarst features are extensive in some regions of the west and primarily exist in late Cenozoic basalt fields where lava tubes, fissures, open sinkholes, and caves formed by the extrusion of still-liquid lava.

Karst and pseudokarst feature risk ratings would be categorized as follows:

- L: No karst or pseudokarst features mapped within two miles.
- M: Karst or pseudokarst features mapped within two miles, but not along the alignment.
- H: Alignment traverses mapped karst and pseudokarst features.

3.2.2.1.4 Seismicity and Earthquakes

Seismic Zone

Seismicity is caused by complex regional tectonic processes that include movement along plates, faults, and uplifts. Seismicity is often closely linked to earthquakes and is responsible for their geographic and/or historical distribution. An earthquake is generally defined as a sudden motion or trembling in the Earth caused by the abrupt release of slowly accumulated strain. The most common types of earthquakes are caused by movements along faults.

The USGS Earthquake Hazards Program is part of the National Earthquake Hazards Reduction Program, established by Congress in 1977 to monitor and report earthquakes, assess earthquake impacts and hazards, and research causes and effects of earthquakes. The program also developed probabilistic seismic hazards maps that depict the levels of earthquake ground motion that have a 10% probability of being exceeded within 50 years. The measure of an earthquake's ground motion is measured by peak horizontal ground acceleration, which is expressed as a proportion of the acceleration caused by gravity. The peak ground acceleration represents probabilistic estimates of the intensity of ground motion that is likely to occur as a result of reasonably foreseeable earthquake events on active faults. The values for seismic acceleration as a percentage of gravitational acceleration (g) for the Project centerline would be evaluated. The acceleration values would be obtained from a digital overlay of the USGS Seismic Hazard Map showing the peak acceleration with 10% probability of exceedance in 50 years. To assist in correlating acceleration to our environmental surroundings, the USGS Instrumental Intensity table lists relative scale of acceleration to instrumental intensity, perceived shaking, and potential damage. Potential damage categories include "None, Very Light, Light, Moderate, Moderate to Heavy, Heavy, and Very Heavy."

Quaternary Faulting

Faults are structural features (fractures) in the Earth's crust where seismic activity has caused displacement. Natural causes are seismic/tectonic activity and the compressive forces in the Earth's crust. Strains increase with time until the crust ruptures and adjacent blocks slip and translate vertically, horizontally, and/or diagonally. Removing large qualities of subsurface fluid can contribute to stress-strain adjustment in subsurface soil and rock. Typically, there are five common fault classifications: Normal, Reverse, Strike Slip, Oblique, and Overthrust faults. The most common are usually normal and reverse faulting; however, in many of the basin formations, overthrusting is also common.

Faults vary in age and are usually visible on the surface by lineations, truncated ridges, faceted spurs, horst and graben landforms, rejuvenated streams, blocked or truncated streams, and step scarps. Buried and unobservable faults can also be identified by seismological data (alignment of epicenters). Displacements on individual faults range from hundreds to many thousands of feet; however, the displacements usually do not occur in single events. Seismic studies indicate that the minor slips on faults only relieve a small fraction of the accumulated strain. Older faults have had time to adjust to build up strain; however, the younger age faults (Quaternary) are associated with most geohazard studies. Active faults are defined as those that have moved or slipped in the Quaternary age (the last 1.8 million years) and are often linked to recent and future earthquakes. Faults less than 15,000 years old are considered active for this study.

Quaternary fault risk ratings would be categorized as follows:

- L: No mapped faults mapped faults within two miles.
- M: Mapped faults within two miles, but not traversed by the alignment.
- H: Alignment traverses mapped faults.

Liquefaction

Liquefaction is a dynamic loading and/or transient shear wave phenomenon that occurs in saturated sands. If a saturated soil or near saturated soil is subjected to ground vibrations (dynamic loading) it tends to compact and decrease in volume. If the fine-grained soil cannot drain rapidly enough, the decrease in volume results in an increase in pore pressures. When the pore pressure increases until it is equal to the overburden confining pressures, the effective stress between soil particles becomes zero resulting in a complete loss of shear strength, and advances into a liquefied state. Fine grained silts and sands are the most susceptible soils, especially along rivers, streams and lake shorelines, as well as in some ancient river and lake deposits. Even though fine sands are documented as the most susceptible to liquefaction, it has been recently documented that gravel deposits are susceptible to liquefaction.

In general, two conditions must exist for liquefaction to occur: (1) the soil must be susceptible to liquefaction (loose, water-saturated silty and/or sandy soil, typically between 0 and 30 feet below the ground surface); and (2) ground shaking (seismic event) must be strong enough to induce liquefaction of the soil. Geotechnical investigations and field knowledge of the local geology and subsurface soil and water conditions are an important component of further characterizing areas susceptible to liquefaction.

The following classification would be used for identifying liquefaction risk; however, the results of the geotechnical investigation is required to properly characterize liquefaction potential.

Liquefaction risk ratings would be categorized as follows:

- L: Low potential for shallow groundwater.
- M: Moderate potential for shallow groundwater.
- H: High Potential for shallow groundwater.

3.2.2.1.5 Groundwater and Flooding

Shallow Groundwater

Water in saturated zones beneath the land surface is typically referred to as groundwater. It is regarded as shallow when it is located less than approximately 30 feet below the ground surface. Most shallow groundwater occurs in basin valleys, downstream of earth dams, along seasonal water courses, rivers, and near swamp/marshy areas and lakes. Unconsolidated deposits that are saturated at shallow depths often present problems for land development in that it causes unstable excavations and foundations. The water in shallow saturated zones is replenished by infiltration from streams, lakes, precipitation, lateral subsurface flow from adjacent higher ground-water areas, and upward leakage of underlying confined water. The shallowest groundwater is generally found in stream valleys and in the center of basins where upward leakage from underlying artesian systems is greatest and potentiometric surfaces are highest. In addition, shallow groundwater is a prerequisite for liquefaction. Shallow groundwater levels are a dynamic process and fluctuate daily, seasonally, annually, and over longer periods in response to a variety of conditions.

Topographic and geologic information typically provide a check on the distribution of shallow groundwater areas. Shallow groundwater risk ratings would be categorized as follows:

- L: No shallow groundwater mapped within two miles.
- M: Shallow groundwater mapped within two miles, but not traversed by the alignment.
- H: Mapped shallow groundwater traversed by the alignment.

Flooding

Flooding can destabilize the land surface and potentially damage towers and access roads. Flooding denotes a progressive abnormal increase in the elevation of the surface level of open channel flow until it reaches a level in excess of its normal maximum height and subsequent inundation of areas which are not normally submerged. The episodic behavior of an open channel that may be considered in the flooding process is then termed “flood event” and typically takes place with a certain period of time. The most common flood environment within the proposed corridor is when open channels such as rivers and streams overflow their banks due to excessive rain events, high rate of snow melt, and overland flow due to denuded and/or removal of vegetation, usually from fires. Flooding is classified according to its likelihood of occurring in a given time period. A hundred-year flood event is a relatively large and often destructive event that would theoretically be expected to happen only once every century. In reality, this classification means there is a 1.0% chance that such a flood event could happen in any given year. Flash flooding can occur within a few minutes or hours of excessive rainfall and is common along the Project alignment. The geohazard potential for flooding to be used in the desktop study would be based on FEMA 100-year floodplain designation maps (where available), aerial imagery interpretation, and limited field evaluation.

Flood risk ratings would be categorized as follows:

- L: No mapped or interpreted floodplains within two miles.
- M: Mapped or interpreted floodplains within two miles, but not traversed by the alignment.
- H: Mapped or interpreted floodplains traversed by the alignment.

3.2.3 Conclusions

While avoidance of faults is preferred, micro siting would be used to reduce impacts to the proposed construction. A fault study would be required to determine actual fault locations and field truth fault locations to help determine final structure locations. Once the geotechnical investigation commences and new, site-specific information becomes available, geotechnical borings may be added and/or removed as needed.

The desktop evaluation of expansive and collapsible soils, karst and pseudokarst features, Quaternary faulting, liquefaction potential, shallow groundwater conditions, and flooding potential would be used in deciding where to place boreholes for geotechnical investigation. Areas where these hazards are likely to occur would therefore be evaluated during the geotechnical investigation and results of the geotechnical investigation would be incorporated into final Project design.

3.3 Geotechnical Exploration Methods

Geotechnical exploration consists primarily of geotechnical drilling with some geophysical surveys and geologic hazard assessments. Each of these exploration methods are discussed below.

3.3.1 Geotechnical Drilling Methods

Geotechnical drilling may be accomplished using a variety of drilling methods, including HSA, mud rotary, continuous diamond coring, air hammer (e.g., overburden drilling with eccentric bit or ODEX), sonic drilling technologies, or by CPT equipment (also known as rigs), depending on the type of soil and rock expected within the completion depth of the borehole. The purpose of the geotechnical drilling is to evaluate the soil conditions for the proposed transmission line structure foundations. The types of drilling rigs that may be used for the variety of drilling methods described below are described in Section 3.4 with photographs of typical drilling rigs shown in Figures 7 through 10.

3.3.1.1 Hollow-Stem Auger Drilling

HSA drilling consists of rotating a drill stem to advance a toothed bit into the subsurface materials. The materials are brought up from the borehole by the rotation of a continuous helical fin on the outside of the drill stem. The drill stem is added in pieces (flights) as the boring advances downward. This is a dry method of drilling that typically requires no water, drilling mud, or pressurized air as a circulating fluid.

The auger is hollow on the inside to allow entry of a center rod, which holds a plug at the bottom of the auger or a sampling tool. The hollow opening allows downhole testing and sampling at the bottom of the boring without having the side walls cave in. The HSA method may be used in combination with mud rotary drilling to temporarily support (i.e., “case”) the borehole across loose materials The HSA method is expected to be used in the majority of areas where unconsolidated sediments are encountered. The use of the HSA method may be impeded when encountering dense uniform sand, large cobbles, and/or a high groundwater table and generally cannot be used to drill into rock. Other drilling methods described below would be used if the HSA method of drilling is not feasible. The support equipment for auger drilling

would include a smaller vehicle to carry the HSA flights and other equipment/supplies to the geotechnical testing site and the field geotechnical engineer/geologist's vehicle.

3.3.1.2 Mud Rotary Drilling

Mud rotary drilling consists of rotating a smooth-walled hollow drill stem and advancing a variety of drill bits at the end of the drill stem. The materials are brought up from the borehole by pumped water (or mud slurry) typically travelling down through the drill stem, out the bit, and flowing up the outside of the drill stem. This method carries drill cuttings to the ground surface with the circulating water. A tub at the surface collects the drill cuttings and holds the water and cuttings (mud) for recirculation. If caving or water loss is encountered, the driller would use casing to stabilize the borehole. Mud rotary can be used to drill soil and rock using a tri-cone hardened steel bit. A special rock bit includes using diamond- or carbide-tipped coring barrels. The coring barrel allows cutting and retrieval of cylindrical rock samples (cores). Once a rock layer is encountered, the driller would attempt to retrieve a continuous core sample to the depth of the borehole. Water would be purchased from private and/or municipal sources that have already been allocated for and approved for use.

Mud rotary drilling is expected to be used in the majority of areas where rock is encountered within the depth of the borings. The equipment for mud rotary drilling includes the drill vehicle, a support vehicle for rods and equipment, a water-tank vehicle and the field geotechnical engineer/geologist's vehicle. Mud rotary drilling requires a vehicle to supply water, which may have difficulty accessing geotechnical testing sites and thus limiting its use in some difficult access areas.

Mud rotary drilling would utilize a recirculation tank that captures unused or leftover mud. Any mud left in the recirculation tank would be pumped back into the water tanks and disposed of at a local landfill. Spilled mud would be shoveled, pumped or vacuumed (dependent on volume and consistency) into the water tanks and disposed of at the local landfill. Water bars would be installed to intercept and cause ponding of sediment laden runoff.

3.3.1.3 Air Rotary Drilling

The air rotary drilling method is similar in principle to mud rotary drilling; however, this method uses compressed air as the circulating medium rather than water or mud slurry. Drill cuttings are retrieved from under a hood placed over the borehole. Because air rotary does not use water-based drilling fluids, clogging is less likely than with mud rotary drilling. A special type of air rotary drilling involves the use of an air hammer. Compressed air is pumped through the drill pipe to an air-hammer bit in the borehole. The pneumatic bit strikes the rock very rapidly. During drilling, the pipe string is rotated by the drilling vehicle to aid in keeping the borehole straight. The compressed air, escaping from the bottom of the air hammer, carries the pulverized cuttings to the surface. A water spray or mist would be applied to control dust at geotechnical investigation sites when necessary.

The support equipment for air rotary drilling would include a support vehicle towing an air compressor and the field geotechnical engineer/geologist's vehicle. The support equipment required may have difficulty accessing geotechnical testing sites, thus limiting its use in some difficult access areas.

3.3.1.4 Sonic Drilling

Sonic drilling uses a rotating drill string as with other drilling methods; however, this method also uses a sonic drill head to impart a high frequency vibration on the drill stem and an open pipe casing/core barrel that is advanced into the subsurface materials. As the casing is advanced, soil and rock samples are forced up into the casing, providing a continuous sample of the subsurface soil and rock. The frequency of vibration can be changed to match the subsurface conditions, making this type of drilling generally faster

than the other drilling methods. However, generally more expensive equipment is required when compared to HSA and mud rotary methods. The support equipment for sonic drilling would include a vehicle to carry the drill to geotechnical testing locations, a support vehicle to carry the drilling rods, and the field geotechnical engineer/geologist's vehicle.

3.3.1.5 Down-Hole Air Hammer Drilling

The down-hole air hammer drilling method uses tooling in which an outer drill casing is advanced along (more or less simultaneously, depending on the manufacturer) with the drill bit. The drill bit has a section that moves outward through eccentric action when the drill rods are rotated or expands by spring action, thereby making the borehole larger than the casing it passes through. The larger diameter hole allows the casing to follow along behind the bit by being hammered or pushed as the hole is drilled. The bit is typically a tungsten carbide button bit that is driven by a percussion hammer during rotation. A common brand name for this type of drilling is ODEX (overburden drilling with eccentric bit). There is also a concentric drilling system (without the eccentric bit), Symmetrix, which allows the casing to advance along with the bit. Drill cuttings are removed by compressed air travelling down the drill rod to the bit and returning via the annulus between the drill rod and casing and then lifting the cuttings to the surface. The air path can be reversed, which is called reverse circulation. Water can be added (from a water tank) or drilling can be done dry. The under-reamer drilling method is especially useful where hard bedrock or hard boulders are encountered.

The support equipment for under-reamer drilling includes an air compressor (which some rigs have on board and some rigs tow behind), a support vehicle to carry the drill casing, and the field geotechnical engineer/geologist's vehicle.

3.3.1.6 Cone Penetration Testing

The CPT is a testing method used to determine the engineering properties of soils and to delineate soil lithology. The test method consists of pushing an instrumented cone at a constant rate. The instruments measure tip (cone) resistance and friction resistance along the sides. The CPT delineates soil layers from the ratio of cone to side friction resistance. CPT drilling provides excellent geotechnical information in softer formations but typically reaches refusal in soils with gravel, medium dense sands or hard fine-grained soils. CPT probes do not collect soil samples and therefore rely on correlations to determine soil type. CPT cones are capable of performing seismic CPT testing at set intervals to determine shear wave velocity of the soils. CPT cones also read pore water pressures as they are advanced to determine depth of groundwater and if artesian groundwater conditions are encountered. CPT equipment could be used to advance other measurement tools. An example is the flat plate dilatometer, an approximate 4.0-inch-wide plate that is pushed into the ground to measure lateral pressures. Measurements from the dilatometer tool could be used for lateral response analysis of the tower foundations.

The CPT drill is typically mounted in a box truck or on a track/all-terrain vehicle. The support equipment for CPT drilling includes a support truck for equipment, and the geologist/engineer vehicle.

3.3.2 Sampling Methods

During drilling operations, samples would be obtained (except in the case of rock coring and CPT) every 2.5 feet for the first 10 feet below ground surface, then once every five feet or at each change in soil or rock type. For rock coring and CPT, soil sampling would be performed either using split-spoon samplers hammered into sandy soil; thin-walled Shelby tubes pushed into fine-grained soil (clays or silts); or grab samples taken from the drill "cuttings" (broken-up material). Once the soil sampler reaches a hard material (i.e., rock or rock-like) that cannot be sampled using the methods described above, the drilling

and sampling equipment would be changed to continuous rock coring. These sampling methods are described in the following sections.

3.3.2.1 Grab Sampling

Each of the drilling methods described above in Section 3.3.1 (except in the case of rock coring and CPT) would bring cuttings to the surface. At the discretion of the field geologist stationed at the drilling vehicle, a grab sample of the cuttings may be collected as they come out of the borehole to observe grain-size, moisture changes, or to confirm that other sampling methods are recovering adequate samples of material. Grab sampling is the least preferable sampling method because the sample interval is approximate and the material is mixed and very disturbed.

3.3.2.2 Thin-Walled Tubes

Relatively undisturbed samples of fine-grained and/or cohesive soils encountered in the borings would be taken by rapidly pushing a 3.0-inch-diameter (outside) thin-walled tube sampler (also known as Shelby tube sampler, ASTM D1587) approximately 1.5 feet into the soil using the hydraulic down push from the drill vehicle.

3.3.2.3 Split Spoon Sampling

Samples of granular soils encountered in the borings would be taken by driving a 2.0-inch-diameter (outside) split-spoon sampler (ASTM D1586) 18 inches into the soil with a 140-pound hammer falling freely from a height of 30 inches. This method is also known as the Standard Penetration Test. Where gravelly soils are encountered, a larger diameter split spoon sampler (usually 3.0 inches in diameter) driven by a 300-pound hammer may be used to improve sampling recovery.

3.3.2.4 Coring

Rock encountered in the borings would be continuously sampled to the termination depth of the boring using a core barrel fitted with a carbide or diamond bit.

3.3.3 Geophysical Surveys

In addition to geotechnical drilling, less invasive ReMi geophysical surveys can be conducted in environmentally sensitive areas (e.g., sensitive plant or wildlife habitat areas, significant cultural resource areas); in remote areas that cannot be easily accessed by a drill vehicle; and in areas of highly erosive soils or fragile locations that are subject to puddling, compaction or extensive removal of protective ground cover resulting in long-term disturbance. Results from ReMi surveys must be correlated to a nearby boring in order to provide reliable design parameters. ReMi surveys would be conducted to supplement rock condition information obtained through exploratory drilling. A ReMi survey may be conducted to obtain information on depth to bedrock, moduli of each layer detected, rock excavatability (rippability), and other design/construction considerations.

In areas where higher noise levels can be tolerated, the ReMi equipment can be switched to refraction mode and a metal plate placed on the ground and struck with a sledgehammer to produce a high-frequency energy source. The maximum noise level may be generated by pounding a metal plate with a sledgehammer with an estimated noise level of 150 decibels at a 5.0-meter distance from the source. By comparison, small arms fire is about 170 decibels at a distance of approximately 1.5 feet.

Equipment to be used in conducting the ReMi survey includes a multichannel seismograph, low- and high-frequency geophones laid out from 10-foot to 50-foot intervals. Ten-foot intervals between geophones with a 120-foot array would provide 30 to 40 feet of penetration and are anticipated to be sufficient. Geophones that are 3.0 inches long would be hand-pushed into the ground and removed after the readings are taken. In hard ground conditions, geophones can be placed directly on the ground surface.

3.4 Drill Vehicle Types

The drilling methods and equipment (rigs) described above would be mounted on road legal trucks, tracked vehicles, or oversized-tire ATVs. All drilling vehicles can be equipped with HSA, ODEX, sonic drills, and mud rotary/coring drilling systems. Additionally, a man-portable drill rig may be used where access is not available. This rig type is transported in pieces as closely as possible to the borehole site using road-legal vehicles or off-highway vehicles. The pieces are packed into the site by personnel, ATV, or livestock and assembled on site to perform the drilling. The majority of the boreholes would be drilled using truck mounted drilling rigs; however, other drilling rigs may be used for areas where the truck-mounted drilling rigs cannot be used due to steep terrain and/or difficult access. Other vehicles and equipment would also be used to support geotechnical testing and may include a water truck or support vehicle, an air compressor, field geotechnical engineer/geologist's pick-up truck or utility vehicle and possibly another support pickup truck. Equipment utilized would be certified for air quality standards as required by the states of Utah and Nevada.

3.4.1 Truck Mounted

Truck-mounted drilling rigs are proposed for the majority of the borings. These rigs are road-legal, heavy trucks that require relatively flat access (5.0% grade or less). The rigs would travel on existing roadways and two-track trails as close as possible to geotechnical testing sites and then overland on firm ground. Truck-mounted drilling rigs are typically 30 feet long, 8.5 feet wide, and 12 feet high with mast down and 34 feet high with the mast up and have a gross vehicle weight of approximately 30,000 pounds with 30 to 50 pounds per square inch (psi) ground pressure. CPT equipment could be truck-mounted or carried by drilling rigs. CPT trucks are approximately 54,000 pounds with 30 to 50 psi ground pressure. Figure 7 shows a typical truck mounted drill vehicle.

Figure 6. Typical Truck-Mounted Drill Vehicle

3.4.2 All-Terrain Vehicles

ATV rigs, also known as balloon-tired rigs, are an alternate drill vehicle type for borings where truck-mounted rigs cannot gain access, including areas with softer ground conditions and up to 20% grade. ATV rigs are typically 25 feet long, 8.5 feet wide, and 15 feet high with mast down and 25 feet high with mast up and have rubber balloon tires allowing low-ground-pressure and thus lower ground disturbance with a gross weight of 25,000 pounds. ATV rigs are transported to the Project area on low-boy trailers using existing roadways and two-track trails as close as possible to geotechnical testing sites and then overland to the geotechnical testing sites. If the ground is firm enough, ATV rigs can travel faster overland than the tracked rigs discussed in the next section. Figure 8 shows a typical ATV mounted drill vehicle.

Figure 7. Typical ATV-Mounted Drill Vehicle

3.4.3 Tracked Vehicles

Track-mounted drilling rigs are another alternative drill vehicle type for borings where softer ground conditions exist with up to 20% grade. These rigs are approximately 8,000 pounds with rubber tracks, resulting in approximately 10 psi ground pressure, the lowest available ground disturbance mobile vehicle for softer ground. Tracked rigs are typically 22 feet long, 6.0 feet wide, and 22 feet high with mast up. Track rigs travel on low-boy trailers using existing roadways and two-track trails to get as close as possible to geotechnical testing sites and then overland to the geotechnical testing sites. Track rigs are driven by remote-control by an operator walking along the side of the vehicle as it is moving.

Track-mounted drilling rigs could also be used to carry CPT equipment. Track-mounted CPT equipment is heavier, up to 25 tons, typically 27 feet long, 10 feet wide and 12 to 13 feet high. The weight of a CPT track-mounted vehicle is distributed using wide rubber tracks, resulting in 4 to 5 psi ground pressure. Figure 9 shows a typical track mounted drill vehicle.

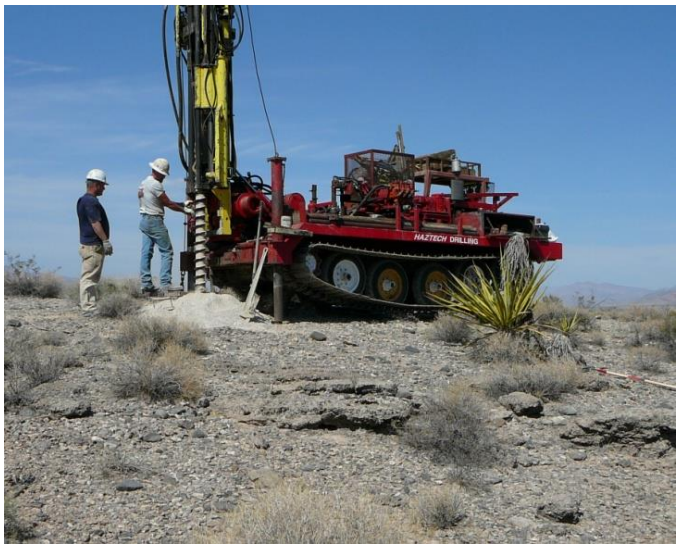


Figure 8. Typical Track-Mounted Drill Vehicle

4 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

To minimize the potential impacts of conducting the geotechnical investigation, TransCanyon has developed a suite of Applicant Committed Environmental Protection Measures (ACEPMs) to address potential conflicts with environmental resources noted above and to minimize the potential for conflicts with public health and safety. These ACEPMs can be found in Section 9 of the POD.

5 RECLAMATION

TransCanyon has adopted the ACEPMs (Section 9 of the POD) to mitigate the potential for increased erosion and ensure that vegetation cover is restored in areas disturbed during activities associated with the geotechnical investigation and POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan would be implemented. The placement of geotechnical testing locations would be selected to minimize the amount of land disturbance and associated increased potential for soil erosion from either water or wind as well as meet the data needs of the testing at the needed locations. The overland access routes also would be planned to minimize the need to clear vegetation. Wherever possible, disturbance of steep and unstable slopes would be avoided. Where steep or unstable slopes cannot be avoided, techniques to ensure establishment of appropriate seed for revegetation and erosion control would be employed. Streams and washes would be crossed as near as possible at right angles. All activities would be conducted in a manner that would minimize disturbance of vegetation, drainage channels, and intermittent and perennial stream banks. All existing roads would be left in a condition that is as good as or better than their condition prior to the geotechnical investigation activities.

Existing roads would be used whenever possible to minimize off-road vehicular traffic. Vehicular access for geotechnical testing would use the same ingress and egress routes to minimize disturbance. The sequence and methods for accessing geotechnical testing sites would limit the number of times vehicles would need to travel overland to any particular site. To the extent possible, overland travel routes and geotechnical testing sites would not be cleared of vegetation. No grading would occur.

Impacts of ground-disturbing activities would be mitigated by reseeding with an agency approved seed-mix to hasten vegetation recovery, prevent spread of invasive species and noxious weeds, and installing cross drains and water bars to limit water erosion. Upon completion of the geotechnical investigation and as required, physical barriers and educational signs would be placed at the entrances of some overland access routes, as directed by the land management agency, for the duration of rehabilitation to limit or prevent unauthorized off-highway vehicle traffic. As needed in specific areas and as directed by the land management agency, additional biotechnical slope stabilization techniques may be used, including landform contour grading, fiber coirs on contour, fabric mats, brush wattle placement, or straw or other mulch (e.g., use of certified weed free) placement and stabilization. Other biotechnical slope stabilization techniques may also be employed where appropriate.

Drill holes would be backfilled with excavated soil, where appropriate, to minimize settlement and the amount of displaced soil. If possible, geotechnical testing would be conducted on nearly level to gentle slopes to minimize runoff velocity and erosion potential. Upon completion and before leaving each site, the soil boring would be backfilled to existing grade with grout extending to 20 feet below grade as required by the Nevada Division of Water Resources, unless a waiver is obtained to avoid this requirement. Drill cuttings or bentonite would be used below the grout depending on groundwater conditions. The top 6 to 8 inches of soil material of the borehole area in an area approximately one foot in diameter would be stripped, mechanically and/or by hand, and set aside to avoid being disturbed prior to drilling. The actual ground disturbance where bare soil would be exposed would be contained within an approximately 3.0-foot-diameter circle relative to the borehole. At the completion of the boring, the borehole would be backfilled with the cuttings removed during drilling, bentonite, or grout, as required. The hole would then be compacted and the previous stripped topsoil would be placed over the backfilled boring to existing grade.

The soil surface would be left rough and covered with mulch, when possible, to minimize the potential for wind erosion. In areas free of invasive plant species and noxious weeds, mulch would consist of previously cleared native vegetation that has been chipped on-site into mulch. In weed-infested areas, weed-free wheat straw would be spread over the ground disturbance at a rate of 1.0 to 1.5 tons per acre, depending upon the percent slope of the sampling location, surrounding terrain, and susceptibility to wind.

In areas where soil is disturbed (i.e., where soils are compacted), surface restoration would normally consist of, but would not be limited to, returning disturbed areas back to rounded contours, scarifying, reseeding, and mulching by hand (at a rate of 1.0 ton per acre) or hydromulching, as needed or as specified by the agencies.

Topsoil and vegetation would be left in place wherever possible and original contours would be maintained to avoid excessive root damage and allow re-sprouting.

Where it is necessary to trim vegetation for temporary work areas or to access drill sites or conduct drilling activities, trimming would be limited to the minimum necessary for operational safety and efficiency for the activities. Trimmed vegetation would be chipped onsite (chipping equipment would be towed by or placed in the bed of the support vehicle) and either distributed immediately or stockpiled for later use as mulch during reclamation activities. Particular care would be taken to ensure that noxious

weeds are not included in the chipping and mulching operations. Any vegetation removed that may contain noxious weeds would be disposed of offsite at an agency-approved location or disposed of in another manner as directed by the land management agencies.

5.1 Reseeding Efforts

In areas where soil is disturbed by geotechnical testing activities, the areas would be seeded with a seed mixture appropriate for those areas, as specified and approved by the land-management agency, or as requested by the landowner.

For the most effective results, seeding would be conducted during the period from mid-October to December following the geotechnical investigation activities, unless timing and seed germination requirements suggest otherwise or as directed by the land management agency. Depending on weather and other factors and to maximize the chances of success, seeding may be performed in the spring for some locations, as determined appropriate by the land-management agencies. Seed would be purchased from a seed source in accordance with pure live seed specifications for seed mixtures and would be certified weed-free in all cases. The recommended seed mixtures could consist of both native and non-native species beneficial to wildlife and suitable for helping to control erosion on disturbed areas. The approved seed mixtures would be applied at or above the application rates specified by the land-management agency, or as requested by the landowner.

To minimize further ground disturbance, seed would be applied by broadcast methods. Immediately prior to seeding, disturbed ground areas would generally be raked by hand to reduce surface compaction and provide a suitable bed for germination. If needed, harrowing may be done with the use of a pickup or ATV in areas too large to hand rake. Broadcast seeding and covering would be done from a pickup, ATV, or other rubber-tired vehicle using previous ingress and egress routes. Following broadcast seeding, the seeded areas would be raked and/or harrowed to cover the seed and ensure good contact of the seed with the soil.

For any areas that do not meet identified cover success rates, the seed mixtures would be reapplied and monitoring continued once annually for period of the ROW grant and special use permit or for another reasonable period directed by the land management agency until suitable cover rates are achieved. After two growing seasons, a vegetative cover of seeded species equal to 70 percent or greater of the total basal vegetative cover of the adjacent “undisturbed” vegetation would be considered successful. Seeded areas must also be free of noxious weeds. If, after two years, seeding is found to be unsuccessful, a reseeding effort could be required at the discretion of the authorized land management agency officer.

6 REFERENCES

Weary, D.J. and D.H. Doctor. 2014. Karst in the United States: A digital map compilation and database: U.S. Geological Survey. Open-File Report. Available at USGS Open-File Report 2014–1156: Karst in the United States: A Digital Map Compilation and Database. Accessed May 17, 2021.

Appendix C. Environmental Protection Plans

Appendix C1. Biological Resources Conservation Plan – DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C1. Biological Resources Conservation Plan

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July 2023

CONTENTS

Attachments

Tables

Abbreviations

APP	Avian Protection Plan
BE	Biological Evaluation
BGEPA	Bald and Golden Eagle Protection Act
BHCA	Bird Habitat Conservation Area
BLM	Bureau of Land Management
BO	Biological Opinion
CIC	Compliance Inspection Contractor
CFR	Code of Federal Regulations
Company	TransCanyon, LLC
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
Forest Service	U.S. Department of Agriculture Forest Service
GHMA	General Habitat Management Area
GIS	geographic information system
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NAC	Nevada Administrative Code
NDOW	Nevada Department of Wildlife
NFMA	National Forest Management Act
NTP	Notice to Proceed
OHMA	Other Habitat Management Area
PHMA	Priority Habitat Management Area
Plan	Biological Resources Conservation Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
RMP	Resource Management Plans

ROD	Record of Decision
ROW	Right-of-Way
SUP	Special Use Permit
UDWR	Utah Division of Wildlife Resources
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

The purpose of this Biological Resources Conservation Plan (Plan) is to assist the Company and their Construction Contractor(s) in meeting their obligations to protect biological resources during (1) the construction and (2) operation and maintenance phases of the Project. This Plan includes information on (1) the distribution of biological resources along the Project, (2) regulatory requirements and agency concerns pertaining to biological resources, (3) permissible impacts to biological resources, and

(4) protective measures and mitigation, stipulations, protocols, and/or techniques required to reduce these impacts. This Plan will be implemented by the Construction Contractor(s) during construction, and by the Company during operation and maintenance activities to avoid and/or minimize impacts to biological resources. The following set of attachments have been included in this Plan to guide the Company and their Construction Contractor(s) to maintain compliance with the stipulations contained in this Plan:

- Attachment A: Biological Resources Survey Requirements
- Attachment B: Biological Resources Monitoring Plan
- Attachment C: Wildlife Variance Management Plan
- Attachment D: Nest and Perch Management and Monitoring Plan
- Attachment E: Seasonal and Spatial Restrictions for Biological Resources
- Attachment F: Biological Opinion (to be included if needed and when available)

The information contained in this Plan was developed in collaboration with agency resource specialists using information that will be contained in the Final Environmental Impact Statement and Biological Opinion (BO) (see Attachment F: Biological Opinion - *to be included when available*), Bureau of Land Management (BLM) Resource Management Plans (RMPs), U.S. Department of Agriculture Forest Service (Forest Service) land and resource management plan, the *Record of Decision and Approved Utah Greater Sage-Grouse Resource Management Plan Amendment* (BLM 2015), and from biological resources surveys that have been or will be conducted by the Company prior to issuance of the notice to proceed (NTP).

This Plan was prepared as part of the Plan of Development (POD). It will be updated as necessary to meet any stipulations of the BLM and the Forest Service records of decision (RODs) and the BLM right-of-way (ROW) grant and Forest Service special use permit (SUP) before issuance of any NTP and commencement of construction.

2 REGULATORY FRAMEWORK

This section provides an overview of regulations applicable to biological resources that have been considered in the development of this Plan.

2.1 Federal Laws and Regulations

- The Endangered Species Act (ESA) of 1973 requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Take of ESA-listed species is prohibited without specific exceptions or permits issued under the ESA. Under the ESA, the definition of "take" includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. The USFWS has further defined harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, such as breeding, feeding, or sheltering. In Utah, coordination is with the Utah Ecological Services Office and in Nevada coordination is with the Nevada Ecological Field Office.

- The Federal Land Policy and Management Act (FLPMA) (43 United States Code [USC] 1701) as amended, consolidates and articulates BLM and Forest Service management responsibilities and governs most uses of federal lands, including authorization to grant or renew rights-of-way (ROW). In accordance with FLPMA, BLM and Forest Service must make land use decisions based on principles of multiple use and sustained yield. A grant of ROW must be limited to its necessary use and contain terms and conditions that reflect the agencies' management responsibilities under FLPMA, including minimizing impacts to biological resources.

- The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703) makes it unlawful to pursue, hunt, take, capture, kill, or possess any migratory bird, part, nest, or egg of such bird listed in wildlife protection treaties among the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Union of Soviet Socialist Republics. This act also contains a clause that prohibits baiting or poisoning of these bird species. A list of species covered by the MBTA can be found in 50 Code of Federal Regulations (CFR) 10.13. The MBTA applies to many bird species, including raptors, and protects them from prohibited activities during construction, operation, and maintenance of the Project. In Utah, coordination regarding MBTA species is with the Utah Ecological Services Field Office and Region 6 Migratory Birds Office. In Nevada, coordination is with the Nevada Ecological Services Field Office and Region 8 Migratory Birds Office.

  On October 4, 2021, the USFWS published a final rule (86 FR 54642) revoking the January 7, 2021 regulation (86 FR 1134) that limited the scope of the MBTA regulations. As of December 3, 2021, the USFWS implements the MBTA as prohibiting incidental take and applying enforcement discretion, consistent with judicial precedent and long-standing agency practice prior to 2017. Additionally, the USFWS released a Director's order (No. 225, October 4, 2021) clarifying that enforcement efforts will be focused on specific types of activities that both foreseeably cause incidental take and where the proponent fails to implement known beneficial practices (best management practices, conservation measures, best practices, mitigation measures, etc.) to avoid or minimize incidental take.

  Under the MBTA a Special Purpose Utility Permit (3-200-81) may be warranted to provide legal coverage for removing or relocating migratory bird nests that are built on utility infrastructure.

An incidental take permit (currently under development by the USFWS) may be warranted. All measures to protect MBTA species are discussed in Section 9 of the POD and in the Avian Protection Plan (APP) (POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan, Exhibit 2).

- Executive Order 13186 (Migratory Birds) requires federal agencies to protect migratory birds and to consider impacts to migratory bird species during Project planning. The federal agencies are directed to develop and implement a Memorandum of Understanding (MOU) with the USFWS to promote the conservation of migratory bird populations.

- BLM MOU WO-230-2010-04 (Memorandum of Understanding between the U.S. Department of the Interior Bureau of Land Management and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds) directs the BLM to evaluate the effects of the BLM's actions on migratory birds on a project level and implement approaches to reduce these effects.

- Forest Service Agreement #08-MU-1113-2400-264 (Memorandum of Understanding Between the U.S. Department of Agriculture Forest Service and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds) identifies specific activities where cooperation between these parties will contribute to the conservation of migratory birds and their habitats.

- Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668) applies primarily to taking, hunting, and trading activities that involve bald or golden eagles. The act prohibits the taking of any individuals of these two species, as well as any part, nest, or egg. The term "take" as used in the act includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb (16 USC 668). The take of eagles or eagle nests may be permitted when the taking is: 1) associated with, but not the purpose of the activity, and cannot practicably be avoided, and 2) where the take is compatible with the preservation of eagle populations, which means it must be consistent with the goal of stable or increasing breeding populations.

  Under the BGEPA, an Eagle Incidental Take Permit (3-200-71) may be warranted to provide legal coverage for injury and death of eagles resulting from collision, electrocution, or other accidental causes, and for accidental harm and harassment of eagles during construction and operation activities. Additionally, an Eagle Nest Take Permit (3-200-72) would be needed for removal of an eagle nest, regardless of current occupancy.

- Executive Order 13112 requires federal agencies to prevent the introduction and spread of invasive species, detect and respond rapidly to control such species, monitor invasive species populations, and restore native species and habitat conditions in ecosystems that have been invaded. In addition, the order requires a federal agency to "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species."

- The National Forest Management Act (NFMA), as amended, and its implementing regulations under 36 CFR 219, consolidate and articulate Forest Service management responsibilities for lands and resources of the National Forest System. The NFMA requires that each national forest develop a management program based on multiple-use, sustained-yield principles and implement a land- management plan for each unit of the National Forest System. The implementing regulations at the time the current forest plans were approved required the identification of management indicator species (36 CFR 219.19). These species were selected because their population changes were believed to indicate the effects of management activities on habitats or other species of selected major biological communities or water quality. The land-management

plan established objectives for the maintenance and improvement of habitat for the management indicator species.

- BLM RMPs and Management Framework Plans for Utah and Nevada, including Fillmore (BLM 1987) and Ely District (BLM 2008) specify regulations and goals for management of BLM-administered land in Utah and set restrictions to protect biological resources and the habitats on which they depend.

- BLM Utah-Instruction Memorandum-2005-091 provides the Utah BLM Riparian Management Policy aimed at identifying, maintaining, restoring, and/or improving riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits and overall watershed protection while allowing for reasonable resource uses.

- BLM Washington Office Instructional Bulletin 2012-097 directs BLM policy for any cutting or removal of timber, trees, or vegetative resources, including resources located in the clearing limits of ROWs.

- BLM Manual 1740-1 – Integrated Vegetation Management and BLM Manual 1740-2 – Renewable Resource Improvement and Treatment Guidelines and Procedures outline policies, objectives, and standards focused primarily on planning, analyzing, constructing, maintaining, replacing, or modifying renewable resource improvements and treatments, such as for forestry, invasive species, and range management.

- BLM Manual 6840 (6840 Policy, Rel. 6-125) provides management direction and guidance for the conservation of special-status species and their habitats. Under this policy, special-status species include animal and plant species listed as threatened or endangered, proposed for listing, or candidates for listing under the provisions of the ESA; those listed as sensitive species by a state; and those listed by a BLM state director as sensitive. The objective of this policy is to ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special-status species and do not contribute to the need to list any special-status species under provisions of the ESA.

- Land and Resource Management Plans for the Humboldt-Toiyabe (U.S. Department of Agriculture [USDA] Forest Service 1986, as amended) national forests identify goals for forest health and constraints on resource uses to meet these goals.

- Forest Service Manual 2900, Invasive Species Management, sets forth National Forest System policy, responsibilities, and direction for the prevention, detection, control, and restoration of effects from invasive species (including vertebrates, invertebrates, plants, and pathogens).

- Forest Service Manual 2670 directs each Regional Forester to designate sensitive species on public lands administered by the Forest Service. Per the manual, sensitive species are defined "as plant or animal species identified by a Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or significant current or predicted downward trends in habitat capability that will reduce an existing distribution of the species."

- Forest Service Manual 2670 also establishes the following management direction and objectives for Forest Service-sensitive species:

- Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on Forest Service-administered land.

- Review programs and activities as part of the National Environmental Policy Act process, through a Biological Evaluation (BE), to determine their potential effect on sensitive species.

- Analyze, if impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat in the area of concern and on the species as a whole.

- Executive Order 11990 (Wetlands) requires federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

- The *Greater Sage-grouse Record of Decision for Idaho and Southwest Montana, Nevada, and Utah* (U.S. Department of Agriculture [USDA] Forest Service 2015) identifies management actions such as establishment of disturbance limits, greater sage-grouse (*Centrocercus urophasianus*) habitat objectives, lek buffers, mitigation requirements, monitoring protocols, adaptive management triggers and responses, and targeted restoration and habitat improvements. This document supersedes the Interim Conservation Recommendations for Greater Sage-grouse and Greater Sage-grouse Habitat for Regions 1, 2, and 4 (Forest Service 2012) that was referenced in the Project record of decision (ROD).

- Executive Order 13443 (Facilitation of Hunting Heritage and Wildlife Conservation) requires federal agencies to facilitate "the expansion and enhancement of hunting opportunities and the management of game species and their habitat."

2.2 State Regulations

- *Utah Wildlife Action Plan* (Utah Wildlife Action Plan Joint Team 2015) is a comprehensive management plan designed to conserve native species populations and habitats in Utah and prevent the need for additional federal listings.

- Utah State Code Section 23-14-1 directs the Utah Division of Wildlife Resources (UDWR) to protect, propagate, manage, conserve, and distribute protected wildlife throughout Utah. This statute also authorizes UDWR to identify and delineate crucial seasonal wildlife habitats.

- Utah Partners in Flight Avian Conservation Strategy, Version 2.0, prioritizes avian species and their habitats and sets objectives designed to determine which species are most in need of immediate and continuing conservation effort. The other purpose of the strategy is to recommend appropriate conservation actions required to accomplish stated objectives.

- The *Utah Conservation Plan for Greater Sage-Grouse* establishes incentive-based conservation programs for conservation of sage-grouse on private, local government, and State Institutional Trust Lands Administration land and regulatory programs on other state- and federally managed lands. The conservation plan also establishes sage-grouse management areas and implements specific management protocols in these areas (State of Utah 2019).

- Utah Executive Order 2015-001 (Implementing the Utah Conservation Plan for Greater Sage-Grouse) directs state agencies to minimize the impact of activities on sage-grouse, consult with the UDWR on decisions that could affect sage-grouse habitat, and incorporate directives from the conservation plan into state operations and report on Utah efforts.

- Control of Insects, Pests, and Noxious Weeds (Nevada Revised Statute Chapter 555 and Nevada Administrative Code [NAC] 555) authorizes the State Department of Agriculture to investigate and control pests, plant diseases and disorders, and noxious weeds. It establishes a program to certify agricultural products as being free from noxious weeds, and provides the framework of classifying noxious weeds as one of three categories in Nevada: (1) Category A: weeds that are generally not found or that are limited in distribution throughout the State, (2) Category B: weeds that are generally established in scattered populations in some counties of the State, or (3) Category C: weeds that are generally established and generally widespread in many counties of the State.

- The Nevada Department of Wildlife (NDOW) is responsible for the management of Nevada's wildlife, including game and nongame mammals, fish, amphibians, reptiles, mollusk, and crustaceans. To that end, NDOW maintains a list of sensitive species; however, state listed species are not protected by any special regulation. Big game herds are, in part, managed through designated seasonal and crucial habitat ranges and species-specific management plans. Rare plants in the state are managed and protected under the State Forester's Office (NAC 527.010).

- The *Nevada Wildlife Action Plan (*Wildlife Action Plan Team 2022) serves as a comprehensive, landscape level plan, identifying the species of greatest conservation need and the key habitats on which they depend, with the intent to prevent wildlife species from becoming threatened or endangered.

- State of Nevada (NAC 232.400 – 232.480) Conservation Credit System specify that any entity that proposes an activity or project on public lands, that is subject to state or federal review, approval or authorization, that will cause an anthropogenic disturbance to greater sage-grouse or its habitat, shall coordinate with the state's Sagebrush Ecosystem Technical Team. Sufficient information needs to be provided for determining potential adverse effects to determine the number of debits required to offset those affects, and to mitigate appropriately. The Sagebrush Ecosystem Technical Team, in conjunction with NDOW and other entities in the state, utilize habitat areas important to the species persistence, including Priority Habitat Management Area (PHMA), General Habitat Management Area (GHMA), and Other Habitat Management Area (OHMA) when considering potential debits and credits. These habitat areas (PHMA, GHMA, and OHMA) are based on U.S. Geological Survey spatially explicit models which are modified by NDOW for the state of Nevada.

3 ROLES AND RESPONSIBILITIES

The following section summarizes the responsibilities of entities specifically responsible for biological resource conservation for Project construction and operation and maintenance phases. This includes but may not be limited to parties responsible biological surveys, the oversight of biological monitors, and decision-making parties. This section also summarizes the reporting relationships and roles in executing this Plan and information contained within the Plan Attachments. Additional details of the roles and responsibilities of parties involved in the Project are described in POD Appendix B6: Environmental Compliance Inspection Plan and throughout the Attachments of this Plan, were relevant.

The various parties involved with construction and/or operations and maintenance of the Project include the Company, the BLM, the Forest Service, the Compliance Inspection Contractor (CIC), the Construction Contractor(s), and their biological monitors.

3.1 Company

The Company acts as the holder of all grants/easements, public and private, and is the grant holder for the BLM ROW grant and Forest Service SUP. As such, the Company is ultimately accountable for adherence to the terms and conditions of the grants/easements, the POD, and the ROD requirements, and is responsible for ensuring that environmental impacts do not exceed those analyzed in the final Environmental Impact Statement (EIS) and approved in the POD. As part of the Company's environmental compliance commitment, the Company will be responsible to ensure the Construction Contractor(s) comply with all federal laws (including but not limited to the ESA, the MBTA, the BGEPA, state laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations, terms, conditions, and/or methods set forth in the POD, the ROD, and the grants/easements (within the definitions of construction activities and associated disturbance analyzed in the final EIS). To facilitate this, the Company will maintain regular and consistent communication with the BLM, the Forest Service, the CIC, the Construction Contractor(s), and any other pertinent Project entities prior to, during, and following construction. During operations and maintenance, the Company will assume the responsibilities described for the Construction Contractor(s).

3.2 Bureau of Land Management/U.S. Forest Service

The primary objective of the BLM or Forest Service (as appropriate based on land jurisdiction) is to ensure compliance with the analysis and mitigation in the final EIS; the Biological Opinion (POD Appendix C1: Biological Resources Conservation Plan, Attachment F: Biological Opinion, *if needed*); and grants/easements during the construction and operation and maintenance phases of the Project. This includes coordination and approval for preconstruction biological surveys and monitoring needs. The CIC represents the BLM or Forest Service (as appropriate based on land jurisdiction) during the preconstruction, construction, and construction reclamation phases to ensure compliance with the ROD, grants/easements, and the POD and to ensure that environmental impacts do not exceed those analyzed in the final EIS and as approved in the ROD.

During construction, the federal land management agency (as appropriate based on land jurisdiction) is responsible for oversight of the CIC, ensuring adequate construction monitoring is occurring, approving qualifications of biological monitors, and resolving any issues related to biological monitoring.

3.3 Compliance Inspection Contractor

The CIC will represent the BLM or Forest Service (as appropriate based on land jurisdiction) during the preconstruction, construction, and construction reclamation phases of the Project by providing regular and consistent field observations, documenting their findings, and working with the Company and Construction Contractor(s) to identify compliance issues and maintain compliance.

While the BLM is the primary federal entity responsible for managing the CIC, the BLM will coordinate with the Forest Service when construction occurs on National Forest System land. The CIC works under the direct supervision and control of the federal land management agency. No direction will be taken from the Company or Construction Contractor(s); however, it is understood the CIC and the Company will work together to support the Project's timely and effective construction.

During construction, the CIC is responsible for inspecting construction monitoring activities, reviewing the reports developed by the lead biological monitor, ensuring that an appropriate level of construction monitoring as identified in this Plan is occurring, and reporting any issues to the appropriate federal land management agency.

3.4 Construction Contractor(s)

The Construction Contractor(s) are contractually bound to comply with all laws, regulations, and permit requirements, including all Project-specific permitting documents and landowner agreements, throughout the construction and construction reclamation phases of the Project.

During construction, the Construction Contractor(s) are responsible for understanding the construction monitoring needs, providing an appropriately qualified lead biological monitor and biological monitors, and communicating construction plans and schedules to the biological monitors and CIC. The Construction Contractor(s) will contract or employ an appropriate number of environmental inspectors that will include a lead biological monitor and biological monitors, as further described in POD Appendix C1: Biological Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan.

4 OVERVIEW OF BIOLOGICAL RESOURCES

Biological resources were evaluated throughout the planning stages of the Project in discussions with biologists and botanists from the BLM, Forest Service, USFWS, UDWR, and NDOW. Potential impacts to biological resources, including BLM and Forest Service sensitive and ESA-listed plant and wildlife species, were identified as an issue for the Project prior to the EIS process. Compliance with the results of the Section 7 consultation process, including implementation of conservation measures included in a BO, if developed and needed, will be required as a condition of the BLM ROW grant and Forest Service SUP. The terms of a BO are legally binding regardless of land ownership. Furthermore, damage or destruction of ESA-listed plants and wildlife or their habitats not specifically authorized by USFWS may be punishable under law.

Biological resources that are addressed in this Plan include:

- ESA-listed plant and wildlife species
- Plant and wildlife species managed by the BLM and/or Forest Service as sensitive species
- Raptors, including eagles, and their nesting habitats
- Migratory birds
- Crucial seasonal habitats for big game

Other important biological resource concerns, including state-listed noxious weeds and other invasive plant species of concern, wetlands and other waters, and reclamation, were identified during the planning stages of the Project but are not addressed within this Plan as these biological resource concerns are covered in detail in the following appendices of the POD for the Project:

- POD Appendix C2: Weed Management Plan
- POD Appendix C3: Water Resources Protection Plan
- POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan

For each biological resource discussed in this section, an overview is provided of the resource presence in the Project area (defined as all areas of both permanent and temporary ground disturbance associated with Project construction; e.g., the ROW). The Company conducted biological resource desktop and field surveys in 2021 (Stantec 2022a), 2022 (Stantec 2022b), and 2023 (Stantec 2023) prior to issuance of the NTP in order to identify and map potentially suitable habitats and/or occupied by ESA-listed and,

BLM/Forest Service-sensitive plant and wildlife species in the Project area. The results of these biological resources surveys will be depicted on figures within POD Appendix A: Detailed Route Alignment Figures. Where presence/absence surveys were required and not conducted due to land access restrictions, the species status is referred to as "occupancy unknown" until presence/absence surveys are completed (see Table 1). The Construction Contractor(s) will be required to complete these surveys prior to ground disturbance (refer to Attachment A: Biological Resources Survey Requirements). The geographic information system (GIS) data used to inform the surveys and depict the survey results on POD Appendix A: Detailed Route Alignment Figures will also be provided to the BLM, Forest Service, Compliance Inspection Contractor, and the Construction Contractor(s).

The Construction Contractor(s) will also be required to conduct year-of-construction surveys for certain biological resources (see Table 1), in accordance with Attachment A: Biological Resources Survey Requirements. The biological resource GIS data will include suitable habitat that will inform where year-of-construction surveys are to be conducted.

Based on the biological resource survey results conducted by the Company prior to issuance of the NTP and those that will be conducted by the Construction Contractor(s) prior to and during construction (post-NTP), biological monitoring for some resources may be required as a condition of the approval. The requirements for biological monitoring are described in Attachment B: Biological Resources Monitoring Plan.

For each biological resource discussed in the subsections below (Sections 4.1 through 4.4), the status of the resource in the Project area and, when relevant, the Section 7 consultation; and mitigation measures (i.e., agency applied mitigation measures for unavoidable impacts) (*to be developed*) are described in detail. Applicant Committed Environmental Protection Measures (ACEPMs) have been developed for the Project and have been included in the EIS. These measures may be expanded upon through consultation with agencies, and conservation measures may be derived from the BO and Section 7 consultation. ACEPMs have been developed in accordance with the BLM's and the Forest Service's mitigation hierarchy to avoid, minimize, and mitigate for resource impacts.

Table 1. Biological Resources Survey Status (*to be updated based on agency coordination*)

Species or Group [1]	Listing Status	Habitat Assessment Surveys Completed by the Company Prior to Issuance of the NTP?	Presence/Absence Surveys Completed by the Company Prior to Issuance of the NTP?	Year-of-Construction Surveys Required by the Construction Contractor(s)? [2]	Species Status Within the Survey Area (Based on Survey Results) [3]
Plants					
Plants listed under the ESA					
Ute ladies'-tresses (*Spiranthes diluvialis*)	ESA-Threatened, BLM Sensitive, Forest Service Sensitive	Yes	As needed	No	—
BLM and Forest Service Sensitive Species					
Various species	BLM Sensitive, Forest Service Sensitive	Yes	Yes	Yes	17 species with low to high probability of occurring within the Project area
Amphibians					
Various species	BLM Sensitive, Forest Service Sensitive	No	No	No	Few water sources occur within the Assessment Area. The Project is not expected to significantly impact wetlands or waterways.
Birds					
Greater sage-grouse (*Centrocercus urophasianus*)	BLM Sensitive, Forest Service Sensitive State Sensitive	No	To Be Determined	To Be Determined	Seasonal habitat: present in portions of the Project area
Migratory bird nests	Protected by the MBTA	No	No	Yes	Suitable habitat: present throughout the Project area
Golden and Bald Eagles	Protected by the MBTA and BGEPA	Yes	Yes	Yes	Species may nest and/or occur within the Project area or vicinity
Raptor nests, including the following sensitive species: • Burrowing owl (*Athene cunicularia*) • Ferruginous hawk (*Buteo regalis*) • Flammulated owl(*Psiloscops flammeolus*) • Northern goshawk (*Accipiter gentilis*) • Peregrine falcon (*Falco peregrinus*) • Short-eared owl (*Asio flammeus*) • Swainson's hawk (*Buteo swainsoni*)	Protected by the MBTA	Yes	Yes	Yes	Suitable habitat: present throughout the Project area
Mammals					
Bats	BLM Sensitive	Yes	No	No	Potential to occur and roost in the Project area
Dark kangaroo mouse (*Microdipodops megacephalus*)	BLM Sensitive	Yes	To Be Determined	To Be Determined	Mapped habitat in the Project area
Kit fox (*Vulpes macrotis*)	BLM Sensitive	Yes	To Be Determined	To Be Determined	Mapped habitat in the Project area
Pygmy rabbit (*Brachylagus idahoensis*)	BLM Sensitive Forest Service Sensitive	Yes	To Be Determined	To Be Determined	Mapped habitat in the Project area

Species or Group [1]	Listing Status	Habitat Assessment Surveys Completed by the Company Prior to Issuance of the NTP?	Presence/Absence Surveys Completed by the Company Prior to Issuance of the NTP?	Year-of-Construction Surveys Required by the Construction Contractor(s)? [2]	Species Status Within the Survey Area (Based on Survey Results) [3]
Big game habitats, including the following species: • Elk (*Cervus elaphus*) • Mule deer (*Odocoileus hemionus*) • Rocky Mountain bighorn sheep (*Ovis canadensis*) • Pronghorn (*Antilocapra americana*)	UDWR and NDOW managed habitat	No	No	No	Mapped habitat in the Project area
		Reptiles			
Various Species	BLM Sensitive	Yes	No	No	6 Species with moderate potential to occur in the Project Area
		Fish			
Bonneville cutthroat trout (*Oncorhynchus clarkia utah*)	BLM Sensitive Forest Service Sensitive	Yes	No	No	The Project area is in the vicinity of known populations
		Insects			
Monarch butterfly (*Danaus plexippus plexippus*)	ESA Candidate BLM Sensitive, Forest Service Sensitive	Yes	No	No	Migratory and breeding within the Project area. Would utilize host plants which occur sparsely throughout Project grasslands, wetlands, and scrublands.
Various Species	BLM-sensitive	Yes	No	No	Two species with low to moderate probability of occurring in the Project area

1. Additional species are listed in counties crossed by the Project. However, these species are not anticipated to be present in the Project area and, therefore, are not included in this Plan.
2. The Company conducted presence/absence surveys for portions covered by the geotechnical activities of the Project. Other surveys will be conducted. Where survey results are valid for multiple years, as described in Attachment A: Biological Resources Survey Requirements, additional surveys will not be required if construction occurs within the approved time frame. If construction occurs outside of the time frame, or if presence/absence surveys are not completed by the Company due to access restrictions, then additional surveys will need to be conducted by the Construction Contractor(s) prior to ground disturbance. Refer to Attachment A: Biological Resources Survey Requirements for Construction Contractor(s) survey requirements. Refer to the GIS data provided to the Construction Contractor(s) for both suitable habitat polygons and restricted access areas where special-status species surveys are required prior to ground disturbance.
3. Refer to Attachment A: Biological Resources Survey Requirements for species-specific survey areas. Refer to POD Appendix A: Detailed Route Alignment Figure, as well as the GIS data for suitable and occupied habitat.

The primary objectives are to avoid and minimize Project impacts to biological resources. This involves locating Project facilities and/or scheduling Project activities to avoid affecting biological resources and minimizing affects where avoidance is not possible. ACEPMs that are applicable to each biological resource are provided in Section 9 of the POD and/or are discussed below, and measures specific to seasonal and spatial restrictions are included in Attachment E: Seasonal and Spatial Restrictions for Biological Resources. In addition, reclamation of vegetation communities and associated wildlife habitat and ranges will be implemented in accordance with POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan. Compliance with these measures is required to comply with the ESA, MBTA, BGEPA, BLM ROW, Forest Service SUP, and other applicable regulations.

As described in POD Section 1, Introduction, the Project primarily crosses BLM-administered land in Utah and Nevada and crosses a portion of National Forest System land in Nevada, with state- and privately-owned land interspersed along the Project alignment. The protective measures provided in this Plan are intended to be applied across the entire Project, with the following exceptions: 1) where protective measures are only applicable to a specific BLM Field Office or specific state and 2) on private property if different practices are requested by the landowner and do not violate the law.

In the event that a protective measure for an ESA-listed plant and wildlife species cannot be followed or the effects on the species exceed those stated in the BO, the BLM will be required to reinitiate formal consultation with USFWS. The consultation process must be complete before any activity that may affect the species can occur.

In the event that seasonal and spatial restrictions for BLM-, Forest Service-, state-listed wildlife, and other federally protected (e.g., MBTA species) species cannot be adhered to, the Company and their Construction Contractor(s) may submit a wildlife variance request, per the procedures identified in Attachment C: Wildlife Variance Management Plan and as outlined in POD Appendix B6: Environmental Compliance Inspection Plan. The Wildlife Variance Management Plan describes the decision-making process to propose modification of certain EIS approved biological restrictions when site-specific conditions exist and provides warrant a change. The Wildlife Variance Management Plan describes a methodology that facilitates the review and approval or denial of these requests through the Level 2 variance request process without needing an amendment to the BLM ROW grant or a Forest Service SUP. The wildlife variance request process must be complete before the activity that may affect the species may occur.

If any of the species listed in Table 1 that were not identified during the Company's presence/absence surveys are located during Construction Contractor(s) year-of-construction surveys or monitoring, the Construction Contractor(s) will be required to coordinate with the Company, BLM, and/or Forest Service and will be responsible for implementing applicable protective measures to protect these species. Similarly, if new information comes forward regarding habitat for a sensitive species or a change in regulatory status, the Company will evaluate the new information and coordinate with the appropriate land management agency to comply with applicable laws, regulations, ACEPMs, and mitigation commitments.

To avoid and minimize the potential impacts from the Project, a suite of ACEPMs have been developed to address potential conflicts with environmental resources and to minimize the potential impacts resulting from the transportation network for the Project and the potential for increased levels of public access associated with construction and operation of the Project. These measures can be found in Section 9 of the POD.

4.1 Special-Status Plant and Wildlife Species

The primary issue regarding ESA-listed and BLM and Forest Service sensitive plant species and the Project is loss or damage of individual plants. Another important issue is loss, degradation, and fragmentation of habitats that support these species. Significant concerns for ESA-listed and BLM and Forest Service sensitive plants identified through the EIS and Section 7 consultation process include:

- Rare plants rely on unique soil, vegetation, precipitation, and other habitat characteristics, and restoration of these characteristics in some instances can be difficult.

- Construction in rare plant habitat can increase habitat fragmentation, which could limit gene flow between populations, decrease genetic diversity in populations, and potentially negatively affect the long-term viability of populations (Ellstrand and Elam 1993).

- Clearing of vegetation during construction could result in increased soil erosion, which could result in the deposition of soil over populations and habitat for ESA-listed and BLM and Forest Service sensitive plants during extreme precipitation events.

- Disturbance that results in the loss of flowering plants adjacent to ESA-listed and BLM and Forest Service sensitive plant populations could reduce the attractiveness of an area to pollinators and subsequently limit the reproductive output of individual ESA-listed and BLM and Forest Service sensitive plants.

- Increases in fire frequencies known to result from invasion of certain invasive plant species could remove ESA-listed and BLM and Forest Service sensitive plant populations and habitat and favor the continued dominance of invasive species in the Project area.

- The drift of herbicide from the treatment of noxious weeds in adjacent areas could inadvertently cause mortality of ESA-listed plants and BLM and Forest Service sensitive plants.

- Increased construction-related and private vehicle use on new and existing roads could result in greater dust deposition, which will inhibit photosynthetic ability, reproductive ability, and various metabolic processes of individual plants (Farmer 1993).

- Road construction in the Project area also could increase access to rare plant species habitat and individuals, which may increase illegal collection of commercially desirable ESA-listed plants.

More specific details regarding the presence of ESA-listed and BLM and Forest Service sensitive plant and wildlife species in the Project area, as well as protective measures to reduce impacts to these species are provided in the subsections below. (*Species to be updated as applicable*)

4.2 Raptors

All raptors are protected under the MBTA, and eagles are afforded additional protections under the BGEPA. Many raptor species also are BLM sensitive species, including bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), flammulated owl (*Psiloscops flammeolus*), northern goshawk (*Accipiter gentilis*), short-eared owl (*Asio flammeus*), and Swainson's hawk (*Buteo swainsoni*). Raptor nests are defined using the Romin and Muck (2002) definition, which includes both occupied and unoccupied nests:

- *Occupied nests* are defined as those nests which are repaired or tended in the current year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or nest

marking, freshly molted feathers or plucked down, or current year's mute remains (whitewash) suggest site occupancy. Additionally, all nest sites in a nesting territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site remains occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

- *Unoccupied nests* are defined as those nests not selected by raptors for use in the current year. Nests would also be considered unoccupied for the non-breeding period of the year. The exact point in time when a nest becomes unoccupied should be determined by a qualified wildlife biologist based upon knowledge that the breeding season has advanced such that nesting is not expected. Inactivity at a nest site or territory does not necessarily indicate permanent abandonment.

In coordination with the BLM, the Company utilized historical BLM and state raptor nest data, as well as data from the 2021, 2022, and 2023 habitat assessment surveys conducted by the Company to determine raptor nest presence along the Project. A total of 170 raptor nests are documented within 0.5 mile of the Project. Of the 170 raptor nests, 97 were considered unknown, 32 were determined to be associated with common raptor species (i.e., 14 red-tailed hawk [*Buteo jamaicensis*] nests, 14 common raven [*Corvus corax*] nests[1], one northern harrier [*Circus hudsonius*] nest, one western screech owl [*Megascops kennicottii*] nest, and one Cooper's hawk [*Accipiter cooperii*] nest). A total of 23 nests were associated with BLM sensitive raptor species (13 ferruginous hawks, six golden eagles, and four Swainson's hawks).

Also, within 0.5 mile of the Project, BLM data shows a total of 18 burrowing owl burrows were documented.

The Company will complete aerial eagle and raptor nest surveys prior to the year of construction to located raptor nests within 1-mile of the Project area and eagle nests within 2-miles of the Project area. The results of these surveys will be provided to the relevant land management and resource agencies (e.g., BLM, Forest Service, USFWS) as well as the Construction Contractor(s) for compliance with applicable. laws and regulations.

The Construction Contractor(s) will be required to conduct additional year-of-construction raptor nest surveys in accordance with POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements. These surveys will include aerial surveys within a 2-mile buffer of the Project area.

For all occupied nests documented during the Construction Contractor(s)' year-of-construction raptor nest surveys, species-specific seasonal spatial restrictions will apply and be adhered to in accordance with Attachment E: Seasonal and Spatial Restrictions for Biological Resources. If a Project activity conflicts with a seasonal spatial restriction, a wildlife variance request can be prepared and submitted by the Construction Contractor(s) and will be processed in accordance with the procedures outlined in POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan.

To further minimize impacts to raptors and their habitats, the Construction Contractor(s) (during construction) and Company (during operation and maintenance) will be required to adhere to the ACEPMs (POD Section 9), mitigation measures (if applicable), and the seasonal and spatial restrictions

[1] Although not considered a raptor, common raven nests were included as the stick nests of a raven may be utilized by a raptor in a given year.

provided in Attachment E: Seasonal and Spatial Restrictions for Biological Resources. A full discussion of the methods used for eagle and raptor nest surveys and protection is found in the APP at POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan, Exhibit 2.

4.3 Migratory Birds

Nearly all bird species occurring in North America are protected under the MBTA, and many species are managed by Utah and Nevada or as sensitive species by the BLM. The following four introduced species, however, are not protected by the MBTA or state regulations and therefore are not included in the avoidance and minimization provisions of this Plan:

- Rock pigeon (*Columba livia*)
- Eurasian collared-dove (*Streptopelia decaocto*)
- European starling (*Sturnus vulgaris*)
- House sparrow (Passer domesticus)

Compliance with the MBTA will be required as a condition of the BLM ROW grant, Forest Service SUP, Executive Order 13186, and BLM MOU WO-230-2010-04. Furthermore, damage or destruction of any migratory bird, part, nest, or egg of such bird may be punishable under law. The MBTA applies to many bird species, including raptors (see Section 4.3), and protects them from prohibited activities during construction and operation and maintenance of the Project. The following sections will be adhered to by the Construction Contractor(s) to ensure compliance with applicable migratory bird laws and regulations. The Construction Contractor(s) will also be required to implement the ACEPMs and mitigation measures to protect migratory birds. Responsibilities of the Company to avoid take and meet its obligations under the MBTA during operations and maintenance activities have been identified in POD Appendix B7: Operation and Maintenance Plan. A full discussion of the methods used for MBTA-species nest surveys and protection is found in the APP at POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan, Exhibit 2.

4.3.1 Migratory Bird Nest Protection

In habitats containing potential nesting substrate, nesting season dates are assumed to be from March 15 to August 31, which represents a conservative breeding season based on agency correspondence for the Project. The Construction Contractor(s) will be responsible for employing or contracting a lead biologist, biologists, and environmental inspectors to ensure the protection of migratory birds, and to conduct migratory bird surveys and monitoring. Any Project-related vegetation clearing or construction activities (including helicopter operations at or below 100 feet above ground level) that will occur during the migratory bird nesting season will require nest surveys in accordance with the requirements outlined in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources. If occupied nests, defined as having eggs or chicks, are observed during the surveys and Project activities are required, guild-specific avoidance areas will be required in accordance with Attachment E: Seasonal and Spatial Restrictions for Biological Resources.

If a Project activity conflicts with a migratory bird seasonal spatial restriction, a wildlife variance request can be prepared and submitted by the Construction Contractor(s) and will be processed in accordance with the procedures outlined in POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan. Furthermore, biological monitoring and associated reporting will be required in accordance with POD Appendix C1: Biological Resources Conservation

Plan, Attachment B: Biological Resources Monitoring Plan. A biologist may increase the spatial restriction radius for any nest if it is determined or suspected that the recommended spatial restriction radius is inadequate to prevent a violation of the MBTA.

4.3.2 Nesting Deterrent Methods

Given environmental conditions and other biological seasonal restrictions, the Project work areas approved for construction activities will be cleared of vegetation in the non-nesting season to remove potential nesting habitat and to reduce potential conflicts between Project activities and nesting birds. See Section 4.3.1 for a discussion on clearing of vegetation and nest buffers. Particular emphasis should focus on vegetation clearing prior to the nesting season adjacent to the 100-meter buffer areas around riparian and wetland habitats because of the disproportionately large number of nests likely to occur in those areas. Vegetation clearing and removal will occur only in approved work areas, and excessive habitat removal will be avoided and will be limited to only clearing and removal that is necessary to provide essential access and a safe work environment. Habitats exhibiting vegetation of low stature within approved work areas should not be cleared and removed to the point where only bare soil remains unless there is a compelling reason for doing so.

If ground disturbing activities occur during the nesting period, surveys will be conducted no more than seven days prior to the ground-disturbing activities. Active nests will have a species appropriate buffer applied, and work would not occur until the young have fledged or the nest has been abandoned, as determined by a qualified biologist.

Birds may initiate nesting in approved work areas even after preconstruction vegetation clearing (habitat removal) has occurred and construction has been initiated. Legally available methods to prevent this will be used to reduce the probability of nests becoming established in approved work areas or on Project-related equipment and materials (see APP at POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan, Exhibit 2. Additional details related to infrastructure nest deterrents are provided in POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan). Examples of nest deterrent methods include, but are not limited to, the following:

- Sticks and other debris thought to have been placed by birds preparing to nest on Project equipment or materials may be actively removed. Fully constructed bird nests also may be removed, except those occupied nests with eggs or nestlings; eggs without a nest may not be removed until a biologist or environmental inspector has determined that the nesting event at that site has been abandoned, completed, or failed.

- Tarps should be used to cover construction equipment, materials in storage, vehicles, helicopter support equipment and materials, contractor staging areas, or other Project equipment and facilities that will not be used for several days to prevent nest initiation in these areas. Straw bundles used for erosion control provide attractive potential nest sites, as do sheltered sites, such as stacks of stored materials. Daily maintenance of tarps through inspection and adjustment is crucial to their effectiveness. It is recommended that pipes or other equipment providing sheltered sites in which cavity-nesting birds could initiate nesting be covered with tarps or other materials that will prevent access by birds.

- Activity by killdeer (*Charadrius vociferus*) or other ground-nesting birds in recently cleared work areas, as noted by biologists, environmental inspectors, or Construction Contractor(s), should result in the prompt inspection of those areas to discourage nesting by those species. Project-related areas maintained for long-term use, such as substations, parking areas, and other maintained semipermanent facilities that might typically be surfaced with gravel, can be covered

with colored gravel designed to discourage ground-nesting birds. Colored gravel that will strongly contrast with the natural camouflage pattern present on the eggs of ground-nesting birds will greatly reduce the probability of nesting.

- Proper trash management in and around construction areas will prevent birds from being attracted to these potential food sources and reduce the potential for nesting. Trash would be removed on a daily basis and trash bins would be covered to prevent access by birds.

- Additional deterrent methods (such as hazing), or guidelines provided by the USFWS at a future date, can be employed, as approved by all agencies involved. Any permits necessary for the listed or future methods will be obtained prior to initiation of the action.

No methods may be employed that will prevent an occupied nest from being used once eggs have been laid in it or if nestlings are present. In situations where nests have been initiated in spite of deterrent methods, the Construction Contractor(s) and environmental inspectors will employ all feasible means to allow the nest to remain and successfully complete its entire nesting cycle by implementing the requirements of this Plan. This includes maintaining an appropriate buffer around the nest and having an environmental inspector on site to ensure project activities do not cause nest failure. Under no circumstances can an occupied nest be removed, destroyed, or harmed in any way through either direct or indirect action.

4.3.3 Flight Diverters

To minimize or prevent injury and fatality, the Construction Contractor(s) will mark Project structures or transmission line spans that present in-flight hazards (e.g., conductor, guy wires, etc.) for migratory birds (including raptors) with Company-approved flight diverters to make them more visible to birds. Use of line-marking devices such as bird flight diverters can reduce bird mortality due to collisions with power lines by over 75 percent (Janss and Ferrer 1998).

Midspan flight diverters are not anticipated as no major river crossings will be spanned. However, guy wire flight diverters may be required on all structures that encroach within greater sage-grouse PHMAs and GHMAs, and other areas (i.e., Bird Habitat Conservation Areas [BHCA], riparian areas, open water sources, and specific sensitive species habitats) identified by the BLM and Forest Service. Refer to Table 2 below and POD Appendix A: Detailed Route Alignment Figures for Project structures or transmission line spans that might require flight diverters.

Table 2. Structures and Spans Where Flight Diverters Are Required to Reduce the Potential for Avian Collisions [1] (*if needed*)

Structure ID	Guy Wire Flight Diverter [2]	Midspan Flight Diverter [3]	Rationale	Structure ID	Guy Wire Flight Diverter	Midspan Flight Diverter	Rationale
1A-54 to 1A-56	Yes	—	BHCA	—	—	—	—
1B-1 to 1B-33	Yes	—	BHCA	—	—	—	—
1B-36 to 1B-65	Yes	—	BHCA	—	—	—	—
1C-71 to 1C-73	Yes	—	Wetland	—	—	—	—
1D-40 to 1D-44	Yes	—	GHMA	—	—	—	—
1D-70 to 1D-73	Yes	—	GHMA	—	—	—	—
1E-7 to 1E-9	Yes	—	GHMA	—	—	—	—
1F-1 to 1F-6	Yes	—	GHMA	—	—	—	—
1F-49	Yes	—	GHMA	—	—	—	—
1F-53 to 1F-62	Yes	—	GHMA	—	—	—	—
1F-63 to 1F-85	Yes	—	PHMA	—	—	—	—
1F-86 to 1F-103	Yes	—	GHMA	—	—	—	—
1F105	Yes	—	GHMA	—	—	—	—
1F-115 to 1F-126	Yes	—	GHMA	—	—	—	—
1F-130 to IF-134	Yes	—	GHMA	—	—	—	—
1F-189 to 1F-190	Yes	—	PHMA	—	—	—	—

1. Flight diverter requirements provided in this table are based on the Project design as of March 8, 2023.
2. Flight diverters will be installed on guy wires in greater sage-grouse PHMAs and GHMAs, as well as within the Sevier Bridge/Chicken Creek BHCA, the Delta BHCA, and field delineated wetland areas (refer to POD Appendix A: Detailed Route Alignment Figures).
3. Flight diverters will be placed on the conductor between two adjacent structures along major waterbody crossings (None anticipated).

4.4 Big Game Seasonal Habitats

UDWR and NDOW studies and manages big game habitats throughout the states and publishes revised big game habitat data annually (or as available). A variety of big game seasonal habitats intersect the Project area for Rocky Mountain elk, mule deer, and pronghorn. The Construction Contractor(s) is required to obtain the most current data from UDWR and/or NDOW at the time of construction.

To minimize impacts to big game species, the Construction Contractor(s) will be required to adhere to the design features and protective measures, as well as the seasonal and spatial restrictions outlined in Attachment E: Seasonal and Spatial Restrictions for Biological Resources. In the event construction activities are required within big game habitat during restricted periods, variances to seasonal and spatial restrictions may be granted by the BLM, Forest Service, or UDWR/NDOW (as appropriate based on land jurisdiction) depending on annual climatic conditions, habitat function, and/or other factors as determined by the federal agency. Locations where wildlife variances may be granted must be evaluated on a case-by-case basis and approved by the federal agency in accordance with the procedures outlined in the Wildlife Variance Management Plan (see POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan).

Furthermore, biological monitoring and associated reporting, roles, and responsibilities will be required in accordance with the Biological Resources Monitoring Plan (see POD Appendix C1: Biological Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan).

5 BIOLOGICAL MONITORING REQUIREMENTS

5.1 Construction-Phase Monitoring

Monitoring for biological resources will be required during construction to ensure that resources present in the Project area are adequately protected and that measures contained in this Plan and other plans are adhered to. The Construction Contractor(s) will be responsible for conducting all required biological resource monitoring during construction. The number of biological resource monitors required on the Project at any point in time will be determined by qualified personnel retained or employed by the Construction Contractor(s) and will depend on the biological resources present in an area and the construction activities set to occur. Biological monitors will have the required expertise to properly identify sensitive resources in the Project area. Activities that occur in biologically sensitive areas or during periods of heightened sensitivity will require additional monitoring. Furthermore, if a wildlife variance request is approved in accordance with the requirements outlined in POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan, daily monitoring of permitted activities and resource(s) conditions covered under the approved variance will be required unless otherwise specified by the BLM and/or Forest Service. Biological resource monitoring requirements are described in detail in POD Appendix C1: Biological Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan.

5.2 Postconstruction Monitoring and Reporting

In addition to the construction monitoring described above, postconstruction monitoring and reporting will be required for the biological resources identified in Table 3 following the completion of construction. The APP contains the procedures for ongoing monitoring and reporting of avian injury and mortality during the operations phase.

5.2.1 *PLACEHOLDER* – Post Construction and Adaptive Management Discussion

Table 3. Overview of Postconstruction Monitoring and Reporting Requirements

Biological Resource	Monitoring/ Reporting Requirement Reference	Responsible Party	Number of Years Postconstruction Monitoring is Required	Postconstruction Monitoring Requirement	Reporting Requirements
Effects on BLM sensitive wildlife from raptor and corvid predation	POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan	Company	5 (bi-annually)	Postconstruction monitoring will be required to document the effectiveness of mitigation measures designed to reduce avian predation in greater sage grouse PHMA and GHMA.	A report will be prepared following completion of each monitoring effort and submitted to the BLM, USFWS, UDWR, and NDOW to summarize the effectiveness of mitigation measures designed to reduce avian predation in greater sage grouse PHMA and GHMA. Reporting will begin the first year after construction is complete and will continue through Year 5 of operations (Years 1, 3, and 5).

6 LITERATURE CITED

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Attachment A: Biological Resources Survey Requirements

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C1: Biological Resources Conservation Plan

Attachment A: Biological Resources Survey Requirements

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CONTENTS

Exhibits (*to be updated as needed*)

Tables

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measure
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
ESA	Endangered Species Act
Forest Service	U.S. Department of Agriculture Forest Service
GIS	geographic information system
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

The purpose of this document is to define the biological resources survey requirements required prior to construction, during construction, and as applicable, during the operation and maintenance phase of the Cross-Tie 500-kV Transmission Project (Project) in Utah and Nevada. This document is intended to be used by TransCanyon, LLC, (the Company) and the Construction Contractor(s) to understand biological resources survey requirements. Biological resources survey status, specific biological resources survey methodologies and timing, and reporting requirements are provided in this document as well as specific survey methodologies, surveyor requirements, and reporting requirements. Specific locations where surveys are required are depicted in the biological resource geographic information system (GIS) data that will be provided to the Bureau of Land Management (BLM), U.S. Department of Agriculture Forest Service (Forest Service), Compliance Inspection Contractor (CIC), and the Construction Contractor(s). Survey locations areas are not depicted on the Project's Plan of Development (POD) Appendix A: Detailed Route Alignment Figures.

2 BASIS FOR SURVEYS

Biological resources surveys conducted by the Company were used to inform the design of the Project consistent with applicant committed environmental protection measures (ACEPMs), as defined in the POD, Section 9 and mitigation measures (*to be determined*) in POD Appendix C1: Biological Resources Conservation Plan. The Construction Contractor(s) is responsible for conducting additional presence/absence surveys for the identified special-status plants and wildlife that could be affected by the Project during construction. The results of these presence/absence surveys, in conjunction with biological resources surveys completed by the Company will be used to inform the implementation of ACEPMs and mitigation measures during construction activities, as defined in POD Section 9 (ACEPMs) and within the POD Appendix C1: Biological Resources Conservation Plan (mitigation measures). Biological resources survey results will also be used to inform resource monitoring needs during construction, operation, and maintenance phases, which are documented in POD Appendix C1: Biological Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan. Additional surveys and analysis may be conducted as part of the National Environmental Policy Act (NEPA) process which may inform changes to Project design to avoid resource impacts.

The Company has completed several desktop assessments and field surveys in support of the Project's NEPA review. These reports were used to determine future survey needs for the preconstruction and construction phases. Survey reports completed to date are listed below.

2.1 Biological Baseline Reports

Baseline reports summarize general natural resource existing conditions along the proponent preferred route, alternative routes, and route adjustments and include desktop and field components.

- Cross-Tie 500 kV Transmission Line Project Biological Resources Baseline Technical Report. March 2, 2022.
- Cross-Tie 500 kV Transmission Line Project Final Biological Resources Baseline Technical Report for Preliminary Alternative Routes. November 28, 2022.
- Cross-Tie 500 kV Transmission Line Project DRAFT Biological Resources Baseline Technical Report for the Robinson Summit Substation Expansion, Robinson Summit Substation Line Reroute, and West Desert Line Reroute. March 2023. (*to be updated when finalized*)

- Cross-Tie 500 kV Transmission Line Project DRAFT Biological Resources Baseline Technical Report for the S1 Alternative. March 2023. (*to be updated when finalized*)

2.2 Technical Reports

Technical Reports were completed for specific habitats and/or species associated with the proponent preferred route, alternative routes, and route adjustments and include desktop and field components.

- Cross-Tie 500 kV Transmission Line Project Technical Memorandum: Yellow-billed Cuckoo Habitat Suitability Along Approximately 7.5 Miles of the Sevier River. November 18, 2022.

- Cross-Tie 500 kV Transmission Line Project DRAFT Ute Ladies'-Tresses (*Spiranthes diluvialis*) Desktop Habitat Suitability Assessment for the Proposed Route and Select Alternatives. 2023. (*to be updated when finalized*)

2.3 Geotechnical Survey Reports

Geotechnical surveys were completed in support of the Project's geotechnical investigations. These reports facilitated compliance with the geotechnical project's Environmental Assessment and ACEPMs.

- Cross-Tie 500-kV Transmission Line Project – Geotechnical Investigation. Special Status Plant Species Clearance Survey Report. December 6, 2022.

- Cross-Tie 500-kV Transmission Line Project – Geotechnical Investigation. Special Status Species Wildlife Clearance Survey Report for Geotechnical Workspaces: Kit Fox, Pygmy Rabbit, and Burrowing Owl. March 9, 2023.

3 ROLES AND RESPONSIBILITIES

The following section summarizes the responsibilities of entities specifically responsible for biological surveys during construction, operation, and maintenance phases of the Project that are not included in POD Appendix C1: Biological Resources Conservation Plan, Section 3. Additional details of the roles and responsibilities of parties involved in the Project are described in POD Appendix B6: Environmental Compliance Inspection Plan.

3.1 Company

As part of the Company's environmental compliance commitment, the Company will be responsible to ensure the Construction Contractor(s) comply with all federal laws (including but not limited to the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), state laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations, terms, conditions, and/or methods set forth in the POD, the Records of Decision, and the grants/easements (within the definitions of construction activities and associated disturbance analyzed in the final Environmental Impact Statement). During the operation and maintenance phases of the Project the Company will be responsible for biological survey requirements.

3.2 Construction Contractor(s)

The Construction Contractor(s) is responsible for conducting additional presence/absence surveys for the identified special-status plants and wildlife that could be affected by the Project during construction. During construction, the Construction Contractor(s) are responsible for understanding the construction-related survey needs, providing an appropriately qualified lead biologist and biological surveyors, and communicating construction plans and schedules to the biological monitors and CIC.

3.2.1 Lead Biologist

During construction, the lead biologist will be retained by the Construction Contractor(s) and is responsible for coordinating the efforts of the construction-related biological surveys, serving as the lead for all reporting, and acting as a lead point of contact for any additional biological technicians and the CIC. The lead biologist may also serve as the lead biological monitor and lead environmental inspector, as described in POD Appendix B6: Environmental Compliance Inspection Plan of the POD, if qualified for those roles.

4 PROJECT PHASES

4.1 Construction

The survey requirements for special-status plant and wildlife species, including survey area, year of last survey, timing, and methodology, are located in Table 1 and the Exhibits. Furthermore, the Construction Contractor(s) should hold an annual meeting with the Company, the BLM, the Forest Service, and CIC prior to initiation of year-of-construction surveys to discuss that year's plan for biological surveys. The Construction Contractor(s), in coordination with the BLM, the Forest Service, and CIC, will confirm the appropriate window for conducting surveys for each special-status species identified in this Plan.

The Company completed each of the required special-status species surveys on lands without access restrictions. As identified in Table 1, some of these special-status species survey results are considered valid for only 1 year, while others are valid for multiple years. If survey results are valid for multiple years, additional surveys will not be required by the Construction Contractor(s), provided construction is completed within these survey-validity time frames. If construction occurs outside of these survey-validity time frames or if surveys were not completed by the Company, the Construction Contractor(s) will need to conduct the associated surveys during the appropriate survey window, in accordance with the survey requirements and protocols summarized in Table 1, prior to ground disturbance. The GIS data package includes suitable habitat polygons where special-status species surveys are required prior to ground disturbance.

4.2 Operations and Maintenance

The Company would ensure that surveys required by ACEPMs, mitigation measures, applicable laws and regulations, the Records of Decision, and the grants/easements are completed prior to applicable maintenance activities occurring. Many surveys required for construction are not anticipated as requirements for the operations and maintenance of the Project as those activities would occur within previously developed areas (e.g., on existing roadways). However, the Company is responsible for ensuring that appropriate surveys are completed prior to beginning maintenance work that may disturb plants or wildlife listed throughout this Plan. Coordination between the Company, the BLM, the Forest Service, and any Construction Contractor(s) (if applicable) prior to initiation of maintenance activities that may pose a risk of disturbance is recommended. Additional information regarding operations and maintenance phase ACEPMs is provided in the POD, Section 9, in POD Appendix C1: Biological

Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan, and in the POD Appendix B7: Operation and Maintenance Plan.

5 SPECIES-SPECIFIC SURVEY REQUIREMENTS

5.1 Special-Status Plants

The Company conducted surveys to determine where special-status plant species have potential to occur and to document the presence of populations along the Project (see Section 2). Suitable and occupied habitat areas for special-status plants are depicted in the GIS data package and on POD Appendix A: Detailed Route Alignment Figures. A complete list of special-status plant species that require presence/absence surveys prior to ground disturbance appears in Table 1.

Prior to initiating special-status plant surveys, reference populations of the target species shall be visited (if available) to confirm that target species are flowering, fruiting, or otherwise identifiable prior to initiating surveys. Multiple site visits may be necessary to ensure that surveys are conducted during the appropriate life stage (usually flowering or fruiting) of target species. In select locations where more than one target species might occur, multiple site visits may be necessary if the survey windows do not overlap to sufficiently allow surveys to be completed in a single visit. If occurrences of special-status plants are found within the survey area, the entire extent of the local population will be delineated as long as access is granted.

5.2 Special-Status Wildlife

The Company conducted surveys for special-status wildlife species to document suitable and occupied habitat along the Project (see Section 2). Suitable and occupied habitat areas for special-status wildlife species are depicted in the GIS data package and on POD Appendix A: Detailed Route Alignment Figures. A complete list of special-status wildlife species that require follow-up presence/absence surveys prior to ground disturbance appears in Table 1.

Table 1. Survey Requirements for Biological Resources (*to be updated as applicable*)

Resource	Conservation Status	Year of Construction Surveys Required by the Construction Contractor(s)?	Survey Area [1]	Year(s) of Most Recent Presence/Absence Survey	Survey Year and Lifespan [2]	Survey Date Range	Protocol
Plants Listed under the Endangered Species Act (ESA)							
Ute ladies'-tresses (*Spiranthes diluvialis*)	ESA-Threatened, BLM-Sensitive, Forest Service-Sensitive	No	Within suitable habitat within 300 feet of impact areas	To Be Determined	Not applicable	Not applicable	Interim Survey Requirements for Ute Ladies-tresses Orchid (USFWS 1992, updated 2017).
Wildlife Listed under the ESA							
Western monarch butterfly	ESA -Candidate, BLM-Sensitive, Forest Service-Sensitive	No	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Yellow-billed cuckoo (*Coccyzus americanus*)	ESA-Threatened, BLM-Sensitive, Forest Service-Sensitive	No	In suitable habitat within 0.5-miles of impact areas	To Be Determined	To Be Determined	June to August	Guidelines for the Identification and Evaluation of Suitable Habitat for Western Yellow-billed Cuckoo in Utah (USFWS 2017) Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo (USFWS 2016)
BLM and Forest Service Sensitive Plants							
Alkali ivesia (*Ivesia kingii* var. *kingii*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	June to August	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Antelope Canyon goldenbrush (*Ericameria cervina*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	July to August	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Basin Jamesian (*Jamesia tetrapetala*)	BLM sensitive Forest Service sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	June to August	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Blaine pincushion (*Sclerocactus blainei*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	May to June	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Broad-pod freckled milkvetch (*Astragalus lentiginosus* var. *latus*)	Forest Service sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	June to August	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)

Resource	Conservation Status	Year of Construction Surveys Required by the Construction Contractor(s)?	Survey Area [1]	Year(s) of Most Recent Presence/Absence Survey	Survey Year and Lifespan [2]	Survey Date Range	Protocol
Currant milkvetch (*Astragalus uncialis*)	BLM sensitive Forest Service sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	May to June	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Great Basin fishhook cactus (*Sclerocactus pubispinus*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	April to May	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Intermountain wavewing (aka basalt springparsley) (*Cymopterus basalticus*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	May to June	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Nachlinger catchfly (*Silene nachlingerae*)	BLM sensitive Forest Service sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	June to August	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Parish phacelia (*Phacelia parishii*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	Late Spring	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Pennell draba (*Draba pennellii*)	Forest Service sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	May to July	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Torrey's milkvetch (*Astragalus calycosus* var. *monophyllidus*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	Spring to Early Summer	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Tunnel Springs beardtongue (*Penstemon concinnus*)	BLM sensitive Forest Service sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	May to June	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Goodrich eared rockcress (*Boechera goodrichii*)	BLM sensitive Forest Service sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	April to May	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
Loa milkvetch (*Astragalus welshii*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	May to early June	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)

Resource	Conservation Status	Year of Construction Surveys Required by the Construction Contractor(s)?	Survey Area [1]	Year(s) of Most Recent Presence/Absence Survey	Survey Year and Lifespan [2]	Survey Date Range	Protocol
Mound cryptanth (*Cryptantha compacta*)	BLM sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	May to June	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
White River swertia / Sunnyside green gentian (*Frasera gypsicola*)	BLM Sensitive	Yes	Within suitable habitat that overlaps impact areas	2022	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)	June to July	Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009)
BLM and Forest Service Sensitive Wildlife (excluding species listed under Eagles, Raptors, and Migratory Birds)							
Kit fox (*Vulpes macrotis*)	BLM Sensitive	No	Within suitable habitat within 0.25-miles of impact areas	2022	Surveys are typically valid for the current field season	Not applicable	BLM FFO Kit Fox Occupancy and Habitat Survey Protocol
Dark kangaroo mouse (*Microdipodops megacephalus*)	BLM Sensitive	To Be Determined	Within suitable habitat that overlaps impact areas	To Be Determined	Surveys are typically valid for the current field season	Spring to Summer	Statewide Wildlife Survey Protocols, BLM Nevada (BLM 2014)
Pygmy rabbit (*Brachylagus idahoensis*)	BLM Sensitive	Yes	Surveys will be conducted in suitable habitat (tall, dense sagebrush communities)	2022	Surveys are valid for 1 year	February to March	Statewide Wildlife Survey Protocols, BLM Nevada (BLM 2014), which references protocols in Surveying for Pygmy Rabbits (*Brachylagus idahoensis*) (Ulmschneider 2008).
Burrowing Owl (*Athene cunicularia*)	BLM Sensitive	Yes	Within suitable habitat within 0.25-miles of impact areas	2023	Surveys should be conducted within 14 days of impact / ground disturbance	March 1 – August 31	Statewide Wildlife Survey Protocols, BLM Nevada (BLM 2014)
Pinyon Jay (*Gymnorhinus cyanocephalus*)	BLM Sensitive	Yes	Within impact areas plus a 600-foot buffer	2023	Surveys should be conducted within 14 days of impact / ground disturbance	March 15 – May 30	Statewide Wildlife Survey Protocols, BLM Nevada (BLM 2014)
Eagles, Raptors, and Migratory Birds (excluding species listed under BLM and Forest Service Sensitive Wildlife)							
Bald eagle nests (*Haliaeetus leucocephalus*)	BGEPA, MBTA, BLM-Sensitive, Forest Service-Sensitive	Yes	Surveys will be conducted within 2 miles of all work areas, and new and improved access routes	To Be Determined	Surveys are valid for the current nesting season	Late Winter to Spring	Updated Eagle Nest Survey Protocol (USFWS [Region 6] 2020a)
Bald eagle winter roosts	BGEPA, MBTA, BLM-Sensitive, Forest Service-Sensitive	To Be Determined	Surveys will be conducted within 2 miles of all work areas, and new and improved access routes	To Be Determined	Surveys are valid for the current nesting season	Winter	Updated Eagle Nest Survey Protocol (USFWS [Region 6] 2020a)

Resource	Conservation Status	Year of Construction Surveys Required by the Construction Contractor(s)?	Survey Area [1]	Year(s) of Most Recent Presence/Absence Survey	Survey Year and Lifespan [2]	Survey Date Range	Protocol
Golden eagle nests (*Aquila chrysaetos*)	BGEPA, MBTA, BLM-Sensitive, Forest Service-Sensitive	Yes	Surveys will be conducted within 2 miles of all work areas, and new and improved access routes	To Be Determined	Surveys are valid for the current nesting season	Late Winter to Spring	Updated Eagle Nest Survey Protocol (USFWS [Region 6] 2020a) Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (USFWS 2010)
Raptor nests	Protected under the Migratory Bird Treaty Act, BLM-Sensitive, Forest Service-Sensitive	Yes	Surveys will be conducted in areas of suitable habitat located within 1.0, 0.5, or 0.25 mile (depending on the appropriate BLM/USFWS field office spatial buffers for each raptor species) of all work areas, and new and improved access routes.	2022	Surveys are valid for the current nesting season; Surveys may be recommended within 14 days of disturbance	See Romin and Muck 2002	Romin and Muck 2002
Migratory bird nests	Protected under the Migratory Bird Treaty Act, BLM-Sensitive, Forest Service-Sensitive	Yes	Impact areas plus buffers defined through agency consultation with the BLM – Filmore Field Office	Not applicable	Surveys should be conducted within 7 days of impact / ground disturbance	March to August	Project Recommendations for Migratory Bird Conservation U.S. Fish and Wildlife Service, Utah Field Office (USFWS 2020b) Handbook of Field Methods for Monitoring Landbirds (Ralph et al. 1993)

1. Project work areas include all areas of both permanent and temporary ground disturbance associated with transmission line construction, as well as new, improved, and overland access roads.
2. The Company conducted presence/absence surveys. Where survey results are valid for multiple years, additional surveys will not be required if construction occurs within the approved time frame. If construction occurs outside of the time frame, or if presence/absence surveys are not completed by the Company due to land access restrictions, then additional surveys will need to be conducted by the Construction Contractor(s) prior to ground disturbance. Refer to the GIS data provided to the Construction Contractor(s) for both suitable habitat polygons and restricted access areas where special-status species surveys are required prior to ground disturbance.

6 SURVEY REPORTING REQUIREMENTS

Following completion of biological resources surveys, a single biological survey report summarizing the survey results for all species, with the exception of non-raptorial migratory birds, will be prepared by the Construction Contractor(s) and submitted to the Forest Service, BLM Fillmore Field Office, the BLM Bristlecone Field Office, and the U.S. Fish and Wildlife Service (USFWS) Utah and Nevada Field Offices. Non-raptorial migratory bird survey results will be reported twice each month during the nesting season (March 15 to August 31). Refer to POD Appendix C1: Biological Resources Conservation Plan Attachment B: Biological Resources Monitoring Plan for migratory bird reporting requirements.

A draft of the biological survey report will be submitted for agency review and comment, prior to finalization. At a minimum, the following will be included in the biological resources survey report:

- The species surveyed for
- The survey dates and a description of the locations surveyed
- Ambient condition data
- An evaluation of environmental conditions that may influence the results of surveys conducted
- The names and qualifications of the surveyors
- A tabular summary of the results of the surveys
- Special-status plant reference population locations, phenology observations, and date of the reference population site visit
- Special-status plant phenology observations of each observation, if individuals are observed
- Representative photographs
- Spatial data and mapping depicting populations or individuals recorded within the species-specific survey areas (as outlined in Table 1) in relation to Project impact areas

7 LITERATURE CITED

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Ralph, C. John; Geupel, Geoffrey R.; Pyle, Peter; Martin, Thomas E.; DeSante, David F. 1993. Handbook of field methods for monitoring landbirds. Gen. Tech. Rep. PSW-GTR-144-www. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 41 p

Romin, L.A. and J.A. Muck. 2002. Utah field office guidelines for raptor protection from human and land use disturbances. US Fish and Wildlife Service, Utah Field Office, Salt Lake City, Utah.

Ulmschneider, H., D. Hays, H. Roberts, J. Rachlow, T. Forbes, J. Himes, E. Sequin, M. Haworth, T. Katzner, A. Kozlowski, R. Rauscher and P. Lauridson. 2008. Surveying for pygmy rabbits (*Brachylagus idahoensis*). Interagency Pygmy Rabbit Working Group.

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USFWS. 2017. Guidelines for identification and evaluation of suitable habitat for western yellow-billed cuckoo in Utah.

USFWS. 2020a. Updated Eagle Nest Survey Protocol. Region 6 USFWS.

USFWS. 2020b. Project Recommendations for Migratory Bird Conservation U.S. Fish and Wildlife Service, Utah Field Office

Exhibit 1. Ute Ladies'-tresses Interim Survey Requirements

Interim Survey Requirements for Ute Ladies'-tresses Orchid
(Spiranthes Diluvialis)

November 23, 1992

The U. S. Fish and Wildlife Service (Service) has established the following interim requirements and guidelines for surveys to determine the presence or absence of the Federally threatened plant species *Spiranthes diluvialis*, Ute ladies'-tresses orchid. These guidelines were developed by the Service in consultation with biologists and ecologists knowledgeable about the species. These guidelines and recommendations are designed to supplement, not substitute for, professional methods, expertise, and judgment typically used to conduct rare plant surveys.

Because the species is so rare, very little is known about its habitat preferences and population ecology. These interim survey requirements have been developed in order to gain more information about the species, identify potential habitat, streamline and standardize survey procedures. As more information becomes available through these surveys, the interim requirements will be revised and simplified as appropriate.

Documentation of compliance with these requirements and recommendations is accomplished through submission to the Service of a survey report. The Service will respond with a letter indicating acceptance of the report.

All Federal agencies have a responsibility under Section 7(a)(1) of the Endangered Species Act to conserve Federally listed threatened and endangered species. The Service encourages all Federal agencies to review their properties and projects and make funds available to conduct surveys in all appropriate potential habitat, including habitat outside the areas specified in these guidelines.

1. Introduction

Spiranthes diluvialis occurs in seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated flood plains below ~~6,500~~ 7,000 feet elevation in Utah, Colorado, and Nevada. Typical sites include old stream channels and alluvial terraces, sub-irrigated meadows, and other sites where the soil is saturated to within 18 inches of the surface at least temporarily during the spring or summer growing seasons. Associated vegetation typically falls into the Facultative Wet wetland vegetation classification category (from the National List of Plant Species that Occur in Wetlands developed by the Service). The species occurs primarily in areas where the vegetation is relatively open and not overly dense, overgrown, or over grazed. Although very rare now, it is estimated that it was once common in low elevation riparian areas in Colorado, Utah, and Nevada.

The moist soil conditions and vegetation composition of known *Spiranthes diluvialis* sites suggest that wetlands regulated under the Clean Water Act qualify as potential *Spiranthes diluvialis* habitat. Therefore, jurisdictional wetlands, as well as other drier sites matching the description above, should be surveyed.

2. Qualification of Surveyor Replaced by the 2011 USFWS Utah Surveyor Guidelines

Spiranthes diluvialis is difficult to identify in the field, and since the orchid is rare and flowers for such a short time, few people have had the opportunity to become acquainted with the species. The Service does not want to exclude any person from conducting surveys. Therefore, the Service has developed a minimum set of qualification criteria that demonstrate whether a surveyor is sufficiently acquainted with *Spiranthes diluvialis* to collect consistent and accurate information for the survey report. Documentation that these criteria have been met is accomplished by submitting a statement of surveyor qualifications as part of the survey report.

The survey report shall contain a statement of qualifications of the individual conducting the survey, including:

a. Description of botanical expertise and training (e.g, graduate degree in botany, ecology, or other appropriate discipline).

b. Experience in conducting rare plant surveys (list dates, locations, and plants included in previously conducted surveys).

c. Actions taken to become acquainted with the known locations and appearance of *Spiranthes diluvialis* (such as visiting herbaria to look at specimens, conversations or site visits with others familiar with the species for a description of ecology and likely occurrences).

d. Documentation of correct identification of *Spiranthes diluvialis* in the field. The surveyor is required to enclose a photograph of the species taken at a known site and a statement certifying when and where the photograph was taken.

e. References, particularly documenting contact with known *Spiranthes diluvialis* experts.

3. Areas Requiring a Survey Out of Date. Use Fertig 2005 instead.

The following areas in Colorado have been determined to have a high probability of occurrence of *Spiranthes diluvialis* based on current and historical records of the species. Surveys are required for appropriate sites below 6,500 feet elevation within these areas:

a. Boulder and Jefferson counties.

b. The South Platte River 100 year flood plain and perennial tributaries from the Front Range as far east as Brush, Morgan county.

c. The Fountain Creek 100 year flood plain and perennial tributaries from the Front Range to the southern boundary of El Paso county.

d. The Yampa River 100 year flood plain and its perennial tributaries from Steamboat Springs west to the Utah border.

A perennial stream is usually represented by a sold blue line on a USGS 7 2 minute quad map.

4. Habitat Description and Sites Requiring a Survey **Out of Date. Use Fertig 2005 instead.**

Spiranthes diluvialis is typically found associated with alluvial deposits of silty, sandy, gravelly, or cobbly soil. The species may occasionally also be found in highly organic soils or peat. The species seems to prefer well drained soils with fairly high moisture content (soil around the roots will form a soft ball). Soils may exhibit some gleying or mottling but are generally not strongly anaerobic. *Spiranthes diluvialis* is found in some heavily disturbed sites, for example, old gravel mines that have since been developed into wetlands, and along well traveled footpaths built on old berms. The species is also found in grazed pastures with introduced pasture grasses.

Spiranthes diluvialis is found with grasses, sedges, and rushes, in shrubs, and riparian trees such as willow species. It rarely occurs in deeply shaded sites and prefers partially shaded open glades or pastures and meadows in full sunlight. Common associated species on the Front Range include:

Horsetail *(Equisetum spp.)*
Milkweed *(Asclepias incarnate)*
Verbena *(Verbena hastate)*
Agalinis *(Agalinis tenuifolia)*
Lobelia *(Lobelia siphilitica)*
Blue-eyed grass *(Sisyrinchium spp.)*
Triglochin *(Triglochin spp.)*
Carpet bentgrass *(Agrostis stolonifera)*
Reedgrass *(Calamagrostis)*
Goldenrod *(Solidago spp.)*

Sites below 6,500 feet elevation occurring within the areas described in Section 3 exhibiting the following features shall be surveyed for *Spiranthes diluvialis*:

a. Seasonally high water table (within 18 inches of the soil surface for at least one week sometime during the growing season, growing season defined as when soil temperatures are above 41 degrees Fahrenheit).

b. In or near wet meadows, stream channels, or flood plains.

c. Vegetation falling into the Facultative Wet or Obligate Wet classification, including introduced pasture grasses.

d. Jurisdictional wetlands as specified under the Clean Water Act.

~~Heavily grazed and weedy sites shall be surveyed for the orchid if they otherwise meet the criteria indicating potential suitability as *Spiranthes* habitat as listed above.~~

5. Sites Not Requiring a Survey

Some sites are either clearly not appropriate *Spiranthes diluvialis* habitat or have very low potential to be *Spiranthes diluvialis* habitat. A survey for *Spiranthes diluvialis* is not required for such sites. Sites below 7,000 feet elevation occurring within the areas described in Section 3 **not** requiring a survey for *Spiranthes* include:

a. Highly disturbed or modified sites such as:

1. Highway right-of-ways built on filled and compacted soil material.

2. Highway right-of-ways build on rock fills, either revegetated or not revegetated.

3. Rock or soil fills with steep back slopes (may or may not be associated with a road).

4. Active construction sites where all vegetation has been stripped exposing bare soil.

5. Construction sites where construction has been completed within the last five years, but the area has not been revegetated.

6. Landscaped and maintained (mowed) bluegrass lawns.

b. Upland sites, including, for example:

1. Prairie dog towns.

2. Short grass prairie.

3. Sagebrush or shadscale rangeland.

c. Sites entirely inundated by standing water, including, for example, monocultures of cattails *(Typha latifolia)* or Olney=s three-square *(Scirpus americanus).* Note that although inundated areas need not be surveyed, mesic slopes surrounding or adjacent to standing water must be surveyed if they otherwise meet the criteria indicating potential suitability as *Spiranthes diluvialis* habitat.

d. Sites composed entirely of heavy clay soils. However, *Spiranthes diluvialis* is found in areas where more well-drained soils or peat overlay a clay layer.

e. Very saline sites. *Spiranthes diluvialis* occurs in alkaline conditions and is somewhat tolerant of saline conditions. However, it has not been found in highly saline sites as indicated by dense monospecific stands of saltgrass *(Distichlis spicata stricta).*

f. Sites entirely composed of dense strands of:

1. Reed canary grass *(Phalaris arundinacea)*

2. Tamarisk or Salt-cedar *(Tamarix ramosissima)*

3. Greasewood *(Sarcobatus vermiculatus)*

4. Teasel *(Dipsacus sylvestris)*

5. Common reed *(Phragmites australis)*

6. Timing of Survey

Because *Spiranthes diluvialis* is very difficult to locate unless it is flowering, because timing of flowering varies, and because the species may not flower every year, the following requirements must be met:

a. Reconnaissance may be conducted at any time of year to determine whether a site exhibits the characteristics described in Section 5 and therefore does not require a survey. If potential habitat is found to exist on the site, then a survey must be conducted at the appropriate time.

b. Surveys shall be conducted during the blooming season, which is normally between July 20 and August 31. However, surveys may be conducted earlier or later if flowering is occurring in a nearby known population comparable to the site being surveyed. Surveyors shall verify that a nearby population is flowering at the time the survey is conducted either by calling a Service representative or including a dated photograph of the flower population. The date of the survey shall be noted in the survey report.

c. *Spiranthes diluvialis* does not necessarily flower every year. Therefore, in drainages where *Spiranthes diluvialis* is known to occur, the Service recommends that surveys be conducted annually for three consecutive years. Also, for any site within required survey areas where habitat alteration has not yet occurred following an initial approved survey. Surveys shall be conducted annually for three consecutive years or until habitat alteration commences.

Under very special circumstances, earlier surveys may be possible for sites small enough to allow a complete a "hands and knees" search for vegetative parts of *Spiranthes diluvialis*. The Service shall be contacted for prior approval and procedural requirements for such early surveys.

Surveys will be considered final for three years. If habitat alteration has not begun within three years, the Service must be contacted regarding the need for a survey update.

7. Maps

The Service recommends that, where available, Soil Conservation Service (S. C. S.) maps (for location of wetland soils) and National Wetland Inventory maps be consulted prior to site surveys to help identify likely potential habitat. Surveyors should be aware that *Spiranthes diluvialis* is not limited to mapped wetlands. In order to avoid duplication of effort and gain more information about the ecology and distribution of *Spiranthes diluvialis*, a USGS 7.2 minute quad map must be submitted with the survey report showing routes taken for all search sites regardless of whether a population of the species was located during the search.

For survey sites too small to be adequately represented on a USGS 7.2 minute quad map, an engineering drawing or more detailed map showing the area that has been surveyed must be included in the report. The site(s) should be indicated and labeled on the accompanying USGS 7.2 minute quad map.

8. Ecological and Site Features

In order to gain more information about the ecology and site characteristics of *Spiranthes diluvialis*, so that better predictions about its location and distribution can be marked, the following information must be collected and reported for each site surveyed:

a. For sites disqualified as potential *Spiranthes diluvialis* habitat, describe the basis on which the site was disqualified.

b. For sites requiring a survey, the following information must be collected. This information can be brief and qualitative for sites where *Spiranthes diluvialis* is not found (a few words, a phrase, or a descriptive sentence is sufficient).

1. List the most frequent or dominant associated plant species of both the over story and under story vegetation (e.g., over story of mature cottonwood trees with an under story of orchard grass and smooth brome).

2. Describe the plant community, including a qualitative assessment of dominance (e.g., riparian willow community, willows dominant, with native grasses *Deschampsia caespitose* and sedges).

3. Describe the ecological condition/management history of the site (such as cultivated field, old gravel mine, good condition native grassland with winter cattle grazing, recently flooded stream edge).

4. Describe the geomorphology of the site, including, for example, the nature of the material (e.g., alluvium), the landscape position (e.g., bench above old stream bed).

5. Describe the soils including, for example, texture, whether moist, presence of mottling or other hydric soil indicators, and list the map unit from the S. C. S. county soil survey if available.

6. Describe the hydro logic characteristics, for example, depth to water table (if possible to determine without major excavation), inferences about frequency, duration, and season of flooding, presence of standing water, high water mark of a stream or water body in relation to location of surveyed site.

7. Describe any other site characteristics that appear relevant to understanding the ecology, population biology, or distribution of *Spiranthes diluvialis.*

In addition, for **each** site where a population of *Spiranthes diluvialis* is found, the following information must be collected and included in the survey report:

a. Map the population on a USGS 7.2 minute quad map and on a finer scaled map or engineering drawing if appropriate.

b. Count the number of individuals if fewer than 500.

c. Estimate the number of individuals if more than 500. Include a description of the method used for population estimation.

d. Note the phenological stage of the plants (e.g., proportion of plants that are flowering, proportion of flowers that have set seed).

e. Note the specific geomorphologic, hydrologic, and soil conditions where the population occurs if it varies from the site description above.

f. Note any other possibly relevant ecological information.

g. Include a photograph of the population that illustrates its setting and habitat.

9. Survey Report

The survey report submitted to the Service should follow the outline below:

a. Name and qualifications of surveyor.

b. Brief project description indicating proposed impact to the site.

c. Site location (address and legal description).

d. Dates surveys were conducted.

e. Ecological and site features as described above.

f. Appendices.

1. Maps

2. Photographs

10. Notification

The Service shall be notified immediately if a new population of *Spiranthes diluvialis* is discovered. For sites located in Colorado and Utah, the surveyor shall notify either:

Bernardo Garza, U.S. Fish and Wildlife Service, P.O. Box 25486 – DFC, Denver, Colorado 80225, telephone 303-236-4377 or

Rita Reisor, U.S. Fish and Wildlife Service, 2369 West Orton Circle, West Valley City, Utah 84119, telephone 801-975-3330

11. Service Approval

Survey reports for sites in Colorado shall be submitted to either of the two Colorado addresses above. The Service will review submitted reports and reply with a written letter of acceptance within 30 days of receipt of the report. If the survey report is judged insufficient for any reason, the Service will notify the author within 30 days and discuss revisions. If the report is judged insufficient due to an inadequate survey, the Service will make every effort to notify the author promptly so that a satisfactory survey may be completed during the allowed survey time. However, given the narrow survey time frame, it may not be possible to rectify an inadequate survey effort during the current field season.

Surveys will be considered final for three years. If habitat alteration has not begun within three years, the Service must be contacted regarding the need for a survey update.

12. Service Follow-up

Survey reports and maps will be retained by the Service. Ecological information will be summarized and used to improve our understanding of *Spiranthes diluvialis* habitat and help predict actual and potential habitat. The Service will prepare periodic reports to keep the public informed about the distribution and ecology of *Spiranthes diluvialis.* The reports will include recommendations for protection strategies and habitat management practices and will identify additional research needs.

Survey requirements will be revised as appropriate based upon the most current available information.

Exhibit 2. Guidelines for the Identification and Evaluation of Suitable Habitat for Western Yellow-billed Cuckoo in Utah

ATTACHMENT 1

Guidelines for the identification and evaluation of suitable habitat for western yellow-billed cuckoo in Utah

The purpose of this guidance is to assist federal agencies and project proponents in identifying areas that provide suitable, occupied habitats for western yellow-billed cuckoos (cuckoo) in Utah, and should be further evaluated for potential effects from proposed project activities.

Step 1: Identify and delineate all riparian habitats within 0.5 mile[1] of the proposed action, below the elevation of 8,500 feet.

Step 2: Identify suitable cuckoo breeding, nesting habitat, including associated foraging areas.

Riparian habitat patches used by breeding and nesting cuckoos vary in size and shape, ranging from a relatively contiguous stand of mixed native/exotic vegetation to an irregularly shaped mosaic of dense vegetation with open areas. The following parameters characterize suitable breeding and nesting cuckoo habitat:

- Vegetation that is predominantly multi-layered, with riparian canopy trees and at least one layer of understory shrubby vegetation;
    - Riparian overstory and understory vegetation that supports suitable cuckoo habitat may include: cottonwood (*Populus spp*), willow (*Salix* spp), alder (*Alnus spp*), walnut (*Juglans spp*), boxelder (*Acer spp*), sycamore (*Plantanus spp*), ash (*Fraxinus spp*), mesquite (*Prosopis spp*), tamarisk (*Tamarix spp*), and Russian olive (*Elaeagnus angustifolia*). Suitable understory vegetation does not include grasses or forbs although herbaceous vegetation is often present alongside shrubby understory.
    - Western yellow-billed cuckoo nest in tamarisk, consequently, the presence of tamarisk should not eliminate a vegetation patch from a suitability determination. However the potential for cuckoo occurrence decreases rapidly as the amount of tamarisk cover increases.
- Patches of multi-layered vegetation (as described above) that are at least 12 acres (5 ha) or greater in extent and separated from other patches of suitable habitat by at least 300 meters;
- Somewhere within a patch, the multi-layered riparian vegetation (as described above) should be at least 100 meters wide by 100 meters long. This is to avoid patches that may be long enough to meet the minimum area (12 acres) but are so narrow that they are unsuitable-- 750 m x 75 m (length x width) for example; and,
- Open areas, or gaps of multi-layered vegetation within a patch are less than 300 meters.

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1 A 0.5 mile distance is the area in which impacts to cuckoos may occur from project-associated noise, light, and human disturbance. Actual effects may vary depending on the type of activity and noise levels. For example, drilling rig operations may create more noise and human disturbance than infrequent traffic associated with monitoring well sites.

Breeding and nesting cuckoos will forage in riparian patches that have a single layer overstory canopy and are within 300 meters (m) of the edge of suitable breeding and nesting habitat.

STEP 3: Suitable cuckoo breeding, nesting, and foraging habitats within 0.5 mile of project activities should be surveyed to determine if a habitat patch contains cuckoos.

STEP 4: Habitats determined to be occupied by cuckoos should be evaluated for potential effects from project activities. If adverse effects to cuckoos are anticipated, federal agencies should initiate section 7 consultation with the U.S. Fish and Wildlife Service under the Endangered Species Act.

References

Halterman, M., M.J. Johnson, J.A. Holmes and S.A. Laymon. 2016. A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo. Draft May 2016: U.S. Fish and Wildlife Techniques and Methods, 45 p.

Laymon, S. 2015. Personal Communication. Senior Wildlife Biologist, Sacramento Fish & Wildlife Service Office.

U.S. Fish and Wildlife Service. 2014. Final rule determining threatened status for the western yellow-billed cuckoo. Federal Register 79: 59992-60038.

Exhibit 3. Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo

placeholder to be provided in final

Exhibit 4. Survey Protocols Require for NEPA/ESA Compliance for BLM Special Status Plant Species

Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species

Policy

It is BLM policy to conduct inventories to determine the occurrence and status of all special status plant species on lands managed by BLM or affected by BLM actions. This includes proactive inventories directed toward determining the status of plant species, as well as inventories conducted to determine the impacts of BLM planned or authorized actions, on any special status plants that might be within the area of a proposed project. Such inventories are to be conducted at the time of year when such plant species can be found and positively identified. Inventory is the periodic and systematic collection of data on the distribution, condition, trend, and utilization of special status plant species.

Definition and Purpose

Inventories are conducted to ensure compliance with the National Environmental Policy Act and the Endangered Species Act by having sufficient information available to adequately assess the effects of proposed actions on special status plants. Special status plants include plant taxa that are Federally listed as threatened or endangered, proposed for Federal listing, candidates for Federal listing, State listed as rare, threatened, or endangered, or BLM sensitive species. Objectives of special status plant surveys are as follows:

1) Locate and map all populations of a plant species.
2) Locate all individuals of a plant species in an area.
3) Locate all plants of a particular habitat.

Timing and Intensity of Inventory

Inventories should include all potential habitats that may be directly or indirectly affected by the project. Field inventories must be conducted at the appropriate time of year, when the target species are present and identifiable. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of targeted plant species. For example, if one target species can only be located and identified in May-June and another target species can only be located and identified in August, then two separate surveys will be necessary to search for all target species.

Some plant species (especially those found in desert climates) are adapted to withstand drought stress and other unfavorable environmental conditions for extended periods of time. Unfavorable environmental conditions may cause these species to be dormant, but still present in a long-lived seed bank. Because of this adaptation, some target species may be present in the seed bank, but not apparent during field inventory searches. The BLM may require additional surveys in subsequent years if unfavorable environmental conditions occurred prior to and during the initial survey year. The BLM may also require additional surveys in subsequent years if the target species was previously documented in the area, but not found during current surveys (especially for annual or geophytic plant species). The potential for special status plants to be present in the

project area, but dormant due to unfavorable environmental conditions should be addressed in the baseline report.

Pre-field Review

Prior to conducting field inventories, the surveyor should be familiar with the plant species that are suspected to be present in the study area. If available, use a regional or local reference population to obtain a visual image of the target plant species and the associated habitat(s). If access to reference population(s) is not available, surveyors should study specimens from their local herbaria. Other sources of information include floras, environmental impact reports and previously completed plant survey reports and informal reports such as status reports prepared by agency personnel and local checklists. The Nevada Natural Heritage Program can provide species lists (and often photos) if requested. Please include references cited, persons contacted, and herbaria visited in the baseline report.

Field Survey - Methodology

Field surveys should be designed to ensure that habitats associated with target species are completely covered. Field surveys will be floristic in nature, and should result in a complete inventory list for the project area. The surveyor identifies and documents every plant observed in the project area to the taxonomic level (at least to genus if species cannot be determined) necessary to determine listing status. For any potential special status species, the plant must be identified to genus and species. Two different types of survey methods are recommended depending upon the surveyor's skill and the size of the area being surveyed: (1) the complete survey or (2) the intuitive controlled survey. The BLM will determine which survey method will be used based on the proposed project.

Complete Survey

The complete survey method is used for smaller areas and/**or as required by BLM** and is defined as a 100 percent visual inspection of the project area. Transects should be set up to completely cover the project area. Transect size may change with topography changes throughout the project area. Transects should be spaced so that the area between transects is completely visible and so the smallest target plant species expected to occur is visible. Justification of transect size and location should be included in the baseline report. GPS units should be used to track the locations of all transects and areas surveyed, and the data included with the GIS portion of the report. Transects should be oriented such that the tops and sides of all topographic features are examined. For example, if the project area includes a wash with a steep bank, one transect should be near the top of the bank, and another near the base of the bank near the wash. Surveyors should record the locations of all special status plant species and compile a complete plant species inventory list for the project area. **The survey must be focused solely on plants** – an individual should not combine multiple survey elements (e.g. migratory bird, other wildlife, etc.).

estimation). Specify the associated vegetation community where the plant was located (use SWreGAP classifications for reporting). Record whether a voucher specimen was collected. Document the associated species list including the scientific name, common name, species code, and the estimated % cover of the species in the area being surveyed. Associated species lists should be compiled by surveying a 10-meter radius around a documented special status species point or surveying completely within a documented special status species polygon plus a 10-meter buffer around the perimeter of the polygon.

Digital photographs should be taken for all areas inventoried, for all special status plants found, and of the habitats associated with each special status plant species occurrence. Collect a voucher specimen only if the removal will not impact the population. Do not collect vouchers of special status plant species without first contacting and obtaining approval from the BLM. Collecting federally listed plants on federal lands requires a permit from the U.S. Fish and Wildlife Service. Collected voucher specimens become the property of the BLM.

Data should be collected using a Mapping Grade GPS Receiver with an accuracy of < 5 meters Horizontal Root Mean Squared (HRMS). All positions should be logged according to the following specifications:

- Maximum PDOP of 6
- Minimum of 5 Satellites
- Minimum elevation mask of 15 degrees
- Datum: NAD83
- Coordinate System: UTM Zone 11

Transects

Prior to ground surveys being conducted, the distance between the transect lines will be determined based on the size of the target plant species, the topography of the site, and the visual acuity of the surveyor. Each transect will be labeled in a manner that will easily distinguish it from other transects. Starting and ending UTM coordinates for each transect will be recorded on the data sheet. Use the route tracking feature on the GPS unit to record all transects surveyed for reporting in GIS.

As transects are surveyed, conduct a visual assessment on each side of the transect to locate special status species. Compile an inventory list of non-target species (to genus if species cannot be determined). For any potential special status species, the plant must be identified to genus and species.

All special status species locations will be recorded as UTM coordinates. For large clusters of special status plants or plants scattered over a large area, record the location as a polygon. Estimate the number of plants present within the polygon and record on the data sheet. An associated species list should be compiled for all plants within the boundaries of the polygon plus a 10-meter buffer around the perimeter of the polygon (See Figure 3a.). Individual or small clusters of plants should be recorded as a point. The number of plants in a cluster will be recorded on the data sheet. An associated species list should be compiled for all plants within a 10 meter radius of the point taken for the target species and included on the survey form (See Figure 3b.).

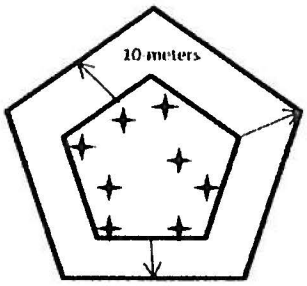

Figure 3a. 10-meter buffer around polygons

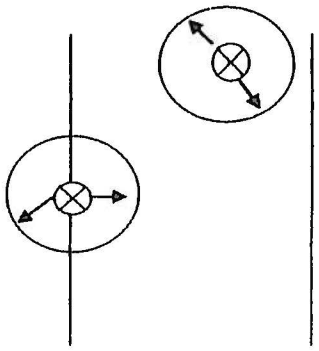

Figure 3b. 10-meter radius around points

Reporting Survey Results to the BLM

When reporting survey results to the BLM please include the baseline report, copies of all original survey forms, digital photos associated with surveys, any voucher specimens collected, and GIS data in an ESRI compliant format (shapefile, file geodatabase). Metadata must be created and included for all GIS data. Metadata at a minimum must include:

- **Project Name**
- **Purpose:** Summary of the intentions with which the dataset was developed.
- **Abstract Information:** Brief narrative summary of the dataset.
- **Location:** What area(s) does the data cover (ie. statewide, region, city, county, project).
- **Developer:** Who collected the data?

Qualifications of Personnel Conducting Inventories

All personnel conducting special status plant inventories must have the following:

- Strong backgrounds in plant taxonomy and plant ecology.
- Strong background in field sampling design and methods
- Knowledge of the floras of the inventory area including the special status plant species
- Familiarity with natural communities of the area

These qualifications help ensure that all special status plants in the inventory area will be located, including taxa that BLM or project proponents did not predict at the start of the inventory. All survey efforts must be coordinated with the responsible BLM Field Office project coordinator or biologist.

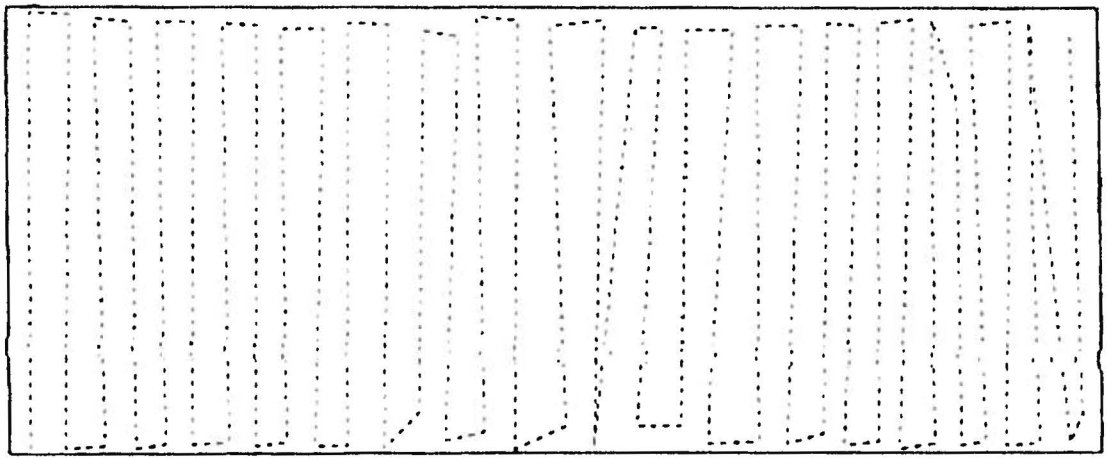

Figure 1. Complete survey.

Intuitive Controlled Survey

The intuitive controlled survey method is suitable for large areas and highly skilled surveyors. This type of survey should only be attempted by surveyors familiar with all plant species and their associated habitats that may reasonably be expected to occur in the project area. The surveyor traverses through the project area to see a representative cross-section of all major plant habitats and topographic features (figure 2). Surveyors should record the locations of all special status plant species and compile a complete plant species inventory list for the project area. When the surveyor arrives at an area of "high potential" habitat, the complete survey methodology as described above should be used (figure 1). "High potential" habitat areas should be identified in the pre-field review (see Pre-field review section above), and include habitat types and vegetation communities where special status plant species are most likely to occur. If a special status plant species is found once surveys in the project area begin, any habitat types similar to where the species was found should be completely surveyed. Areas within the project area that are not the focus of a complete survey must be surveyed sufficiently so that the BLM reasonably believes that few if any additional species would be added to the inventory species list for the project area. The baseline report must justify why the surveyor did not consider these areas to have a high potential for supporting special status plant species. GPS units should be used to track the locations of all transects and areas surveyed, and the data included with the GIS portion of the report.

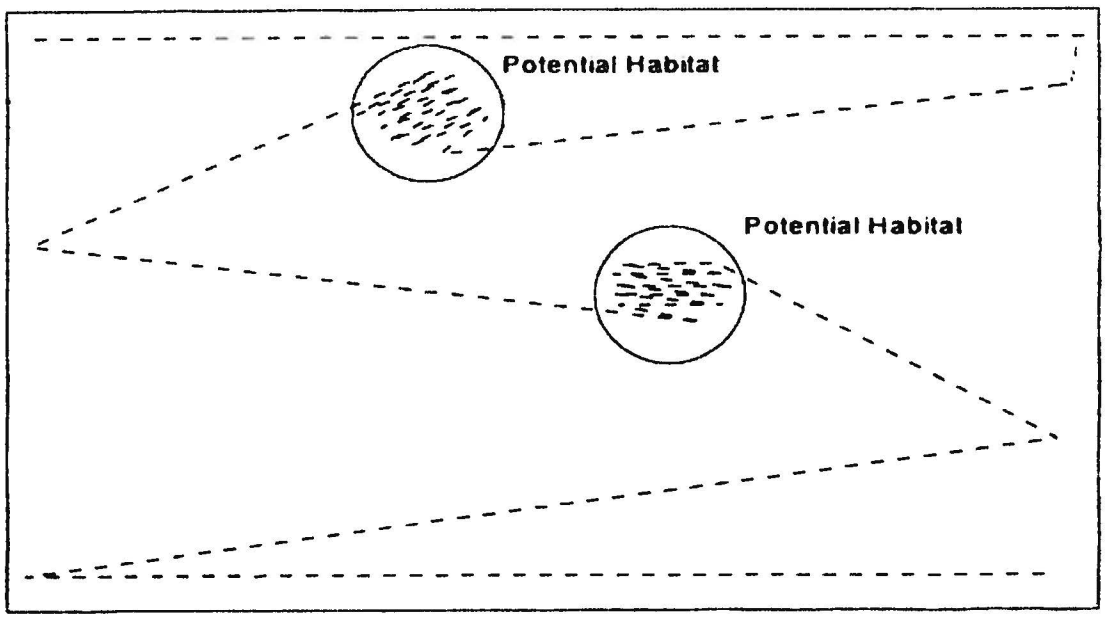

Figure 2. Intuitive Controlled Survey.

Data Collection and Documentation

The results of special status plant inventories should be well documented. The surveyor records the locations of all special status plant species encountered, the project area inventory list, and the location of all transects/areas surveyed. The Special Status Plant Species Survey Report Form (Appendix A) should be filled out for all surveys conducted, regardless of results. For any special status species found, a Nevada Native Species Site Survey Report should be filled out and submitted to the Nevada Natural Heritage Program (see http://heritage.nv.gov/ for forms and instructions).

The following information is required for the Special Status Plant Species Survey Report Form (Appendix A):

Names of surveyor(s)
Date of survey
Survey location: Document the township, range, section, and UTM's.
Site characteristics and use: Document any unfavorable growing conditions for current and prior years. Document any disturbances or other factors that may affect detection of special status plant species.
Transects/Polygons: Document transect/polygon numbers, starting and ending UTM's for each transect, and starting UTM for each polygon.
Project area species inventory list: Record the date, scientific name, common name, and species code for each plant species encountered in the project area.
For special status plants found: Record the date, scientific name, common name, species code, and the transect/polygon number for the area being surveyed when the special status plant was found. Also document the elevation, UTM's for each occurrence point and/or polygon, and the number of plants present (and whether the number is an actual count or

Appendix A. Special Status Plant Species Survey Report Form
(All UTMs should be reported in NAD83 Zone 11 N)

Surveyor(s):

Date of Survey:

Survey Location (¼ Section, Township, Range, and UTMs):

City: County:

Site Characteristics and Use (Unfavorable growing conditions, Disturbances, etc.):

Special Status Plant Species Previously Documented in the Project Area:

Instructions:

Provide completed survey report forms, baseline report, and shapefiles or file geodatabases(with associated metadata) of the surveyed area including all information recorded on the survey report form. Shapefiles or file geodatabase must show the location of all transects and areas surveyed (Use GPS to track all survey routes) and points and/or polygons for all special status plant locations, as well as all associated plant species, communities, and the project area species inventory list (included with GIS data and as an Excel spreadsheet). Label each transect/survey area so that it corresponds to the data below.

Transect#/ Polygon #	Transect start location/ Polygon start location (UTMs)	Transect end location (UTMs)

Project Area Species Inventory List

Date	Scientific Name	Common Name	Species Code

Transect #/Polygon #:

Date:

For Special Status Plant found:

Scientific Name: Common Name: Species Code:

UTMs for point/Starting UTM for polygon:

Elevation:

Number of plants present (specify whether actual count or estimate):

Voucher Specimen Collected?

Associated Vegetation Community (Use SWreGAP classification):

Associated Species List (10-meter radius from point, within polygon plus 10-meter buffer)

Scientific Name: Common Name: Species Code: % Cover:

Exhibit 5. Bureau of Land Management Fillmore Field Office Kit Fox Occupancy and Habitat Survey Protocol

BUREAU OF LAND MANAGEMENT
FILLMORE FIELD OFFICE
KIT FOX OCUPANCY AND HABITAT SURVEY PROTOCOL

Adult Female with two juveniles.

1.0 Introduction

These survey guidelines are utilized for conducting kit fox inventories in the BLM, Utah Fillmore Field Office (FFO). Due to the varying nature of project proposals, these guidelines are designed to provide flexibility in the survey intensity level to directly correlate with the scope and scale of the project. While some projects may only require a low intensity burrow survey, larger projects may require a more intense survey effort, as determined by the BLM FFO biologist, to accurately describe the environmental baseline on the project site. The FFO biologist will determine the intensity once a substantially complete proposal is submitted to the BLM. Preapproval of contractors/third party biologists conducting the survey is required. Resumes of individuals conducting the survey will also be required prior to obtaining survey approval. Individuals conducting surveys are required to have a copy of the Field Work Authorization Form available for review at the project site while conducting surveys.

Actions authorized by the Bureau of Land Management (BLM) shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species. Bureau sensitive species will be managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the Endangered Species Act (ESA).

2.0 Kit Fox (*Vulpes macrotis*) Natural History

2.1 Range

Historically, kit fox have occupied the desert and semi-arid regions of southwestern North America ranging from Idaho to central Mexico (Dempsey 2013) including: Arizona, California, Colorado, Idaho, New Mexico, Nevada, Oregon, and Utah. Kit fox are native to much of the western United States and northern Mexico (UDWR, 2013a) including areas of the Mojave Desert, the Central Valley of California, and the southern and central portions of the Great Basin (Nature Serve, 2013).

2.2 Distribution in Utah

In Utah, the distribution of the kit fox is limited to the most arid portions of the state. Distribution in the western portion of the state generally corresponds with the deep soils of the Pleistocene Lake Bonneville; while distribution in the eastern portion of the state occurs along the western foothills of the Rocky Mountains, from the Cisco Desert to the Four Corners area. These areas delineate the two discontinuous populations of kit fox in Utah (Egoscue 1962, Thacker et al. 1995). Within these areas, kit fox populations occupy habitats that provide favorable combinations of low predator numbers, sufficient prey, and soils suitable for denning (UDWR 2011). The Utah Department of Wildlife Resources (DWR) has identified areas of the state as high-value habitat (an area that provides for "intensive" use by a wildlife species) and substantial-value habitat (an area that provides for "frequent" use by a wildlife species) (UDWR, 2013a).

2.3 Species Status in Utah

Presently, the kit fox is listed as a Utah BLM Sensitive Species and a state of Utah Species of Concern. The BLM manages special-status species and their habitats according to policies established in *Manual 6840, Special Status Species Management* (BLM, 2008). The BLM Manual 6840 states,

On BLM-administered lands, the BLM shall manage Bureau sensitive species and their habitats to minimize or eliminate threats affecting the status of the species or to improve the condition of the species habitat, by:

1. Determining, to the extent practicable, the distribution, abundance, population condition, current threats, and habitat needs for sensitive species, and evaluating the significance of BLM-administered lands and actions undertaken by the BLM in conserving those species.

2. Ensuring that BLM activities affecting Bureau sensitive species are carried out in a way that is consistent with its objectives for managing those species and their habitats at the appropriate spatial scale.

3. Monitoring populations and habitats of Bureau sensitive species to determine whether species management objectives are being met.

2.4 Habitat

Kit fox occur in open desert, shrubby or shrub-grass, playa/salt flats, prairie, and plains habitats. In the Great Basin, kit fox are found in shadscale, greasewood, and sagebrush communities (NatureServe, 2013). McGrew (1977) reported kit fox in Utah occupied communities of mountain sagebrush, black sagebrush, pinyon-juniper, creosote bush, and shadscale; and Egoscue (1962) reported them in rabbitbrush, greasewood, horsebrush, winterfat, shadscale, and shrubby buckwheat with kochia, seepweed, and Indian ricegrass. In Utah, 75 percent of the 92 kit foxes reported in a 2-year study occurred in areas with less than 20 percent vegetation cover and light-colored loamy soils (McGrew, 1977; McGrew, 1979). Kit fox generally avoid rugged terrain with slopes greater than 5 percent (Warrick and Cypher, 1998).

Adult Female Kit Fox

Kit fox have definite preferences and permanent ties to specific den sites. They tend to select sites in barren areas with silty, clay soil which are higher than the surrounding terrain (UDWR, 2010). In Utah, most dens were on flat, well-drained uplands (Daneke et al., 1985). The low-stature vegetation and open ground around kit fox dens may reduce the frequency of ambush by kit fox predators (Fitzgerald, 1996).

Kit fox dens usually have multiple entrances (three or more) and may be 3 to 6 meters long, reaching 127 centimeters in depth (NatureServe, 2013). Old dens may have as many as seven entrances and the opening is usually narrow in order to prevent badgers and coyotes from entering the den (UDWR, 2010). Several dens may be used. Kit fox move from one den to another, especially in summer when pups are present (NatureServe, 2013; Fitzgerald et al., 1994). When kit fox populations are high, several active dens may be located within a single home range; but these dens will be used only by members of the same family group (UDWR, 2010). Pairs or individuals may use up to 10 dens clustered in a 0.8- to 1.2-hectare area (Cypher, 2003).

In June of 2010, Oliver and Tuhy published the report titled *Ecological Integrity Tables for Utah Animals of Conservation Concern*. The key ecological attributes for the species, as published in that report, are presented in Appendix A.

2.5 Diet

Kit fox opportunistically eat small mammals, small birds, reptiles, invertebrates, and plant matter (UDWR, 2013a; NatureServe, 2013). The primary food item for kit fox is usually the most abundant nocturnal rodent or lagomorph in the area such as kangaroo rats (*Dipodomys sp*.) or black-tailed jackrabbit (*Lepus californicus*) (McGrew, 1979; NatureServe, 2013). Some kit fox populations may be regulated in part by availability of lagomorph prey (Egoscue, 1975 cited in McGrew, 1979). In Utah, over 94 percent of the diet of a kit fox family consisted of black-tailed jackrabbits during whelping season (Egoscue, 1962). O'Neal and others (1986) also reported high use of jackrabbits in the same area, as well as kangaroo rats as an important food source. Water is obtained from the body fluids of their prey (UDWR, 2010). Oliver (2010) reported that some authors have suggested a dependency of this species on kangaroo rats and have even suggested that distribution and abundance of kangaroo rats determines the distribution and abundance of kit fox in some places. However, in some studies, black-tailed jack rabbits and cottontails have been more important in the diet, even when kangaroo rats were common (Oliver 2010).

2.6 Reproduction

It fox pair in late fall and breeding occurs in December, January, and February. Gestation lasts approximately 49 to 56 days and one litter of four to five pups is produced usually in February, March, or early April. Pups emerge from the den at about 4 to 5 weeks old and begin foraging with the parents at about 3 to 5 months old. Both sexes tend the young. Family groups usually disperse in October; juveniles reared earlier in the year typically show the longest dispersal movements (NatureServe, 2013; Fitzgerald et al., 1994; UDWR, 2010; Egoscue, 1956; Egoscue, 1962). Dispersal distance (mostly juveniles) in Kern County, California, was 1.8 to 32.3 kilometers (mean 7.8 kilometers) (Scrivner et al., 1987). Dempsey (2013), estimated dispersal ranges up to 23.3 km^2 or 9 mi^2. Biological seasons, as defined by Dempsey (2013), are presented in Table 3.

Juvenile Kit Fox.

2.7 Home Range

Kit fox are somewhat territorial and will establish a territory or home range to protect limited food resources. However, because of their small size, kit fox usually don't protect their territories as vigorously as other canids (UDWR, 2010), and home ranges may overlap (Fitzgerald et al., 1994). The size of the home range varies based on prey density, habitat suitability, presence of predators, and competition for the prey base. Home ranges have been studies for many years in various regions using different methods, and results are summarized in Table 1.

TABLE 1
Kit Fox Home Range Estimates

Study	Location	Home Range
Dempsey (2013)	western Utah	Radio-telemetry used on collared kit foxes, averaging 20.5 km2 (7.9 mi^2) through dispersal (23.3 km^2; 9 mi^2), breeding (20.8 km^2; 8 mi^2), and pup-rearing (17.2 km^2; 6.64 mi^2) seasons
Zoellick and Smith (1992)	western Arizona	Females averaged 9.8 km2 (3.78 mi^2), males averaged 12.3 km2 (4.75 mi^2); home ranges commonly overlapped
Morrel (1972)	San Joaquin Valley, California	2.6 to 5.2 km2 (1 to 2mi^2)
White and Ralls (1993)	California	up to 11.6 km2 (4.48 mi^2) during times of prey scarcity
Fitzgerald (1996)	Colorado	5.2 km2 (2 mi^2)
O'Neal et al. (1986)	Utah	averaged less than 5 km2 (1.93 mi^2); no overlap for same-sex adults
Daneke et al. (1985)	western Utah	Maximum population density in optimum habitat was two adults per 2.6 km^2(1 mi^2)

Kit fox densities have been estimated to range from 0.0002 to 0.07 kit foxes per acre (CH2M HILL (2008b); Cypher et al. (2000). Table 2 identifies approximate kit fox density from various studies.

TABLE 2
Approximate Kit Fox Densities

Study	Study Location	Density
CH2M HILL (2008b)	Utah, Millard County	0.0002 per acre (0.0006/ha)
Meaney et al. (2006)	Average throughout biogeographic range in the US and Mexico	0.0004 to 0.07 per acre (0.01 – 0.17/ha)
Daneke et al. (1985)	Utah	0.003 per acre (0.008/ha)
Egoscue (1975)	Utah	0.004 to 0.03 per acre (0.01 – 0.08/ha);
White et al. (1996)	3-year study in California	0.006 to 0.01 per acre (0.015 – 0.02/ha)
Cypher et al. (2000)	15-year study in California	0.008 to 0.07 per acre (0.02 – 0.17/ha)
List (1997)	within active prairie dog towns Chihuahua, Mexico	0.01 to 0.03 per acre (0.03 – 0.08/ha)

Dempsey (2013) defined the biological seasons by behavior and energetic needs as follows: breeding December 15 – April 14; pup-rearing April 15-August 14; and dispersal August 15-December 14.

TABLE 3

BIOLOGICAL SEASONS

Breeding	**December 15 - April 14**
Pup-rearing	**April 15 - August 14**
Dispersal	**August 15 – December 14**

Adult and juvenile kit fox for size comparison.

3.0 Survey Methodology

3.1 Pre-field Research

To evaluate the project's impacts to kit fox the following information is required:

1. A substantially complete proposed action, including a detailed project description;
2. Compiled historical records within five miles of the project boundary;
3. Description of the vegetative communities found on the project site;
4. An analysis of potential direct and indirect effects of the project on kit fox, if any;
5. An analysis of potential cumulative effects of the project on kit fox, if any.

Upon receiving all of the above information, the BLM will evaluate the information as to whether or not the project site represents kit fox habitat, the quality of the habitat, and the value of that habitat within the FFO.

3.2 Burrow Survey

The burrow survey area encompasses each feature of the proposed project (e.g., access roads, pipelines, turbine arrays, well pads, buildings, etc.) and includes a 0.25-mile buffer around each feature. Qualified biologists will conduct pedestrian surveys on transects spaced no greater than 200 feet in width; ensuring 100% visual coverage of the entire survey area. Biologists will use meandering transects and binoculars to visually inspect areas between transects and adjust for changes in sight distance based on topography, vegetation height and density to attain 100% visual coverage of the survey area.

Each burrow will be recorded and photographed. The following information will be recorded and submitted with the final report:

1. Unique burrow reference number;
2. Burrow activity status;
3. Dimension category of burrow entrance (inches);
4. Evidence suggestive of activity (scat, feathers, wildlife observed);
5. Number of individuals and age class of individual wildlife observed at a burrow;
6. Number of satellite burrows;
7. UTM location in NAD 83;
8. (1) Photograph of the burrow entrance and (1) Photograph of the landscape setting.

Surveyors must maintain a minimum distance of 50 feet (15 meters) from any special-status species observed while recording global positioning system (GPS) coordinates and information about the animal's activity and precise location. Burrow data (i.e., burrow width) will not be collected, at active burrows, during the pup rearing season. Burrow locations will be submitted to the BLM in a shapefile or geodatabase, along with the final report.

3.3 Kit Fox Camera-trapping Survey Methods

1. To determine the number of sampling units, buffer the entire project area by one-mile. Then place a one mile square grid over the entire project area; each sampling unit is 1 mi^2.
2. The number of units sampled at any one time will be determined at a 1:4 ratio; 1 camera per 4 mi^2. For example, if the project area is 29 mi^2. Then 8 cameras should be used in the sampling effort.
3. Units are assigned a number and are selected for sampling using a random number table or generator (e.g., Excel function-RANDBETWEEN) (Sutherland 2006).
4. The exact locations of each station within a sampling unit will be selected in the field, by a qualified biologist. The best habitat for a camera is in areas of less than 40% shrub cover (i.e., ideal <20%), where a camera can be placed without any shrubs within 40 feet of the camera to avoid photos of shrubs on windy days. Available water sources may also be selected as suitable sites (Wilson et al 1996). The habitat and terrain at each location will be described, and a photograph of each camera station will be taken from each of the four cardinal directions to show the landscape setting for each camera. Camera locations between adjacent sampling units will not be placed closer than 1000 ft.
5. Prepare the scent station by clearing the vegetation in a 3ft diameter circle approximately 15 ft from the camera location. A scent attractant, fatty acid scent tablet or approved alternative, will be placed in the center of the cleared area, in each camera's view.
6. The cameras will be set up to capture motion-triggered photographs during daylight and nighttime (infrared). Cameras will be attached to a t-post or suitable alternative and set within two to four feet of ground level at locations that will be as disguised as much as possible within the vegetation or other natural environmental features. Each camera will have a range of up to 90 feet, and will focus on areas that are largely clear of vegetation to maximize the ability to capture animal movement. Each camera will store photographs on SD cards for downloading. Capture rates of remote cameras decline as the camera increases in age and exposure to the outdoor elements. Remote cameras will be tested prior to deployment into the field. Each camera must be able to photograph a kit fox sized mammal from 60 ft at a 90% capture rate.
7. During each biological season, cameras will be rotated between sample units every two weeks until 50% of the project area is sampled. Units previously sampled will not be resampled during the same biological season.
8. A report detailing survey results will be submitted to the BLM within 30 business days from the conclusion of the field work. Information in the final report will include;
    a. Results of the pre-field research including: vegetative community descriptions; habitat suitability of the project site to be assessed (i.e., evaluate prey base and denning potential);
    b. An analysis of adverse effects on kit fox, if any;
    c. Recommendations for mitigating the adverse effects where applicable;
    d. An analysis of cumulative effects, if any;
    e. Maps displaying camera locations and tables showing the camera rotation schedule;
    f. Table of camera trap locations and photographs;

g. Species presence/absence list of all species observed by biologists while deploying cameras and captured on cameras. Organized by sampling unit and date observed.

h. Representative photographs of all wildlife observed;

i. Survey results, including data collected and a summary of all wildlife observed.

3.4 Required Qualifications of Biologists

Biologists conducting the pre-field research and field surveys described in this protocol must have demonstrable experience in kit fox biology, identification, and survey techniques. Resumes submitted to the BLM must include specific information concerning kit fox survey experience, experience surveying for other canids, other professional experience, and education.

3.5 Additional Information, Limitations, and Caveats

With respect to this survey protocol, the following apply:

1. Surveys are to be conducted only after the pre-field research process has been completed. Surveys are only to be conducted after obtaining written approval from the FFO Biologist.

2. Specific circumstances may justify or necessitate modification of this survey protocol on a case-by-case basis. Such modifications are allowable under this protocol if: (a) the applicant or its representative explains to the BLM in writing why modifications of the protocol are necessary; and (b) the BLM concurs with such adjustments in writing.

3. The BLM recognizes that certain types of projects (e.g., linear projects such as pipelines, phased projects, and projects involving small land areas) may raise special issues with respect to the implementation of this protocol. These applicants must consult with the BLM prior to initiating surveys.

4. The BLM reserves the right to reject kit fox surveys conducted under this protocol as inadequate if:
    a. Specific methods described under the Survey Protocol are not implemented and prior written exception to the protocol was not obtained;
    b. Surveyor qualifications are demonstrably inadequate or inconsistent with the description under Required Qualifications of Biologists; or
    c. Survey methods are conducted in a manner that is demonstrably inconsistent with the Survey Protocol.

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5.0 Appendix- Ecological Integrity Tables

kit fox (*Vulpes macrotis*)[1]
Ecological Integrity Table[2]

Key Ecological Attribute	Indicator	Indicator Rating				Basis for Indicator Rating	Comments
		Poor	Fair	Good	Very Good		
habitat	biome*	other	—	semi-arid areas	desert	McGrew (1979), Cypher (2003)	
habitat	plant community*	other (e.g., dense brush, woodland, forest)	barren	—	shrub, shrub–grass	McGrew (1979), Cypher (2003)	Dominant shrub species include saltbush in c. California; shadscale and creosote bush in the Mojave Desert; and shadscale, greasewood, and sagebrush in the Great Basin (McGrew 1979).
habitat, visibility of predators (especially coyotes[3])	% ground cover*	≥20%	—	—	<20%	McGrew (1979)	At 6 natal dens in sw. Utah, O'Neal et al. (1987, Table III) reported grass cover as 5.9–16.8% and forb cover as 2.5–7.7%. (Combining their figures for grass and forb cover, the range is 13.6–19.3%, but this apparently does not include shrub cover.)

Key Ecological Attribute	Indicator	Indicator Rating				Basis for Indicator Rating	Comments
		Poor	Fair	Good	Very Good		
general habitat (foraging), visibility of predators (especially coyotes[3])	vegetation height*	>5 ft	<1 ft or 3–5 ft	2–3 ft	1–2 ft	Egoscue (1962), Daneke and Sunquist (1984)	Egoscue (1962) found *V. macrotis* in 3 associated plant communities in nw. UT. For 2 of these, he mentioned vegetation height: "Dominant plants of this relatively sparsely vegetated community [shadscale flats] average less than 24 inches in height . . . . . The dominant plant [of the greasewood flats] is greasewood which is 3 to 5 ft in height, and usually quite widely spaced . . . ." Daneke and Sunquist (1984), who studied *V. macrotis* in sw. UT, reported: "Most [kit] foxes were located in flat, shrub-grassland areas with a vegetation height between 30 cm and 91 cm. A few locations were in sparse shrub (<31 cm high) and one was in tall shrub (>91 cm)."

Key Ecological Attribute	Indicator	Indicator Rating				Basis for Indicator Rating	Comments
				Good	Very Good		
denning habitat, visibility of predators (especially coyotes[3])	average vegetation height	>10 in.	<8 in.	—	8–10 in.	Egoscue (1956)	Egoscue (1956), in a study of *V. macrotis* in nw. Utah, noted: "About eighty per cent of the [kit fox] dens were found in sparsely vegetated shadscale flats. Here vegetation averages about eight to ten inches in height . . . . The low vegetation provides good visibility." Also, Daneke and Sunquist (1984) noted that most of the kit fox dens found in their study "were on a southerly aspect" even though "most slopes drained in other directions." (See also footnote 4.) In wet years, cheatgrass may become tall enough and dense enough to degrade habitat quality for *V. macrotis*.

Key Ecological Attribute					Very Good	Basis for Indicator Rating	
habitat, dens	soil texture (see Comments)		coarse, gravelly or rocky	clayey, sandy (Places where sand is extremely fine, loose, and deep may be uninhabitable by this species because the substrate makes creation of stable dens impossible.)		McGrew (1977), O'Neal et al. (1987), Cypher (2003), and other sources	**N.B.: The importance of this indicator is questionable.** Although a tendency or preference exists, it is not limiting. "Kit foxes prefer loose-textured soils . . ., but are found on virtually every soil type" (Williams et al. 1998, p 129). In some places (e.g., in the Chihuahuan Desert), *V. macrotis* occurs in areas of almost entirely rocky or gravelly substrates. In such areas (as well as many areas with loose soils) *V. macrotis* typically modifies burrows or dens of other species (e.g., badgers) rather than digging its own dens. In addition to texture, soils must be of adequate depth; soils that are shallow, with bedrock or slickrock near the surface, are unsuitable.

Key Ecological Attribute					Very Good	Basis for Indicator Rating	
habitat	terrain (slope)*	steep, rugged (>20%)	rolling (11–20%)	slight slope (5–10%)	flat (<5% slope)	Daneke and Sunquist (1984), Warrick and Cypher (1998), Cypher (2003), and other sources	Warrick and Cypher (1998), studying this species in California, found: "Topographic ruggedness was the only consistent factor that affected capture rates of kit foxes . . . . Kit foxes appear to be most abundant and persist longest in the flat or rolling terrain . . . . Relatively flat or rolling terrain probably has the greatest potential for sustaining viable populations of this species, and this terrain should be considered in habitat conservation efforts." Use of much steeper slopes was reported by Arjo et al. (2003), but their findings to represented a shift from historically selected habitats, perhaps as a result of increased abundance of coyotes and conversion of native nonnative habitats.[4]
habitat, thermal ecology	elevation*		5,501–6,100 ft	5,001–5,500 ft		McGrew (1977) and other sources	McGrew's (1977) elevational analysis was based on 92 observations throughout Utah. 74% of these were at ≤5,000 ft, and 90% were at ≤5,500 ft. The highest was at 6,100 ft.
thermal biology	freeze-free season (average no. of days between last spring frost and first fall frost)		100–119 days			McGrew (1977)	McGrew's (1977) analysis was based on 92 observations throughout Utah. 90% of these were from areas with a freeze-free season of ≥120 days.

Key Ecological Attribute	Indicator					Basis for Indicator Rating	
		Poor	Fair	Good	Very Good		
thermal biology	average annual minimum temperature					McGrew (1977)	McGrew's (1977) analysis was based on 92 observations throughout Utah. 90% of these were from areas with average annual minimum temperatures of –10 °F or higher.
food	available prey (see Comments)		2003).	other nocturnal small mammals diurnal sciurids: ground squirrels; prairie dogs	nocturnal rodents, especially kangaroo rats, pocket mice; jack rabbits, cottontails (Leporid abundance, however, may favor coyotes and red foxes [see below] and may allow these other canids to survive in areas otherwise too dry for them.)	Morrell (1972), McGrew (1979), Cypher (2003)	**N.B.: The importance of this indicator is questionable.** Some authors have suggested a dependency of this species on kangaroo rats and have even suggested that distribution and abundance of kangaroo rats determines the distribution and abundance of *V. macrotis* in some places. However, in some studies, black-tailed jack rabbits and cottontails have been more important in the diet, even when kangaroo rats were common (see McGrew 1979 for discussion). McGrew (1979) commented: "The primary food item in the kit fox diet is usually the most abundant nocturnal rodent or lagomorph in the vicinity of the den."

Key Ecological Attribute					Very Good	Basis for Indicator Rating	
predation, competition (both interference [i.e., mortality] and exploitation competition)	coyotes, red foxes*,[3]					O'Neal et al. (1987), White and Ralls (1993), Cypher (2003)	Coyotes are the main cause of death in this species.[3]
poisoning, mortality	use of toxicants for predator control (coyotes) or rodent control					Schitoskey (1975), McGrew (1979), Williams et al. (1998), Cypher (2003)	Poisoning to control predators (such as coyotes) and rodents is now much less frequent than in the past.
mortality	roads	many, large, with heavy traffic	many or large or with heavy traffic	few, small, unpaved, with little traffic		Morrell (1972), Williams et al. (1998), Cypher (2003)	"Vehicles have been and continue to be a an important source of kit fox mortality . . . , and in some locations are responsible for over 10% of kit fox mortalities . . . " (Cypher 2003). Also, by providing access, roads almost certainly increase mortality from shooting (see below).

Key Ecological Attribute	Indicator	Indicator Rating				Basis for Indicator Rating	Comments
		Poor	Fair	Good	Very Good		
mortality	shooting, trapping	occurring	—	—	none	Morrell (1972), McGrew (1979), Williams et al. (1998), Cypher (2003)	"Kit foxes are relatively unwary and easy to trap or shoot. . . . Kit foxes are harvested in Arizona, Colorado, Nevada, New Mexico, Texas, Utah, and Mexico. Harvests are prohibited in California, Oregon, and Idaho. During 1994–95, 247 kit foxes were harvested in Nevada and 531 in Utah" (Cypher 2003). Discussing the unwariness and vulnerability of *V. macrotis*, Egoscue 1962) observed: "Unfortunately, many [kit] foxes were shot by hunters who either mistook them for coyotes or merely wanted easy targets. With a little patience it was sometimes possible to walk to within 6 or 8 ft of a [kit] fox before it bolted . . . ."

[1]This species, occurring in the deserts and arid lands of w. (mainly sw.) America and n. and nw. México, has been combined or "lumped" with *Vulpes velox*, the swift fox (occurring on the Great Plains of c. America and s.-c. Canada) for long periods, and the taxonomy of these animals is unstable. Currently most mammalogists regard these foxes as separate species, but, in using literature, care should be taken to ascertain the taxonomic concept of authors.

[2]Although population densities of *V. macrotis* have been reported by many authors, population density is not included in this table as an "indicator". Reported population densities have been highly variable, both geographically and temporally. In long-term studies, observed population densities have changed greatly in response to changes in precipitation patterns (e.g., drought) and changes in prey populations. Thus, population density in this species is the result of complex ecological factors (i.e., is multivariate), and an attempted univariate consideration of population density (e.g., "rating" of density as an "indicator") would be misleading or meaningless.

[3]White and Ralls (1993), who studied this species in California, reported: "Predation by coyotes (*Canis latrans*) was the main cause of death." Cypher (2003), reviewing numerous studies of *V. macrotis*, commented: "Coyotes . . . will kill kit foxes . . . , and generally are the primary source of mortality for [this] species. Thus, coyotes can have a significant impact on the populations of [this] species, and at times may limit [its] abundance. . . . However, coyotes naturally occur everywhere that kit foxes . . . occur, and therefore some degree of coevolution has occurred. Some resource partitioning occurs relative to food availability, . . . and year-round den use by [kit] foxes and the presence of multiple dens within home ranges allow [kit] foxes to avoid coyotes . . . . Also, in an interesting

interaction among species, the presence of coyotes potentially provides a benefit to kit foxes . . . by limiting red fox abundance . . . . Red foxes historically were uncommon or absent in habitats occupied by kit foxes . . ., and therefore [this] species [has] not evolved strategies for mitigating competition from red foxes. Because of anthropogenic landscape modifications, red foxes are increasing within the range of kit foxes . . . and pose a significant threat to [this] species . . . . Interspecific aggression from coyotes appears to limit red fox abundance in kit fox . . . habitat." Warrick and Cypher (1998) found a negative correlation between kit fox abundance and coyote abundance, which was higher in areas of denser, taller, shrubbier vegetation and lower in a more open area that had been burned. They commented: "Predator control could potentially increase both the distribution and abundance of kit foxes, but previous attempts at [the study site] were labor and cost intensive and did not produce satisfactory results . . . . Another option may be to modify certain types of habitats to decrease their suitability for larger predators (bobcats, coyotes) and to increase the ability of kit foxes to detect or avoid these predators. In some areas, shrub control (via burning or other methods) may provide this type of advantage to kit foxes, and the potential positive effect of this technique should be further investigated."

[4]O'Neal et al. (1987, Table III) reported average shrub heights at 6 *V. macrotis* natal den sites in sw. Utah. Average shrub heights that they observed ranged 5.0–37.7 cm (2.0–14.8 in.), in fair agreement with Egoscue's (1956) observation that vegetation near dens in shadscale habitat in nw. Utah averages ~8–10 in. However, if species that represented <1% of shrubs near the dens are excluded from the data presented by O'Neal et al. (1987), average shrub heights of the remaining species ranged only 9.4–31.9 cm (3.7–12.6 in.), in even better agreement with Egoscue's findings. Interestingly, the lowest average shrub heights that O'Neal et al. (1987) reported were at the only natal den that was in an area that was not grazed by livestock. Arjo et al. (2003) reported many habitat characteristics of *V. macrotis* den sites in an area in nw. Utah that was earlier studied by Egoscue (1956, 1962). Their findings showed a shift from habitats historically selected by *V. macrotis* in this area. They interpreted the changes in habitat use by *V. macrotis* as ecological displacement resulting from increased abundance and distribution of coyotes and conversion of native plant associations to nonnative ones. Although their data are of great interest and demonstrate considerable ecological plasticity and adaptability in *V. macrotis*, they have not been used for the "ratings" of the "indicators" in this table because the data are assumed to represent departure from preferred natural conditions.

*Most important indicators.

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Exhibit 6. Statewide Wildlife Survey Protocols BLM Nevada

STATEWIDE WILDLIFE SURVEY PROTOCOLS

BLM NEVADA

2014

Table of Contents

Photos on Cover (clockwise from top left): California floater, pronghorn, long-eared owl, turkey vulture, black-crowned night heron, pallid bat, relict leopard frog, desert bighorn sheep, burrowing owl, greater sage-grouse, scrub jay, desert tortoise.

General Guidelines for Wildlife Surveys

Following the Guidelines

This document describes a set of survey standards to determine the occurrence of **target** wildlife species in areas of proposed activities. A goal of wildlife surveys is to gather relevant data to enable the BLM to make an informed NEPA decision regarding the relative magnitude or significance of effects to target species. See ***Target Species Survey Protocols*** and coordinate with wildlife biologists from the Bureau of Land Management (BLM), Nevada Department of Wildlife (NDOW), and the United States Fish and Wildlife Service (USFWS). Deviation from the survey protocols described in this document requires scientifically valid justification with reference to scientific literature. Surveys must be rigorous (see *Survey Effort*) and meet current scientific standards for the species. BLM must approve any deviation from the survey protocols described in this document before surveys are conducted. NDOW does not require permits for surveys of wildlife, but permits are required for handling. Permit applications are available at: http://www.ndow.org/uploadedFiles/ndoworg/Content/Forms_and_Resources/Application-Scientific-Collection-Possession-Banding-Permit.pdf. The protocols in this document may change or be added to as new information on surveys becomes available. Modifications of this document may be made at the discretion of the BLM based on new information or site-specific conditions. Target species may be added. This document will be updated annually.

Surveyor Experience

Surveys must be conducted by qualified wildlife biologists or be supervised by someone with experience conducting field surveys. Surveyors need to be able to identify target species and their habitats, as well as any similar species they may be confused with. Surveyors may be required to have or attend protocol training for certain species (i.e., Southwestern willow flycatcher).

Survey Effort

All potential habitat for a target species must be surveyed. See *Habitat Assessment* to identify potential habitats.

- See *Target Species Survey Protocols* for the species-specific protocols. Any deviation from the protocols provided in this document must be accepted by BLM before surveys are conducted.
- Surveys must be temporally comprehensive. Conduct surveys at the appropriate time of day and season, for appropriate lengths of time, and at the appropriate frequency. Surveys for some species (e.g., migratory birds) must be conducted annually because results from one year do not necessarily carry over to the next. See *Target Species Survey Protocols* to determine acceptable survey times.
- Surveys must be spatially comprehensive. All potential habitats must be surveyed. See *Target Species Survey Protocols* to determine acceptable survey areas.
- **Note:** While the presence of a target species can be confirmed at a location, it is often difficult to confirm a species' absence without extensive survey effort. Regardless of the outcome of species surveys, the occurrence of potential habitats must still be addressed in a NEPA document and any potential effects to habitat analyzed and disclosed. Appropriate mitigation to avoid or minimize effects to potential habitat will be applied.

Survey Area

The survey area should be accurately identified before beginning field surveys. The survey area will generally be larger than the proposed project area because it includes any adjacent potential habitat where

target species could be directly or indirectly affected by proposed activities. See *Target Species Survey Protocols* and consult BLM, NDOW, and USFWS wildlife biologists to determine acceptable survey areas.

Habitat Assessment

A habitat assessment will occur prior to surveys to identify areas of potential habitat. Surveys will focus on the areas of potential habitat identified in the habitat assessment. Focused surveys are more efficient because they save time and money, and are more likely to document the occurrence of target species. **A completed Habitat Assessment Form (HAF; Appendix A) with shapefiles must be reviewed and accepted by BLM prior to beginning surveys.**

Determine Which Target Species to Survey

Before surveys begin, proponents should determine which target species have potential to occur in the proposed project area by completing the HAF (Appendix A). The HAF is a tool to evaluate the potential of target species to occur in an area.

To complete the HAF, proponents need to review the 2012 Nevada Wildlife Action Plan (WAP; Wildlife Action Plan Team 2012; per BLM IM 2006-114 regarding BLM support and use of State Wildlife Action Plans). The WAP describes 22 key habitats and identifies wildlife species assemblages for each (http://www.ndow.org/Nevada_Wildlife/Conservation/Nevada_Wildlife_Action_Plan/). The project area should be compared to the WAP key habitats GIS to determine which key habitats occur in the project area. Proponents should be careful to identify certain habitat types (e.g., aspen, riparian, meadow, springs, mesquite-acacia, Joshua tree/Yucca) that are often poorly delineated with spatial data.

Proponents need to review current BLM, NDOW, USFWS, and Nevada Natural Heritage Program (NNHP) wildlife spatial data, and any other current spatial data such as: 1) state- and regional-level data and maps identifying wildlife corridors and crucial habitat (Western Wildlife Crucial Habitat Assessment Tool [CHAT] per BLM IM 2012-039), 2) cave data, 3) mine data, and 4) springs/stream data. Coordinate with NDOW for raptor nest spatial data. Proponents can obtain electronic information on federally listed (threatened and endangered) species by referring to the USFWS Information, Planning, and Conservation System (IPaC; http://ecos.fws.gov/ipac). The information provided by IPaC is generated by the USFWS. The USFWS will continue to process hard copy requests for species lists if a proponent chooses not to use IPAC. **A completed HAF, along with all spatial data and other information used to complete it, must be reviewed and accepted by BLM prior to beginning surveys. Any deviation from the survey protocols provided in this document must be accepted by BLM before conducting surveys. If any deviation is to occur, include with the HAF a thorough description of the protocols to be used.** As stated above, surveys must be rigorous (see *Survey Effort*) and meet current scientific standards for target species. Justify protocols by referencing scientific literature.

Target species surveys will be done for the target species documented on the HAF as having potential to occur in the project area. **If a proponent chooses not to do target species surveys or surveys aren't feasible, then target species are assumed present in potential habitat and appropriate mitigation will be applied.**

Survey Report

A Survey Report must be reviewed and accepted by BLM prior to beginning project activities. See

the Wildlife Survey Report Template (Appendix B) to ensure that reporting standards are met. All hard copy data sheets and GIS data must be included. The Survey Report will not be reviewed without this data. If there was deviation from the survey protocols described in this document, thoroughly describe the protocols used. These protocols must have been previously accepted by BLM before conducting surveys.

Include the completed HAF. Provide a detailed map showing the project area, survey area, and specific survey routes and locations. Surveyors will use GPS units with tracking capabilities to record all surveys. Provide information regarding the survey area covered as well as failed to cover. Discuss significant problems and obstacles that may have interfered with surveys (e.g., weather). Report and map the locations where target species or their sign were observed.

Target Species Survey Protocols

Birds

The need to conduct surveys to determine the presence/absence of target bird species is primarily driven by federal legislation including the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and the Endangered Species Act (ESA). Disturbance of breeding birds at nests, eggs, or nestlings during the nesting season risks violation of the MBTA. Actions resulting in the death of birds or eggs are violations of the MBTA. The BGEPA includes "disturb" in its definition of "take." Disturb means to agitate or bother an eagle to a degree that causes, or is likely to cause, injury, a decrease in productivity, or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior.

Migratory Birds

Regulatory Setting – In 2001, President Clinton signed Executive Order (EO) 13186 placing emphasis on the conservation and management of migratory birds. The BLM management for migratory birds is based on Information Bulletin (IB) 2010-110 which transmits the Memorandum of Understanding (MOU) between the BLM and USFWS concerning conservation of migratory bird populations. For MOU implementation, BLM Priority Migratory Birds are those that are listed in the periodic USFWS report Birds of Conservation Concern and game birds below desired condition (GBBDC) as identified by the USFWS Division of Migratory Bird Management.

Nesting Season Clearance Surveys **–** Nesting season clearance surveys will be conducted when a proposed activity would involve ground disturbance during the nesting season and potential impacts to nesting migratory birds are not mitigated by applying a seasonal restriction. Table 1 provides the nesting season dates. **These dates may be modified depending on weather, elevation, et cetera. Coordinate with the local BLM District on the appropriate nesting season dates prior to beginning surveys.** Generally, ground disturbance involves moving or penetrating the ground surface (soil, rocks) or destroying/removing vegetation. Ground disturbance includes mechanical excavation and grading, and manual activities such as driving posts and stakes, drilling, digging, trenching, blasting, and others. Clearance surveys are not necessary for activities that do not involve any new ground disturbance (i.e., activities restricted to existing roads and trails). Livestock grazing is not considered a ground-disturbing activity.

Clearance surveys are to occur in the project area including a 300-ft buffer around the project area unless the BLM or USFWS recommends a different distance. Surveys must be conducted a maximum of 2 weeks prior to disturbance and are then adequate for a maximum of 2 weeks. Additional surveys will need to be

repeated after 2 weeks have elapsed if proposed activities have not been initiated. If active nests are found, proposed activities will not occur until after young have fledged, nests are abandoned, or after the nesting season ends unless a 300-ft buffer can be provided around nests. Buffered nests need to be tied to contiguous habitat and not left as islands within project areas.

Clearance surveys are generally appropriate for those proposed activities where activity disturbance ends with activity completion and effects to migratory birds are not ongoing (long-term). If effects to migratory birds from the proposed activity are expected to continue to be ongoing and occur over the long-term after activity completion, then additional surveys may be required (see *Pre- and Post-Activity Surveys* below).

Table 1. Avian nesting seasons by BLM District Office. Disturbance should be avoided during nesting seasons to prevent risking violation of the MBTA. Coordinate with the local BLM District to confirm dates prior to beginning surveys.

BLM District	Migratory Birds	Pinyon Jay	Raptors (including Eagles)	Burrowing Owl
Battle Mountain	Apr 1 - Jul 31	Mar 15 - May 30	Mar 1 - Jul 31	Apr 1 - Jul 31
Carson City	Apr 1 - Jul 31	Mar 15 - May 30	Mar 1 - Aug 31	Apr 1 - Jul 31
Elko	Apr 1 - Jul 31	Mar 15 - May 30	Dec 1 – Sep 30	Mar 1 - Aug 31
Ely	Apr 1 - Jul 31	Mar 15 - May 30	Mar 1 - Jul 31	Apr 1 - Jul 31
Southern Nevada	Mar 1 - Aug 1	Mar 15 - May 30	Jan 1 - Aug 31	Mar 1 - Jul 31
Winnemucca	Mar 1 - Aug 31	Mar 15 - May 30	Mar 1 - Aug 31	Mar 1 - Aug 31

Pre- and Post-Activity Surveys – Pre- and post-activity surveys may be required when data is needed to adequately evaluate potential ongoing (long-term) negative effects from proposed activities. If proposed activities are expected to have ongoing (long-term) negative effects after project completion, then multiple years of pre- and post-activity surveys may be required. A Bird and Bat Conservation Strategy (BBCS) may be required (see *BLM and/or USFWS Direction* below). **Coordinate with BLM and USFWS to determine whether these surveys and a BBCS are needed for the proposed activity.**

Surveys are to be conducted for at least two consecutive years immediately prior to and immediately following project implementation. Surveys are to occur in the project area including a 300-ft buffer unless the USFWS recommends a different buffer distance. For wind energy, surveys are to occur in a 1-mile buffer (see *BLM and/or USFWS Direction* below).

A variety of survey methods are available (Emlen strip, belt transect, point counts, area searches, spot mapping, etc.). Selection of transects or plots will often depend on the size of the area to be surveyed, local topography and biotic features. Some BLM Districts may choose to provide contractors with survey protocols and other Districts may have the contractors develop and submit protocols, therefore it is important to coordinate with the local BLM District early in the process and remain in contact throughout the process.

Determine what time of year surveys should occur based on the seasonal presence of species in Nevada. Coordinate with BLM, NDOW, USFWS, and Great Basin Bird Observatory (GBBO), and refer to the Nevada Comprehensive Bird Conservation Plan (Great Basin Bird Observatory 2010) to determine seasonal

presence. Surveys during the breeding/nesting and migration seasons should span the seasons to capture both early and late breeders and migrants as well as cover the height of the breeding and migration season. Nevada BLM District Offices have different nesting seasons for migratory birds (see Table 1). Surveys should be conducted a minimum of three times per season to adequately span the entire season. Conduct surveys during periods of calm and dry weather. Birds may delay breeding during extended periods of precipitation; windy and wet weather can interfere with detection capabilities. No physical marking of nests should occur (only UTM coordinates) because predatory birds and mammals may associate flagging or other markers with nests.

BLM and/or USFWS Direction

***USFWS* – For ground-disturbing activities**, the USFWS recommends that proponents develop a Bird and Bat Conservation Strategy (BBCS; previously known as an Avian Protection Plan [APP]), which indicates a "good faith" effort to conserve migratory birds and address the MBTA. Generally, ground disturbance involves moving or penetrating the ground surface (soil, rocks) or destroying/removing vegetation. Ground disturbance includes mechanical excavation and grading, and manual activities such as driving posts and stakes, drilling, digging, trenching, blasting, and others. A BBCS is not necessary for activities that do not involve any new ground disturbance (i.e., activities restricted to existing roads and trails). Livestock grazing is not considered a ground-disturbing activity. A BBCS is described in the USFWS Land-Based Wind Energy Guidelines (USFWS 2012).

For wind energy, the USFWS Land-Based Wind Energy Guidelines (USFWS 2012) are intended to promote compliance with wildlife laws and regulations including the MBTA and thus recommend developers prepare a project-specific Bird and Bat Conservation Strategy (BBCS). A BBCS is a document or compilation of documents that describes the steps a developer could take or has taken to apply these Guidelines to mitigate for adverse impacts and address the post-construction monitoring efforts the developer intends to undertake. It is a written record of the actions to avoid, minimize, and compensate for potential adverse impacts to migratory birds.

For utility and energy facilities, the USFWS has developed a special collection permit for migratory bird carcass collection. The USFWS requires this salvage permit to collect carcasses as part of monitoring post-construction mortality. The company or operating entity applies and holds the permit, not the BLM.

BLM – **For renewable energy**, per BLM IM NV-2010-063, the USFWS may require a Bird and Bat Conservation Strategy (BBCS; previously referred to as an Avian Protection Plan [APP]) for any project that may take a listed species as part of the biological opinion. BLM is required to have concurrence from the USFWS for a BBCS if it covers threatened or endangered species and the USFWS makes it a condition of the biological opinion.

For wind energy development, per BLM IM NV-2010-024 for wildlife monitoring protocols, pre- and post-construction surveys should occur within the project area including a 1-mile buffer. Spring (March-May) and fall (September-November) migration surveys should be conducted. These surveys should be performed at dawn and dusk, three times each season to identify early, mid, and late migrants. Breeding bird surveys should be conducted using the GBBO protocol. The objective is to determine the extent of habitat use by migratory birds and identification of concentrations or important breeding areas.

Pinyon Jay

The pinyon jay (*Gymnorhinus cyanocephalus*) is a Nevada BLM sensitive species. According to North American Breeding Bird Survey data, the pinyon jay is declining at a rate of 4-5% per year in the Great Basin and range-wide (http://www.mbr-pwrc.usgs.gov/bbs/specl11.html). This trend estimate translates to the population being cut in half in 15 years (2028) and being rare or extirpated in the Great Basin in 30 years. The causes for decline are currently unknown. While the species is declining, its preferred habitat, pinyon-juniper woodland, has been expanding (Great Basin Bird Observatory 2010). The bird's decline may be related to changes in woodland age profile; large expanses of closed-canopy woodland with a poor shrub understory are largely unsuitable for these jays. These jays prefer mixed-age woodland transitioning into, or interspersed with, sagebrush shrubland. They roost and nest within relatively dense groves of trees typically within 2km (1.2mi) of the woodland-sagebrush habitat edge. Seed caches are usually located in the woodland-shrubland transition zone or in shrubland within 2km (1.2mi) of the woodland-shrubland edge.
Pinyon jays nest in traditional colony sites with 30-60 nests that are tended to by a flock of 150-300 adults and immature birds. They are cooperative breeders, where the immature birds from previous years learn to forage and nest successfully by helping raise the current brood.

Nesting Season Clearance Surveys **–** Nesting season clearance surveys will be conducted when a proposed activity would occur during the nesting season and potential impacts to nesting jays are not mitigated by applying a seasonal restriction. Table 1 provides the nesting season dates. Clearance surveys are to occur in the project area including a 600-ft buffer around the project area unless the BLM or GBBO recommends a different distance. Nest sites are discovered by examining mid-sized and large pinyon pines (about 12-30ft tree height) for relatively large nests (about 12-18in diameter, 10-12in tall). These nests are made mostly from thin sticks (Photo 1). If one nest is found, time should be spent to examine all trees in the vicinity for similar nests, going out at least 200y (600ft) from the original nest. If more nests are found, it is a colony site. It is not necessary to try to locate all nests of the colony. Colony nest sites are in close proximity to traditional communal roost sites where the flock spends every night during breeding. If the birds are followed to their roost site at dusk during this time, the nesting colony is likely within 1,000m (0.6mi). If a colony is found, buffer the site by 1,200m (0.7mi) for no disturbance during the breeding season and for no vegetation removal any time of year.

Photo 1. Pinyon jay nest.

Bald and Golden Eagles

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaeatos*) are Nevada BLM sensitive species. The USFWS has guidance for proposed activities that have the potential to impact bald or golden eagles or their habitat (Pagel et al. 2010, USFWS 2012, USFWS 2013). Generally, the steps in these

BLM and/or USFWS Direction

***USFWS* – For ground-disturbing activities**, the USFWS recommends that proponents develop an ECP. Generally, ground disturbance involves moving or penetrating the ground surface (soil, rocks) or destroying/removing vegetation. Ground disturbance includes mechanical excavation and grading, and manual activities such as driving posts and stakes, drilling, digging, trenching, blasting, and others. An ECP

is not necessary for activities that do not involve any new ground disturbance (i.e., activities restricted to existing roads and trails). Livestock grazing is not considered a ground-disturbing activity. An ECP is described in the USFWS Eagle Conservation Plan Guidance (USFWS 2013).

For wind energy, the USFWS Land-Based Wind Energy Guidelines (WEG; USFWS 2012) provide a broad overview of wildlife considerations for siting and operating wind energy facilities, but does not address the in-depth guidance needed for the specific legal protections afforded to bald and golden eagles. The Eagle Conservation Plan Guidance (ECPG; USFWS 2013) fills this gap and supplements the WEG. The ECPG provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Like the WEG, the ECPG calls for wind project developers to take a staged approach to siting new projects. Both call for preliminary landscape-level assessments to assess potential wildlife interactions and proceed to site-specific surveys and risk assessments prior to construction. They also call for monitoring project operations and reporting eagle fatalities to the Service and state and tribal wildlife agencies. The ECPG provide a descriptive instructional template for developing an ECP. An ECP documents how the project developer or operator intends to comply with regulatory requirements by avoiding and minimizing risk of taking eagles and evaluating possible alternatives in siting, configuration, and operation.

Compliance with the ECPG is voluntary, but the Service believes that following the guidance will help project operators in complying with regulatory requirements and avoiding the unintentional "take" of eagles at wind energy facilities, and will also assist the wind energy industry in providing the biological data needed to support permit applications for facilities that may pose a risk to eagles.

For utility and energy facilities, the USFWS has developed a special collection permit for migratory bird carcass collection. The USFWS requires this salvage permit to collect carcasses as part of monitoring post-construction mortality. The company or operating entity applies and holds the permit, not the BLM.

BLM – **For golden eagles and renewable energy**, per BLM IMs NV-2010-063 and NV-2010-156, it is critical to determine if breeding territories and nests, feeding areas, or roosts are present in the analysis area to determine whether a proposed action has the potential to impact eagles or their habitat. The analysis area should be determined on a project-specific basis with USFWS. **An ECP (previously known as an Avian Protection Plan [APP]) will be required by the BLM as a condition of the right-of-way grant if the proposed project has the potential to impact golden eagles or their habitat.**

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is a Nevada BLM sensitive species. Burrowing owl habitat can be found in annual and perennial grasslands and scrublands characterized by low-growing vegetation (Conway and Simon 2003). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows of fossorial mammals such as ground squirrels or badgers are typically used, but man-made structures such as cement culverts can be an essential component of burrowing owl habitat. Burrows provide protection, shelter, and nest sites.

Nesting Season Clearance Surveys – Nesting season clearance surveys will be conducted when a proposed activity would occur during the nesting season and potential impacts to nesting owls are not mitigated by

applying a seasonal restriction. Table 1 provides the nesting season dates.

Surveys for burrows and owls should be conducted by walking through suitable habitat over the entire project area including a 150-m buffer (USFWS 2003, California Report on Burrowing Owl Mitigation 2012). This buffer zone is included to account for adjacent burrows and foraging habitat outside of the project area and impacts from such factors as noise and vibration due to heavy equipment.

Survey transects should be spaced to allow for 100 percent visual coverage of the ground surface while walking transects. Typically, the distance between transect lines should be no more than 30-m. To efficiently survey large project areas (over 100 acres), 2 or more surveyors should conduct concurrent surveys.

Burrowing owls are active throughout the day however peaks in activity in the morning and evening make these the best times for conducting surveys (Conway and Simon 2003, Arizona Burrowing Owl Working Group 2007).

Call-broadcast methods should be incorporated into surveys to increase the likelihood of detecting burrowing owls. See Conway and Simon (2003) or Arizona Burrowing Owl Working Group (2007) for appropriate methods).

Surveys must be conducted a maximum of 2 weeks prior to disturbance and are then adequate for a maximum of 2 weeks. Additional surveys will need to be repeated after 2 weeks have elapsed if proposed activities have not been initiated.

Clearance surveys are generally appropriate for those proposed activities where activity disturbance ends with activity completion and effects to burrowing owls are not ongoing (long-term). If effects to owls from the proposed activity are expected to continue to be ongoing and occur over the long-term after activity completion, then additional surveys may be required (see *Pre- and Post-Activity Surveys* below).

Pre- and Post-Activity Surveys – Pre- and post-activity surveys may be required when data is needed to adequately evaluate potential ongoing (long-term) negative effects from proposed activities. If proposed activities are expected to have ongoing (long-term) negative effects after project completion, then multiple years of pre- and post-activity surveys may be required. **Coordinate with BLM and USFWS to determine whether these surveys are needed for the proposed activity.**

Raptors

See separate sections for Bald and Golden Eagles, and Burrowing Owl.

Nest Surveys – Raptor nest surveys will be conducted when a proposed activity would occur during the nesting season and potential impacts to nesting raptors are not mitigated by applying a seasonal restriction or the proposed activity occurs outside the nesting season, but there may be negative effects that impact raptors when they return to their nest(s) the following nesting season.

Nest Survey Methodology – Two nest surveys should be conducted:

1) First survey – conduct aerial or ground survey to determine if nests are present and occupied, and

2) Second survey – conduct a follow-up ground search to confirm species identification and determine nest occupancy and success. **If the second survey is not conducted, any nests found during the first survey are assumed active for the year and appropriate mitigation will be applied.**

Aerial searches are most useful for large raptors with prominent nests. Ground surveys are more useful for smaller, less prominent raptors. Terrain and accessibility can also dictate which method is most useful. NDOW has a raptor nest site protocol and survey form (primarily for aerial surveys) that is available upon request.

The following are important characteristics of adequate nest surveys:

- Surveys will be done whenever nesting habitat is present within or adjacent to the project area. Nesting habitat includes rock outcrops, cliffs, ridges, knolls, stream banks, conifers, aspen groves, riparian woodlands, and man-made structures (e.g., power lines and buildings).
- **Table 1 provides the nesting season dates. These dates may be modified depending on species, weather, elevation, et cetera. Coordinate with the local BLM District on the appropriate nesting season dates prior to beginning surveys.**
- Generally, surveys will be conducted in the project area including a minimum 0.25-mile buffer of the proposed activity, but this buffer may be increased based on raptor species or proposed activity. A 0.25-mile buffer is generally most appropriate for activities involving only hand equipment (i.e., chainsaws), less than 5 acres of disturbance, or restricted to existing roads and trails. For wind energy, surveys are to occur in a 1-mile buffer (see *BLM and/or USFWS Direction* below*).* **Coordinate with the local BLM District and USFWS on the appropriate survey buffer prior to beginning surveys.**
- If breeding behavior is observed or active nests are found, proposed activities will not occur until after young have fledged, nests are abandoned, or after the nesting season ends unless nests are appropriately buffered.
- At least two surveys per nesting season prior to initiation of the proposed activity. One month of elapsed time is required between surveys. If the second survey is not conducted, any nests found during the first survey are assumed active for the year and appropriate mitigation will be applied.
- Optimum weather conditions for surveys are clear, calm days. Nests will not be visited during adverse weather conditions (e.g., extreme hot or cold, rainy or snowy days, or high winds).
- Playback of calls can be a useful survey tool. Ground surveys should include broadcast calls of conspecific vocalizations.
- Aerial surveys of deciduous trees (e.g., aspen and cottonwoods) should be conducted as early as possible in the spring prior to leaf-out.
- Aerial surveys should be flown at slow speeds (30-40 knots; USFWS 2012).
- During surveys, extreme caution should be given to make sure that breeding/nesting/fledging raptors are not disturbed. Monitoring will be conducted from the farthest distance possible that allows the surveyor to determine the nest activity using a spotting scope.
- Nest visits should be as brief as possible.
- Photographs of the nests will be taken to illustrate nest shape, condition, and substrate.
- Status of nesting birds will be recorded. Note whether there are eggs or young in the nest, whether fledged young were observed, or if the adult is incubating/brooding.
- Data will be summarized for project reports in a table format. Tables should include species of raptor, nesting stage, nest type (stick, scrape, or cavity), nest substrate (species of tree, cliff, ground), location (UTM coordinates), and other characteristics (e.g., nest height, nesting material).

Pre- and Post-Activity Surveys – Pre- and post-activity surveys may be required when data is needed to adequately evaluate potential ongoing (long-term) negative effects from proposed activities. If proposed activities are expected to have ongoing (long-term) negative effects after project completion, then multiple years of pre- and post-activity surveys may be required. A Bird and Bat Conservation Strategy (BBCS) may be required (see *BLM and/or USFWS Direction* below). **Coordinate with BLM and USFWS to determine whether these surveys and a BBCS are needed for the proposed activity.**

BLM and/or USFWS Direction

USWFS – **For ground-disturbing activities**, the USFWS recommends that proponents develop a Bird and Bat Conservation Strategy (BBCS; previously known as an Avian Protection Plan [APP]), which indicates a "good faith" effort to conserve migratory birds and address the MBTA. Generally, ground disturbance involves moving or penetrating the ground surface (soil, rocks) or destroying/removing vegetation. Ground disturbance includes mechanical excavation and grading, and manual activities such as driving posts and stakes, drilling, digging, trenching, blasting, and others. A BBCS is not necessary for activities that do not involve any new ground disturbance (i.e., activities restricted to existing roads and trails). Livestock grazing is not considered a ground-disturbing activity. A BBCS is described in the USFWS Land-Based Wind Energy Guidelines (USFWS 2012).

For wind energy, the USFWS Land-Based Wind Energy Guidelines (USFWS 2012) are intended to promote compliance with wildlife laws and regulations including the MBTA and thus recommend developers prepare a project-specific Bird and Bat Conservation Strategy (BBCS). A BBCS is a document or compilation of documents that describes the steps a developer could take or has taken to apply these Guidelines to mitigate for adverse impacts and address the post-construction monitoring efforts the developer intends to undertake. It is a written record of the actions to avoid, minimize, and compensate for potential adverse impacts to migratory birds.

For utility and energy facilities, the USFWS has developed a special collection permit for migratory bird carcass collection. The USFWS requires this salvage permit to collect carcasses as part of monitoring post-construction mortality. The company or operating entity applies and holds the permit, not the BLM.

BLM – **For renewable energy**, per BLM IM NV-2010-063, the USFWS may require a Bird and Bat Conservation Strategy (BBCS; previously referred to as an Avian Protection Plan [APP]) for any project that may take a listed species as part of the biological opinion. BLM is required to have concurrence from the USFWS for a BBCS if it covers threatened or endangered species and the USFWS makes it a condition of the biological opinion.

For wind energy development, per BLM IM NV-2010-024 for wildlife monitoring protocols, raptor nest ground and/or aerial surveys to identify nest sites would be necessary if their habitat exists within the project area (including a 1-mile buffer). Spring and fall migration surveys for raptors should be conducted according to Hawk Watch protocols (Bildstein et al. 2007).

Greater Sage-Grouse

Regulatory Setting – In October 2013, the FWS proposed to list the Bi-State distinct population segment (DPS) of greater sage-grouse (*Centrocercus urophasianus*) as threatened and designate proposed critical

habitat for the species. The Bi-State sage-grouse is now a Proposed Threatened species. In 2010, the FWS announced that listing the greater sage-grouse range-wide under the ESA was warranted, but precluded by higher priorities. As a result, the greater sage-grouse range-wide is a Candidate species for listing under the ESA and a Nevada BLM sensitive species. The FWS is scheduled to make a new listing decision for greater sage-grouse range-wide in 2015.

BLM IMs NV-2013-009 (Bi-State sage-grouse) and 2012-043 (greater sage-grouse range-wide) provide direction on managing sage-grouse and its habitat. **If a project area is in sage-grouse habitat, coordinate with BLM and NDOW to determine if the following surveys are needed.**

Lek Surveys – Lek surveys may be required for ground-disturbing activities or activities that occur during the breeding season (March 1-May 15) within 4 miles of active, pending active, and unknown leks, as defined by NDOW. Conduct surveys during the breeding season (March 1-May 15). Follow NDOW lek survey protocol.

- Active – 2 or more males observed at least twice in the last 5 years
- Pending Active – 2 or more males observed only once in the last 5 years
- Unknown – No other conditions have been met

Searches for New Leks – Searches may be required for ground-disturbing activities. Lek searches should be conducted within 4 miles of the project area. Project areas should be searched from the ground or air (helicopters or fixed-wing aircraft utilizing Forward Looking Infrared (FLIR) technology can be used) from March 1-May 15. If aerial searches are conducted, the search area should be flown on north-south transects moving from the eastern to the western portion of the survey area with lines a maximum of 1km apart. Transects should be flown 100 to 150m above ground level. Special attention should be paid to old lakebeds, stock-watering areas, and other relatively open sites largely surrounded by sagebrush of 15 to 25% cover. Conduct ground searches by driving along roads and stopping every 1km to listen for displaying grouse. On a calm morning, breeding sage-grouse may be heard at a distance of 1.5km.

Winter Surveys – Surveys may be required for ground-disturbing activities or activities that occur during the wintering period (November-February).

1) Within suspected sage-grouse winter use areas, identify likely areas that would support wintering birds. Identify actual sagebrush cover types, topography, aspect, etc. most likely to support sage-grouse during the winter;
2) Within the identified sagebrush areas, develop transects spaced 100 to 300m apart along the length of the habitat areas to count the number of birds using the habitat or document sign in the form of droppings or tracks. Conducting surveys within 72 hours of snowfall can aid with the identification of tracks.
3) Surveys by air are also allowable
   a. Parallel transect lines approximately ¼ mile apart would be set up over the project area and a two-mile buffer zone.
   b. Transects can be flown during daylight hours, preferably with helicopter, or at night utilizing a fixed wing aircraft equipped with Forward Looking Infrared technology.
   c. Helicopter flight height to range from 75-125ft, with an average air speed of 45 mph.
   d. When sage grouse are located, the observer records UTM coordinates for the location using a

handheld GPS unit, and documents the number of individuals present. Tracks can also be documented from the air when conducting surveys using a helicopter.

Noise Monitoring **–** Recent studies suggest that chronic anthropogenic noise contributes to chronic stress and declines in sage-grouse populations (Blickley et al. 2012a, Blickley et al. 2012b). The primary mechanism causing population reductions is not clear. However, it is hypothesized that exposure to anthropogenic noise at leks could have indirect or direct impacts on male fitness by reducing lek attendance, masking important vocalizations, or increasing their susceptibility to predators.

The potential of project-related noise to impact sage-grouse should be evaluated if there is an active, pending active, or unknown status lek within 4 miles of the project boundary, and if noise levels from project activities are likely to exceed 10dB (A weighted) above ambient noise levels during March 1-May 15. This evaluation involves ambient noise collection at the lek and modeling potential noise at an active lek(s) from project activities to determine whether noise is likely to be above the minimum disturbance threshold (10dBA). The minimum disturbance threshold may change as new information becomes available concerning the impacts of noise on sage-grouse.

Ambient acoustic data should be collected either: 1) during the breeding season (March 1-May 15), or 2) within 3 weeks of the breeding season in order to avoid conflict with birds. Data should be collected for a minimum of 7 consecutive days from 1 hour before sunrise until late morning when sage-grouse are most likely to be at leks. Noise data should be collected 1.5 ft. above ground level at the edge of each lek closest to the potential noise source. Sound pressure levels should be recorded at intervals no greater than 5 seconds and recorded at 1/3 octave band intervals across the audible spectrum. Since atmospheric conditions are key noise modeling inputs, weather conditions should also be measured at data collection sites (i.e., temperature, humidity and wind in real time with the sound pressure level). Camouflage monitoring set-ups so that wildlife are not deterred from or artificially attracted to the area.

Acoustic equipment should be capable of collecting critical sound pressure metrics including L_{10}, L_{50}, L_{90}, L_{eq} and L_{max} (intrusive, median, residual, equivalent and maximum sound levels, respectively). To determine baseline ambient levels, A-weighted L_{90} should be used. As a measure of median noise exposure, A-weighted L_{50} should be used.

PaSoftware is available that estimates noise levels from industrial and vehicle sources. Currently, the only BLM requirement is that non-proprietary noise modeling software be used for impact analysis. This provides an opportunity for modeling replication by a third party. Noise modeling software should factor in the effects from weather (primarily wind), atmosphere (temperature, humidity), substrate type (rock, water, and bare earth), vegetation, and topography. Noise modeling software must also be capable of robust outputs including a broad spectrum of frequencies represented, several weightings (A, C, flat) and L_{eq}.
Utilize weather station data to assist in evaluating the noise caused by wind.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (SWWF; *Empidonax traillii extimus*) is an Endangered species. The main cause of population decline is related to riparian habitat degradation. In Nevada, potential populations are relegated primarily to the extreme southern portions of the state along the Muddy and Virgin Rivers, Meadow Valley Wash, and Pahranagat Valley, as well as along the Colorado River (NDOW, pers. comm.).

Coordinate with the USFWS prior to conducting surveys. Permits from the USFWS are required before beginning surveys. Permits require attendance at USFWS-approved protocol training. Instructions for completing SWWF survey reports can be found at the USGS Colorado Plateau web site (http://sbsc.wr.usgs.gov/cprs/research/projects/swwf/cprsmain.asp).

Yellow-Billed Cuckoo (Western U.S. DPS)

The Western U.S. distinct population segment (DPS) of the yellow-billed cuckoo (*Coccyzus americanus*) is a Proposed Threatened species. In western North America, DPS populations have declined primarily as a result of riparian habitat loss and degradation. Preferred nesting habitat is riparian woodland with an understory of dense, scrubby vegetation (Wiggins 2005). They are rare in Nevada; a few recent documented records of this species were recorded in *The Atlas of the Breeding Birds of Nevada* (Floyd et al. 2007), although it is possible that this secretive bird breeds in suitable riparian woodlands throughout the state.

Surveys for yellow-billed cuckoos should be conducted in potential habitat. Coordinate with the USFWS prior to conducting surveys. Instructions for completing surveys are described by Halterman et al. (2009). Halterman et al. describes a specialized protocol, particularly with regard to timeframe. More generalized landbird survey methods often fail to detect cuckoos.

Small Mammals

Bats

Many bats species are Nevada BLM sensitive species (see Appendix A). Bats roost and hibernate in cliffs, rock faces, talus slopes, caves, mine tunnels, adits, buildings, abandoned structures, tree branches, and cavities.

Understand decontamination protocol for white-nose syndrome prior to site entry or handling of bats (see *BLM Direction*).

Habitat Surveys – Any buildings/structures, mine workings, or caves identified from spatial data during completion of the HAF should be externally surveyed to assess condition and determine habitat potential for bats if a proposed project involves any disturbance to these features or bats using these features. All features will be examined, photographed, and GPS locations will be obtained. Proposed activities should avoid any features with bats or the potential for bats. If proposed activities would occur within ¼ mile of features with bats or the potential for bats, then more extensive bat surveys may be required to identify species, population size, season of use, et cetera.

Bat Surveys – Survey methods include live capture with mist nets, acoustic surveys, and techniques using night vision equipment or infrared cameras. Before undertaking a specific survey approach, review standard bat survey protocols outlined in The Revised Nevada Bat Conservation Plan (Bradley et al. 2006) and coordinate with BLM and NDOW. Biological consultants should consider and be prepared to defend their study design concerning the following issues in particular:

- Expertise of survey personnel
- Location of surveys
- Timing, length (i.e., number of hours spent), and frequency of surveys

Permits are required for handling. Permit applications are available at: http://www.ndow.org/uploadedFiles/ndoworg/Content/Forms_and_Resources/Application-Scientific-Collection-Possession-Banding-Permit.pdf.

***BLM Direction* – For wind energy development**, per IM 2010-024 for wildlife monitoring protocols, bat surveys of caverniculous roosting habitat (i.e., mines and caves) is necessary to identify maternity use and/or hibernacula use. Bat capture surveys (i.e., mist nets) at water sources and roosting habitats within/adjacent to the project area would be necessary to supplement long-term acoustic monitoring stations to determine species richness and diversity of the area, as well as insight into seasonal use activity patterns. Surveys should occur within the project area including a 1-mile buffer.

For renewable energy facilities, per BLM IM NV-2010-063, development of an Avian and Bat Protection Plan (ABPP; now known as a Bird and Bat Conservation Strategy [BBCS]) may be developed for wind project at the discretion of the applicant, unless a candidate, threatened, or endangered bat may be affected. In this situation, an ABPP should be prepared and may be required as a condition of the Right-of-Way. A BBCS is described in the USFWS Land-Based Wind Energy Guidelines (USFWS 2012).

For white-nose syndrome (WNS), per BLM IM 2010-181, BLM offices will implement BLM-WNS containment and decontamination procedures to all site entries. The BLM states and district offices apply containment and decontamination procedures for all caves and abandoned mine feature entries. Also refer to the USFWS White-Nose Syndrome Decontamination Protocol available at: http://whitenosesyndrome.org/topics/decontamination.

Pygmy Rabbit

Pygmy rabbit (*Brachylagus idahoensis*) is a Nevada BLM sensitive species. This species is a sagebrush obligate that uses sagebrush for food and shelter throughout the year. While it occurs throughout most of the Great Basin, it exhibits extremely specialized habitat requirements, and thus occupies only a small subset of locations within this range. Pygmy rabbits occur in areas within their broader distribution where there are tall, dense big sagebrush stands and soils sufficiently deep and loose to allow burrowing. Surveys should be focused within these habitat types. Suitable habitat can be recognized by distinctly taller patches of mature sagebrush, which are indicative of deeper soils. Burrows and pellets are excellent indicators of the occurrence of pygmy rabbits (Himes and Drohan 2007). Pygmy rabbits spend the majority of their time close to their burrows resulting in high concentrations of pellets around burrows. Pygmy rabbits are active all year above ground therefore surveys may be conducted at any time of year.

Existing data on locations of known occurrence should be used to screen areas for the presence of suitable habitat. Coordinate with BLM and NDOW to determine whether surveys are needed.

***BLM Direction* – For surveys**, IM NV-2003-064 directs all field offices to survey for pygmy rabbits in relation to all proposed ground disturbing activities, including issuance of rights-of-ways in suitable habitat. Accepted methods for surveys are outlined in a BLM document (Ulmschneider 2008). Recommendations include:

- Surveys will include searches for pygmy rabbits, burrows and pellets.
- In patchy habitat, walk in loops, triangles or a generally meandering line (avoid edges).

- In uniform or extensive patches, walk in straight lines or in a spiral. Spiral transects should start at the center of a search area and spiral out while gradually increasing the diameter of the circle.
- Burrow systems can be widely spaced, and searches should be conducted carefully and methodically before the absence of pygmy rabbits can be confidently determined.
- Record rabbit, burrow and pellet locations in UTMs.

Rodents, Insectivores

Several rodents and insectivores are Nevada BLM sensitive species and they could warrant surveys for ground-disturbing activities (see Appendix A). Coordinate with BLM and NDOW biologists to determine whether surveys are needed.

To determine presence/absence of these small mammals within a project area, review Manley et al. (2006). The primary method recommended by Manley et al. (2006) entails the placing of Sherman live traps along eight transects, each 200m in length, arrayed in a hexagonal pattern. It is recommended that traps are 20m apart and within 2m of habitat features such as logs, burrows, the base of trees, and runways. Trapping should occur over three consecutive days, as a pilot study conducted by Manley et al. (2002) determined that the largest gains for the detection of small mammals occurred within the first three days of trapping.

As stated in Manley et al. (2006), transects are the preferred method, since Pearson and Ruggiero (2003), Read et al. (1988), and Steele et al. (1984) documented more effective detection when using transects over a trapping grid with similar effort. Using a large hexagonal pattern increases the probability of intersecting a variety of habitats/microhabitats containing different species when compared to a trapping grid (Pearson and Ruggiero 2003). Though setting Sherman live traps along transects in a hexagonal pattern is the preferred method, coordinate with BLM and NDOW biologists to determine the adequate transect lengths, spacing between traps, and duration of trapping to determine presence/absence of rodents and insectivores within a project area.

Ungulates

Bighorn Sheep

Bighorn sheep is a Nevada BLM sensitive species. Three subspecies of bighorn sheep (*Ovis canadensis*) occur in Nevada: Rocky Mountain (*O. c. canadensis*), desert (*O. c. nelsoni*), and California (*O. c. californiana)*:

- California bighorn sheep occupy areas north of Interstate 80 in the central and western portions of the state.
- Rocky Mountain bighorn sheep occupy portions of Elko and White Pine counties.
- Desert bighorn sheep occur throughout Nevada south of Interstate 80.

Bighorn sheep habitat is characterized by rugged terrain that includes canyons, gulches, talus cliffs, steep slopes, mountaintops, and river benches.
For projects in occupied bighorn sheep habitat (based on NDOW GIS data), coordinate with BLM and NDOW to determine if survey data on seasonal use and movement corridors within a project area is needed. Field determinations of bighorn sheep presence within a project area should be accomplished through photographs of animals or their sign (e.g. scat, tracks).

For projects that have the potential to physically disturb bighorn sheep (i.e., Special Recreation Permit events), coordinate with NDOW to implement appropriate seasonal restrictions or survey data may be required to show they are not present in the project area during project implementation.

Elk

Elk (*Cervus elaphus*) populations occur in the central, southern, eastern, and northeastern portions of Nevada. More specifically, elk will generally occupy mountain forests and meadows during the summer months and foothills and valley grasslands during the winter months. Also, riparian areas are crucial during the calving period, which generally occurs from mid-May to mid-June.

Elk presence/absence, as well as the identification of seasonal use and movement corridors within a project area if present, should be determined through contact with NDOW and field observations. Field determinations of elk presence within a project area should be accomplished through the noting of sign (e.g. scat, tracks, or foraging) during surveys for other species.

Mule Deer

Although mule deer (*Odocoileus hemionus*) occur in a variety of ecosystems throughout Nevada, there are many similarities in diet and habitat composition among subpopulations. Mule deer are secondary successional species that often prefer vegetation communities resulting from some type of disturbance except areas dominated by cheatgrass (Wasley 2004). High quality habitat is generally characterized by areas of thick brush or trees that provide thermal and protective cover interspersed with more open shrub or grasslands that provide forage.

For projects in mule deer habitat (based on NDOW GIS data), coordinate with BLM and NDOW to determine if survey data on seasonal use and movement corridors within a project area is needed. Field observations of mule deer presence within a project area should be verified via photographs of animals or their sign (e.g. scat, tracks).

Pronghorn

Pronghorn (*Antilocapra americana*) occur throughout Nevada, with the exception being the southernmost part of the state. Habitat selection is influenced by the vegetative height, cover, and community type, as well as the elevation, topography, and distance to water. Vegetation height is important, as pronghorn prefer areas with lower vegetation to provide long-range visibility of predators.

For projects in pronghorn habitat (based on NDOW GIS data), coordinate with BLM and NDOW to determine if survey data on seasonal use and movement corridors within a project area is needed. Field determinations of pronghorn presence within a project area should be accomplished through photographs of animals or their sign (e.g. scat, tracks).

Amphibians

Coordinate with BLM and NDOW to determine if surveys are needed for the following species.

Columbia Spotted Frog (Great Basin DPS)

The Great Basin distinct population segment (DPS) of the Columbia spotted frog (*Rana luteiventris*) is a Candidate species for listing under the ESA and a Nevada BLM sensitive species. In Nevada, Columbia

spotted frogs are currently found in Nye, Elko, and Eureka Counties, typically at elevations between 5600 and 8700 feet. Based on geography, they can be subdivided into three well-defined subpopulations: 1) Jarbidge, Independence and Tuscarora Mountains in Elko and Eureka County; 2) an isolated subpopulation in the Ruby Mountains in Elko County; and 3) an isolated subpopulation in the Toiyabe Range in Nye County.

Mountain Yellow-legged Frog (Northern DPS)

The northern distinct population segment (DPS) of the mountain yellow-legged frog (*Rana muscosa*; populations that occur north of the Tehachapi Mountains) is a Proposed Endangered species. Although this species primarily occurs in California within the Sierra Nevada, there is potential for occurrence in Nevada in Carson City, Douglas, and Washoe Counties.

Relict Leopard Frog

The relict leopard frog *(Lithobates onca*) is a Candidate species for listing under the ESA and a Nevada BLM sensitive species. This species occurs on the border region of Arizona, Nevada, and Utah, USA, mostly below 1,000m asl. It was known from the Virgin and Muddy River drainages and along the Colorado River drainage downstream of its confluence with the Virgin River to Black Canyon below Lake Mead (Bradford et al. 2004).

Reptiles

Banded Gila Monster

The banded Gila monster (*Heloderma suspectum cinctum*) is the subspecies that occurs in Clark, Lincoln, and Nye counties of Nevada. The species is primarily found below 1,525 m (5,000 ft) in elevation in desert wash, spring and riparian areas that occur in rocky landscapes of upland desert scrub habitats. Occasionally, Gila monsters will use gentler terrain of alluvial fans (bajadas).

Consult with NDOW to determine if presence/absence surveys are needed and for survey protocols. NDOW has a gila monster handling protocol available at: http://www.ndow.org/uploadedFiles/ndoworg/Content/public_documents/Nevada_Wildlife/Gila%20Monster%20Status,%20Identification%20and%20Reporting%20Protocol%20for%20Observations.pdf.
A State Special Purpose Permit is required for individuals to handle Gila monsters.

Desert Tortoise

The Mojave population of the desert tortoise (*Gopherus agassizii*) is a Threatened species. For detailed information on the ecology of the tortoise or protocols that have been developed for presence/absence surveys for proposed projects within the range of the desert tortoise, see the USFWS Draft Revised Recovery Plan (USFWS 2010). Consult the Desert Tortoise Recovery Office for information (http://www.fws.gov/nevada/desert_tortoise/dtro/).

Fish

Several federally listed fish species occur in Nevada and several species are Nevada BLM sensitive species (see Appendix A). Fish populations in Nevada are surveyed and monitored by NDOW. If the project area contains perennial water sources with potential fish habitat, consult with USFWS, NDOW, and the BLM to determine if fish populations are known to occur and if surveys are needed to determine presence/absence. USFWS and NDOW will determine the appropriate survey protocols.

Molluscs

Numerous molluscs are listed as Nevada BLM sensitive species and proposed activities with potential effects to aquatic habitat could warrant presence/absence surveys (see Appendix A). Existing data (e.g., Nevada Natural Heritage Program [NNHP] data) on locations of known occurrence should be used to screen areas for the presence of sensitive molluscs. Coordinate with BLM, NDOW, and NNHP to determine if surveys are needed.

Lotic Habitats (greater than 500 feet in length)

IM OC-2011-044 standardized BLM field methods for collection and submission of aquatic macroinvertebrate samples in lotic habitats (wadeable, perennial streams). This IM requires that aquatic macroinvertebrate samples follow sampling outlined by the National Aquatic Monitoring Center (NAMC) at http://www.usu.edu/buglab/Monitoring/monitoringProtocols.cfm. The NAMC protocol is only applicable to wadeable, perennial streams. The NAMC website provides a sampling protocol designed to generate data sufficient to: 1) characterize the status and trend of macroinvertebrate assemblages, and 2) quantify effects of anthropogenic disturbances and/or restoration actions.

Lentic Habitats (and Lotic Habitats less than 500 feet in length)

These habitats exhibit such a high spatial variation in water quality and quantity, landscape setting, and macroinvertebrate assemblages that correlation to other sites does not provide significant insight into the condition of any individual site. Because of this, the National Aquatic Monitoring Center (NAMC) analysis does not apply. The NAMC protocol is only applicable to wadeable, perennial streams. BLM, NDOW, and NAMC should be consulted to determine if general macroinvertebrate collection and analysis is necessary and if a site-specific monitoring plan should be developed. In these cases, a modification of the protocol described in IM OC-2011-044 will be used, but has yet to be developed.

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Appendix A: Habitat Assessment Form (5 Pages)

Common Name	Scientific Name	Status*	BLM District Office	Key Habitat Type (from Nevada WAP)	Potential to Occur In Project Area (Y/N)	Rationale for Occurrence/Non-occurrence	Description of Wildlife Use (year-round, breeding, wintering, migratory/stop over)
BIRDS							
Northern goshawk	*Accipiter gentilis*	SS	BM, Carson, Elko, Ely, Winnemucca				
Golden eagle	*Aquila chrysaetos*	SS	Statewide				
Burrowing owl	*Athene cunicularia*	SS	Statewide				
Ferruginous hawk	*Buteo regalis*	SS	Statewide				
Swainson's hawk	*Buteo swainsoni*	SS	Statewide				
Greater sage-grouse (rangewide)	*Centrocercus urophasianus*	C, SS	BM, Carson, Elko, Ely, Winnemucca				
Greater sage-grouse (Bi-State DPS)	*Centrocercus urophasianus*	PT, SS	BM, Carson,				
Snowy plover	*Charadrius alexandrinus*	SS	Statewide				
Yuma clapper rail	*Rallus longirostris yumanensis*	E, SS	Southern				
Lewis' woodpecker	*Melanerpes lewis*	SS	BM, Carson, Elko, Ely, Winnemucca				
Yellow-billed cuckoo (Western U.S. DPS)	*Coccyzus americanus*	C, SS	Carson, Ely				
Southwestern willow flycatcher	*Empidonax traillii extimus*	E, SS	Ely				
Peregrine falcon	*Falco peregrinus*	SS	Statewide				
Pinyon jay	*Gymnorhinus cyanocephalus*	SS	Statewide				
Bald eagle	*Haliaeetus leucocephalus*	SS	Statewide				
Loggerhead shrike	*Lanius ludovicianus*	SS	Statewide				
Black rosy-finch	*Leucosticte atrata*	SS	BM, Elko, Ely, Winnemucca				
Sage thrasher	*Oreoscoptes montanus*	SS	BM, Carson, Elko, Ely, Winnemucca				
Le Conte’s thrasher	*Toxostoma lecontei*	SS	Southern				
Bendire’s thrasher	*Toxostma bendirei*	SS	Southern				
Brewer's sparrow	*Spizella breweri*	SS	Statewide				
MAMMALS							
Pallid bat	*Antrozous pallidus*	SS	Statewide				

Common Name	Scientific Name	Status*	BLM District Office	Key Habitat Type (from Nevada WAP)	Potential to Occur In Project Area (Y/N)	Rationale for Occurrence/Non-occurrence	Description of Wildlife Use (year-round, breeding, wintering, migratory/stop over)
Pygmy rabbit	*Brachylagus idahoensis*	SS	BM, Carson, Elko, Ely, Winnemucca				
Elk	*Cervus elaphus*						
Townsend's big-eared bat	*Corynorhinus townsendii*	SS	Statewide				
Big brown bat	*Eptesicus fuscus*	SS	Statewide				
Spotted bat	*Euderma maculatum*	SS	BM, Carson, Elko, Ely, Winnemucca				
Greater western mastiff bat	*Eumops perotis californicus*	SS	Southern				
Silver-haired bat	*Lasionycteris noctivagans*	SS	Statewide				
Western red bat	*Lasiurus blossevillii*	SS	BM, Carson, Elko, Ely, Southern				
Hoary bat	*Lasiurus cinereus*	SS	Statewide				
California leaf-nosed bat	*Macrotos californicus*	SS	Southern				
Dark kangaroo mouse	*Microdipodops megacephalus*	SS	Statewide				
Pale kangaroo mouse	*Microdipodops pallidus*	SS	BM, Carson Winnemucca				
Pahranagat Valley montane vole	*Microtus montanus focosus*	SS	Ely				
California myotis	*Myotis californicus*	SS	Statewide				
Western small-footed myotis	*Myotis ciliolabrum*	SS	Statewide				
Long-eared myotis	*Myotis evotis*	SS	Statewide				
Little brown myotis	*Myotis lucifugus*	SS	BM, Carson, Elko, Ely, Winnemucca				
Fringed myotis	*Myotis thysanodes*	SS	Statewide				
Cave myotis	*Myotis velifer*	SS	Southern				
Long-legged myotis	*Myotis volans*	SS	Statewide				
Yuma myotis	*Myotis yumanensis*	SS	Carson, Elko, Ely				
Big free-tailed bat	*Nyctiniomops macrotis*	SS	Southern				
Allen’s big-eared bat	*Odionycteris phyllotis*	SS	Southern				
Western pipistrelle	*Pipistrellus Hesperus*	SS	Statewide				
Preble's shrew	*Sorex preblei*	SS	Elko				
Brazilian free-tailed bat	*Tadarida brasiliensis*	SS	Statewide				
Fish Spring pocket gopher	*Thomomys bottae abstrusus*	SS	BM				
San Antonio pocket gopher	*Thomomys bottae curatus*	SS	BM				

Common Name	Scientific Name	Status*	BLM District Office	Key Habitat Type (from Nevada WAP)	Potential to Occur In Project Area (Y/N)	Rationale for Occurrence/Non-occurrence	Description of Wildlife Use (year-round, breeding, wintering, migratory/stop over)
AMPHIBIANS							
Columbia spotted frog (Great Basin DPS)	*Rana luteiventris*	C, SS	BM, Elko, Winnemucca				
Mountain yellow-legged frog (Northern DPS)	*Rana muscosa*	PE, SS	Carson				
Relict leopard frog	*Rana onca*	C, SS	Ely, Southern				
REPTILES							
Desert tortoise	*Gopherus agassizii*	T, SS	BM, Ely, Southern				
Banded Gila monster	*Heloderma suspectum cinctum*	SS	Ely, Southern				
FISH							
Wall Canyon sucker	*Catostomus* sp 1	SS	Carson				
Meadow Valley Wash desert sucker	*Catostomus clarkia*	SS	Ely, Southern				
Cui-ui	*Chasmistes cujus*	E	Carson				
White River Springfish	*Crenichthys baileyi baileyi*	E	Ely				
Hiko White River springfish	*Crenichthys baileyi grandis*	E	Carson				
Railroad Valley springfish	*Crenichthys nevadae*	T	BM, Carson, Ely				
Devils Hole pupfish	*Cyrpinodon diabolis*	E	Southern				
Ash Meadows Amargosa pupfish	*Crypinodon nevadensis mionectes*	E	Southern				
Warm Springs pupfish	*Cyrpinodon nevadensis pectoralis*	E	Southern				
Pahrump poolfish	*Empetrichthys latos*	E	Ely, Southern				
Desert dace	*Eremichthys acros*	T	Winnemucca				
Independence Valley tui chub	*Gila bicolor isolata*	SS	Ely				
Fish Lake Valley tui chub	*Gila bicolor ssp. 4*	SS	BM				
Hot Creek Valley tui chub	*Gila bicolor ssp.5*	SS	BM				
Railroad Valley tui chub	*Gila bicolor ssp. 7*	SS	BM, Ely				
Independence Valley tui chub	*Gila bicolor isolata*	SS	Elko				
Newark Valley tui chub	*Gila bicolor newarkensis*	SS	Elko, Ely				
Bonytail chub	*Gila elegans*	E	Ely, Southern				
Pahranagat roundtail chub	*Gila robusta jorndani*	E	Ely				
Virgin River chub (Muddy River pop.)	*Gila seminude pop. 2*	E	Ely, Southern				
White River spindedace	*Lepidomeda albivalis*	E	Ely				
Northern leatherside chub	*Lepidomeda copei*	SS	Elko				

Common Name	Scientific Name	Status*	BLM District Office	Key Habitat Type (from Nevada WAP)	Potential to Occur In Project Area (Y/N)	Rationale for Occurrence/Non-occurrence	Description of Wildlife Use (year-round, breeding, wintering, migratory/stop over)
Big Spring spinedace	*Lepidomeda mollispinis pratensis*	T	Ely				
Moapa dace	*Moapa coriacea*	E	Ely, Southern				
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	T	BM, Carson, Elko, Winnemucca				
Bonneville cutthroat trout	*Oncorhynchus clarkia utah*	SS	Ely				
Inland Columbia Basin redband trout	*Oncorhynchus mykiss gairdneri*	SS	Elko, Winnemucca				
Woundfin	*Plagopterus argentissimus*	E	Southern				
Relict dace	*Relictus solitarius*	SS	Ely				
Monitor Valley speckled dace	*Rhinichthys osculus spp. 5*	SS	BM				
Oasis Valley speckled dace	*Rhinichthys osculus spp. 6*	SS	Southern				
White River speckled dace	*Rhinichthys osculus spp 7*	SS	Ely				
Meadow Valley speckled dace	*Rhinichthys osculus ssp 11*	SS	Ely, Southern				
Independence Valley speckled dace	*Rhinichthys osculus lethoporus*	E	Elko				
Clover Valley speckled dace	*Rhinichthys osculusoligoporus*	E	Elko				
Moapa speckled dace	*Rhinichthys osculus moapae*	SS	Southern				
Ash Meadows speckled dace	*Rhinichthys osculus nevadensis*	E	Southern				
Pahranagat speckled dace	*Rhinichthys osculus velifer*	SS	Ely				
Bull trout	*Salvelinus confluentus*	T	Elko				
Razorback sucker	*Xyrauchen texanus*	E	Southern				
MOLLUSCS							
Transverse gland pyrg	*Pyrgulopsis cruciglans*	SS	Ely				
Crystal springsnail	*Pyrgulopsis crystalis*	SS	Southern				
Spring Mountains pyrg	*Pyrgulopsis deaconi*	SS	Southern				
Dixie Valley pyrg	*Pyrgulopsis dixensis*	SS	BM, Winnemucca				
Ash Meadows pebblesnail	*Pyrgulopsis erythropoma*	SS	Southern				
Fairbanks springsnail	*Pyrgulopsis fairbanksensis*	SS	Southern				
Landyes pyrg	*Pyrgulopsis landyei*	SS	Ely				
Squat mud meadows pyrg	*Pyrgulopsis limaria*	SS	Winnemucca				
Pahranagat pebblesnail	*Pyrgulopsis merriami*	SS	Ely				
Oasis Valley pyrg	*Pyrgulopsis micrococcus*	SS	BM				
Northern soldier meadow pyrg	*Pyrgulopsis militaris*	SS	Winnemucca				

Common Name	Scientific Name	Status*	BLM District Office	Key Habitat Type (from Nevada WAP)	Potential to Occur In Project Area (Y/N)	Rationale for Occurrence/Non-occurrence	Description of Wildlife Use (year-round, breeding, wintering, migratory/stop over)
Elongate mud meadows springsnail	*Pyrugulopsis notidicola*	C, SS	Winnemucca				
Sub-globose Steptoe ranch pyrg	*Pyrgulopsis orbiculata*	SS	Ely				
Bifid duct pyrg	*Pyrgulopsis peculiaris*	SS	Ely				
Ovate Cain Spring pyrg	*Pyrgulopsis pictilis*	SS	Carson				
Median gland Nevada pyrg	*Pyrgulopsis pisteri*	SS	Southern				
Flat-topped Steptoe pyrg	*Pyrgulopsis planulata*	SS	Ely				
Northern Steptoe pyrg	*Pyrgulopsis serrata*	SS	Ely				
Southern soldier meadow pyrg	*Pyrgulopsis umbilicata*	SS	Winnemucca				
Southeast Nevada pyrg	*Pyrgulopsis turbatrix*	SS	Southern				
Duckwater Warm Springs pyrg	*Pyrgulopsis villacampae*	SS	Elko, Ely				
Vinyards and Humboldt pyrg	*Pyrgulopsis vinyardi*	SS	BM, Elko				
Wong's pyrg	*Pyrgulopsis wongi*	SS	BM, Carson Winnemucca				
Grated tryonia	*Tryonia clathrata*	SS	Elko				
Sportinggoods tryonia	*Tryonia angulata*	SS	Southern				
Point of Rocks tryonia	*Tryonia elata*	SS	Southern				
Minute tryonia	*Tryonia ericae*	SS	Southern				
Amargosa tryonia	*Tryonia variegata*	SS	Southern				

***E** = Endangered
T = Threatened
PE = Proposed Endangered
PT = Proposed Threatened
C = Candidate for Listing
SS = Nevada BLM Sensitive Species

Appendix B: Wildlife Survey Report Template

Project Name:
Legal Location:
Applicant:
Consultant:
Contact Information:

1. **Introduction**
    a. Description of the proposed activity and the project area
    b. Species surveyed (use HAF to include rationale for why the species were or were not surveyed)
    c. Objectives of survey (e.g., presence/absence, abundance)

2. **Methods**
    a. Description of survey protocols
    b. Rationale for the routes selected and explanation why surveys did not cover certain areas
    c. Dates of surveys
    d. Survey effort

3. **Results**
    a. Report survey results for each species
    b. Locations where species or their sign were observed

4. **Discussion –** Compare survey results to other studies

5. **Other Materials** (electronic copies are preferred)
    a. HAF
    b. Completed data forms and/or copies of field notes
    c. Photos of survey area and wildlife species and/or sign
    d. Maps
    e. Shapefiles and metadata

Exhibit 7. Updated Eagle Nest Survey Protocol (USFWS 2020)

Updated Eagle Nest Survey Protocol

U.S. Fish and Wildlife Service (Service) protocol for data collection to support an eagle incidental take permit application recommends surveys for occupied nesting territories be conducted potentially out to 10 miles around the perimeter of the area where take may occur (U.S. Fish and Wildlife Service 2013). The purpose of these surveys is to identify nesting pairs of eagles that might be disturbed or subject to potential lethal take by the activity associated with the permit request. Although the existing protocol recommends use of local information to inform more appropriate distances for surveys in areas of high eagle nesting density, application of this guidance in practice has proven difficult. In the years since the guidance was developed, the Service and collaborators have deployed satellite transmitters on over 700 golden eagles, many of which subsequently bred. The data from satellite-tagged breeding golden eagles provides new information on the ranging behavior of golden eagles around their nest sites. These data provide new quantitative information about the distance from nests at which risk of take becomes unlikely.

The Service conducted a preliminary analysis of satellite telemetry data for 101 breeding adult golden eagles from across North America to determine whether the existing nest survey guidance was appropriate, or warranted modification. The data set includes information from 55 breeding males and 46 breeding female eagles, 87 of which were tracked across >1 breeding season. Data from eagles that were not associated with breeding territories was excluded from the analysis. We computed distances between each eagle location in the data set and the geometric center of the individual's locations (likely the approximate nest location). We removed a few additional outlier locations, those in the 99^{th} quantile of the distribution.

Based on the untransformed data, territorial breeding golden eagles appear to seldom range further than 3 km from their territory centers (Figure 1), and this pattern was evident for both males and females in nearly all geographic regions examined (Table 1). This is similar to the conclusion reached by Watson et al. (2014) in a more localized study of ranging behavior of satellite-tagged golden eagles. Available data from the literature suggest that bald eagle ranging behavior around nests is comparable, if not more constrained (Watson 2002, Smith et al. 2017). Moreover, recent studies have shown that bald eagle ranging behavior around communal roosts is such that a buffer distance of 2 miles (~3.2 km) would provide substantial protection for roosting eagles, as well as those moving into and out of roosts (Watts and Turrin 2017).

Considering all of this information, and in keeping with the Service's policy of adopting a risk-averse position with regard to eagle management, the Service believes that eagle nest surveys out to 2 miles from the boundary of the area associated with an incidental take permit will provide sufficient information to evaluate project impacts to nearby nesting eagles (in conjunction with eagle exposure information from within the project footprint, when required). This distance corresponds to the 85^{th} quantile of the ranging distribution of satellite-tagged golden eagles in temperate North America, and appears to be sufficiently protective of bald eagles as well. With the release of this document, the Service revises its nest survey protocol to reflect this updated information.

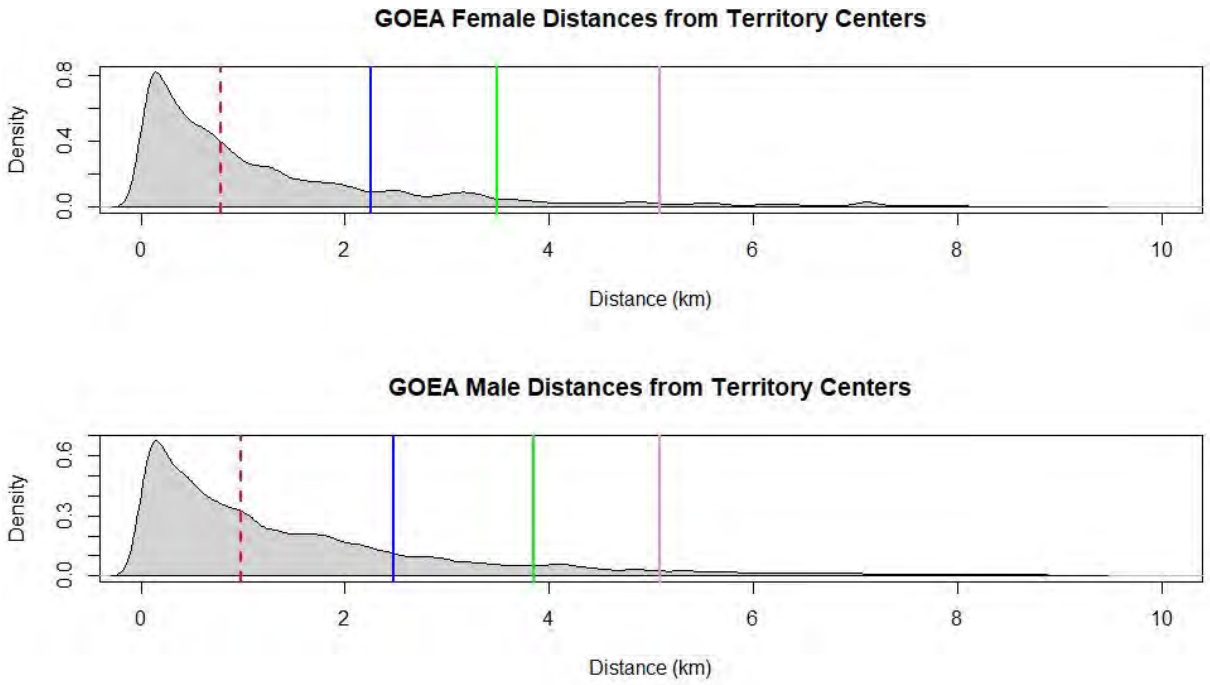

Figure 1. Density plots of distances from territory centers for 55 breeding male and 46 breeding female satellite-tagged golden eagles across the western United States. The dashed red line is the median, blue the 80th, green the 90th, and purple the 95th quantiles.

Table 1. Sample sizes and quantiles of the distance-ranging distributions for 55 breeding male and 46 breeding female golden eagles equipped with satellite transmitters. Distances are in untransformed units of km from territory centers. Ecosystem categories are based on Level 1 Environmental Protection Agency (EPA) Ecoregions (https://www.epa.gov/eco-research/ecoregions-north-america).

			Quantile (km)				
Sex	**Pooled L1 Ecoregions**	**n**	**Q50**	**Q80**	**Q85**	**O90**	**Q95**
F	Arctic	16960	0.70	3.75	4.69	5.80	6.97
F	Great Plains	42748	0.78	2.07	2.53	2.99	3.77
F	Mediterranean California	24343	0.62	1.63	1.94	2.49	4.03
F	North American Deserts	56082	0.91	3.27	4.19	5.42	7.11
F	Northwestern Forested Mountains	57191	0.81	1.91	2.26	2.82	3.82
F	Pooled Female	197324	0.79	2.37	2.98	3.70	5.56
M	Arctic	2048	2.05	4.76	5.13	5.47	6.25
M	Great Plains	77944	1.10	2.47	3.02	4.02	6.24
M	Mediterranean California	30967	1.57	2.67	2.99	3.81	5.27
M	North American Deserts	111097	0.75	2.28	2.78	3.61	4.51
M	Northwestern Forested Mountains	68413	0.97	3.14	3.81	4.71	6.37
M	Pooled Male	290469	1.00	2.57	3.15	4.04	5.50
	Pooled Overall	487793	0.91	2.49	3.07	3.93	5.54

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Exhibit 8. Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations

Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations

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Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations

Table of Contents:

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I. Purpose

This document identifies the minimum inventory and monitoring effort recommended for determining and evaluating potential Golden Eagle (*Aquila chrysaetos canadensis*) use of habitat including nest sites, roosts, and territories, as well as the rationale for identifying and evaluating foraging locations during breeding and non-breeding periods. It also outlines the minimum monitoring techniques to ascertain occupancy and reproductive success at territories. These field efforts are the mutual responsibility of agencies authorizing activities and their permittees (i.e. action agency; see Glossary). They are essential components for avoiding and minimizing disturbance and other kinds of take, including lethal take, and are a necessary component of short and long-term site specific monitoring and management of local Golden Eagles and regional Golden Eagle populations. The data gathered will provide information on the baseline circumstances for evaluation of permit applications and foundation for permit conditions, as well as assist planners so they may conduct informed impact analyses and mitigation during the National Environmental Policy Act (NEPA) process. Data collected via this effort will also help:

1. Determine the fate and reproductive trends of regional nesting populations via collating information from observed territories;
2. Document and list historical and unsurveyed habitat for future analysis to assist in determining local and regional population trajectories;
3. Provide information to document whether local Golden Eagle conservation efforts are meeting goals for improvements in the status of the species; and
4. Provide a foundation for evaluation of whether and which activities or conditions may be affecting Golden Eagles.

II. Background

Golden Eagles are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (Eagle Act), both of which prohibit take. Take means *pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest,* or *disturb*. When the Bald Eagle (*Haliaeetus leucocephalus*) was delisted under the Endangered Species Act (ESA), and in order to improve management of both species of eagles under the Eagle Act, the U.S. Fish and Wildlife Service (Service) undertook a series of management actions, including:

- **Codifying a regulatory definition of "disturb"** under the Eagle Act (see 72 FR 31132, June 5, 2007). *Disturb* means to agitate or bother a Bald Eagle or a Golden Eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest

abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

- **Proposing permit regulations** to (1) Create a new permit type to authorize take of Bald Eagles and Golden Eagles that is associated with, but not the purpose of, the activity; and (2) Create a second new permit type to authorize purposeful take of eagle nests that pose a threat to human or eagle safety (subsequently broadened to accommodate additional circumstances). The regulations were finalized on September 11, 2009 (74 FR 43686).

Summary of the new regulations.

Permits issued under 50 CFR § 22.26 authorize take of Bald Eagles and Golden Eagles, where the take is associated with, but not the purpose of the activity, and cannot practicably be avoided. Most take authorized under this section will be in the form of disturbance; however, permits may authorize lethal take that results from, but is not the purpose of, an otherwise lawful activity. Purposeful take will not be authorized under § 22.26.

The second new permit regulation, at 50 CFR 22.27, establishes permits for removing eagle nests where (1) necessary to alleviate a safety hazard to people or eagles, (2) necessary to ensure public health and safety, (3) the nest prevents the use of a pre-existing human-engineered structure, or (4) the activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests during the non-breeding season may be taken, except in the case of safety emergencies.

Regulations under § 22.27 authorize removal and/or relocation of active and inactive eagle nests in cases where genuine safety concerns for people, eagles, or both, necessitate the take. Examples include: (1) a nest tree that appears likely to topple onto a residence; (2) at airports to avoid collisions between eagles and aircraft; and (3) to relocate a nest built within a reservoir that will be flooded.

Both regulations are provided for by the Eagle Act which gives the Secretary of the Interior the authority to permit the limited take of Bald Eagles and Golden Eagles "for the protection of... other interests in any particular locality." Additionally, both new regulations:

- Are applicable to Golden Eagles as well as Bald Eagles.
- Authorize take only where it is compatible with the preservation of the eagle. For purposes of these regulations, "compatible with the preservation of the Bald Eagle and the Golden Eagle" means consistent with the goal of stable or increase of breeding populations.
- Authorize take only where it cannot practicably be avoided.

- Include provisions for programmatic take. Programmatic take (take that is recurring and not in a specific, identifiable timeframe and/or location) will be authorized only where it is unavoidable despite implementation of comprehensive measures developed in cooperation with the Service to reduce the take below current levels.

Additional needs for Golden Eagle information and evaluation.

As part of an adaptive management approach to the permits and eagle management, the Service will assess, at least every five years, overall population trends along with annual report data from permittees and other information to assess how likely future activities are to result in the loss of one or more eagles, a decrease in productivity of Golden Eagles, and/or the permanent loss of a nest site, territory, or important foraging area. Therefore, implementation of the new permit regulations will entail requirements for cumulative effects analyses and identifying the impacts of an activity. We include them here to provide the context and framework for the protocols and recommendations in this document.

Cumulative effect considerations.

Whether the take is compatible with eagle preservation includes consideration of the cumulative effects of other permitted take and additional factors affecting eagle populations. Cumulative effects are defined as: *"the incremental environmental impact or effect of the proposed action, together with impacts of past, present, and reasonably foreseeable future actions"* (50 CFR 22.3). Numerous relatively minor disruptions to eagle behaviors from multiple activities, even if spatially or temporally distributed, may lead to disturbance that would not have resulted from fewer or more carefully sited activities. The accumulation of multiple land development projects or siting of multiple infrastructures that may be hazardous to eagles can cumulatively reduce the availability of alternative sites suitable for breeding, feeding, or sheltering, resulting in a greater than additive risk of take to eagles.

To ensure that impacts are not concentrated in particular localities to the detriment of locally-important eagle populations, cumulative effects need to be considered at the population management level—*Service Regions* for Bald Eagles and *Bird Conservation Regions* for Golden Eagles—and, especially for project-specific analyses, at local area population levels (the population within the average natal dispersal distance of the nest or nests under consideration). Eagle take that is concentrated in particular areas can lead to effects on the larger management population because 1) disproportionate take in local populations where breeding pairs are 'high' producers may reduce the overall productivity of the larger population; and 2) when portions of the management population become isolated from each other the productivity of the overall management population may decrease.

Identifying the Impacts of the Activity

The applicant for an Eagle Act permit (who can be a project proponent or the agency preparing the NEPA), has four subtasks to determine the likely effects of a project or activity on eagles:

a. Collection and synthesis of biological data. The applicant is responsible for providing up-to-date biological information about eagles that breed, feed, shelter, and/or migrate in the vicinity of the activity that may potentially be affected by the proposed activity. Biological information can include locations and distribution of nests, delineation of territories, prey base, general composition and relative abundance, and productivity data.

b. Identifying activities that are likely to result in take. As part of the permit application, the applicant must include a complete description of the actions that: (1) are likely to result in eagle take, and (2) for which the applicant or landowner has some form of control. For most applications, the activity will be specific and well-defined (e.g., home construction; water use development) or land use activity (e.g., forestry). For larger-scale permits, each applicant will need to determine the extent of impacts to include in the permit authorization and, if necessary, which ones to exclude.

c. Avoidance and minimization measures. An application for a § 22.26 permit must document the measures to which the applicant will commit to avoid and minimize the impacts to eagles to the maximum degree practicable.

d. Quantifying the anticipated take. The take authorized under a permit will depend on a variety of factors, including: (1) the number of eagles that breed, feed, shelter, and or migrate within the activity area, (2) the degree to which the eagles depend on that area for breeding, feeding, or sheltering, or migration, and thus are more likely to be present and affected, (3) the potential of that type of activity in general to take eagles, (4) the scale of the activity, and (5) the measures the applicant will undertake to avoid and minimize the take.

Federal agencies have additional responsibilities to Golden Eagles under Executive Order 13186 (66 FR 3853, January 17, 2001), which reinstated the responsibilities of Federal Agencies to comply with the Migratory Bird Treaty Act of 1918. The Executive Order establishes a process for Federal Agencies to conserve migratory birds by avoiding or minimizing unintentional take and taking actions that benefit species to the extent practicable. Agencies are expected to take reasonable steps that may include restoring and enhancing habitat. Environmental analyses of Federal actions required by NEPA or other environmental review processes must evaluate the effects of actions and Federal agency plans on migratory birds, including Golden Eagles.

Golden Eagle populations are believed to be declining throughout their range in the contiguous United States (Harlow and Bloom 1989, Kochert and Steenhof 2002, Kochert et al. 2002, Good et al. 2007, Farmer et al. 2008, Smith et al. 2008, 74 FR 46836-46879). The Service has modeled current data (USFWS 2009, Appendix C), employing Moffat's equilibrium (Hunt 1998) and Millsap and Allen's (2006) analysis of anthropogenic demographic removal, and estimated that the floating (non-breeding and surplus) component of the Golden Eagle population in some areas may be limited at this time. Data from the Western EcoSystems Technology Inc. surveys from 2006 through 2009 suggest a decline since 2006 in the total Golden Eagle population within the area covered by the surveys (Neilson et al. 2010, USFWS 2009, Appendix C). Significant Golden Eagle breeding failures have been reported in some areas of the southwestern United States (WRI 2009), and declines in counts of migrating Golden Eagles have been reported in most areas in the western United States (Farmer et al. 2008, Smith et al. 2008), although it is unclear if the latter is linked to a decrease in the number of eagles.

III. Management Need

Prior to initiating inventory and monitoring efforts, land management agencies and/or proponents of land use activities should first assess all existing recent and historical data available on eagles, including their nests, reproductive activity and chronologies, natal dispersal, pertinent data from VHF and satellite telemetry, winter roosts, migration corridors, and foraging habitats contained by and 4 - 10 + miles of areas slated for development or authorizations for increased human activity. This background search of available information may yield few data, but is necessary to alert project proponents and regulatory staff about data gaps, and existing knowledge of Golden Eagles for that area. Inventory, monitoring, and research activities may then be identified and funded to fill in site specific information gaps to avoid take of Golden Eagles. Specific recommendations for the number of years needed for baseline data and measures to avoid take should be developed in coordination with the Service, and, to reduce redundancy between management and permitting requirements, consistent with permit requirements outlined in the Draft Implementation Guidelines for the new rules (expected fall 2010).

Projects in Golden Eagle breeding home ranges on federal, state, and private land possibly will have direct, indirect, and cumulative effects associated with or exacerbated by, factors such as: recreation disturbance, electrocution, urbanization, illegal shooting, invasive species altering prey densities, lead poisoning, other contaminants, climate change, and prolonged drought which affects predator and prey abundance and distribution. In many cases, existing data may not be adequate for NEPA, planning, or permitting purposes. Therefore, inventory and subsequent monitoring of Golden Eagles and components of their habitats are important to 1) develop a baseline prior to project planning and prior to project development in Golden

Eagle habitat, 2) analyze impacts to the species, 3) continue to evaluate and report on the effects of the action and mitigation on Golden Eagles, 4) essential to adaptive management approaches, and 5) provide information that may be required for permits.

Project design, type, and siting of project footprint and infrastructure are critical to avoid disturbance and take of Golden Eagles. In the Final Environmental Assessment on the rule and in the draft Implementation Guidance, the Service recommended that when planning locations of infrastructure and project boundaries, action agencies and project proponents consider life-history components such as productivity, age-class survival, dispersal, migration, winter-concentration behavior, and foraging behavior during breeding and non-breeding seasons to avoid lethal take. The Service recommends use of the best available or gathered information applicable to the location of the project or plan, but also encourages efforts to conduct further research. For permitting purposes however, and to determine the likelihood and magnitude of take, as well as effectiveness of mitigation, monitoring will need to yield productivity information.

Note: This document does not address site specific observations for transitory or wintering eagles; these protocols will be forthcoming. Although the life history for transitory and wintering eagles is not discussed at length here, that does not imply a lack importance for site-specific observations from the Service's perspective. The document provides general recommendations for factors to consider outside nesting, until more specific protocols are developed.

IV. Basic Golden Eagle Ecology

This account is not intended as a compendium of Golden Eagle natural history, biology, ethology, or ecology; please refer to Watson (1997), Palmer (1988) and Kochert et al. (2002) for more detailed information.

Where they exist, Golden Eagles are an upper-trophic aerial predator, and eat small to mid-sized reptiles, birds, and mammals up to the size of mule deer fawns and coyote pups (Bloom and Hawks 1982). They also are known to scavenge and utilize carrion (Kochert et al. 2002).

Golden Eagles nest in high densities in open and semi-open habitat, but also may nest at lower densities in coniferous habitat when open space is available, (e. g. fire breaks, clear-cuts, burned areas, pasture-land, etc.). They can be found from the tundra, through grasslands, woodland-brushlands, and forested habitat, south to arid deserts, including Death Valley, California (Kochert et al. 2002). Historically, Golden Eagles bred in the Plains and Great Lake states. Golden Eagles currently breed in and near much of the available open habitat in North America west of the 100th Meridian, as well as in eastern United States in the northern Appalachian Mountains (Palmer 1988, Kochert et al. 2002). The Lee and Spofford (1990) review

of the literature for the eastern portion of the United States suggested historical nesting Golden Eagles south of New York in the Appalachians was unlikely. Nesting of introduced Golden Eagles has been reported in Tennessee and northwestern Georgia (Kochert et al. 2002), but we do not know if those territories are still extant.

A nesting territory for the purpose of this monitoring protocol is an area that contains, or historically contained, one or more nests within the home range of a mated pair. It is a confined locality where nests are found, usually in successive years, and where no more than one pair is known to have bred at one time (Steenhof and Newton 2007).

Golden Eagles avoid nesting near urban habitat and do not generally nest in densely forested habitat. Individuals will occasionally nest near semi-urban areas where housing density is low and in farmland habitat; however Golden Eagles have been noted to be sensitive to some forms of anthropogenic presence (Palmer 1988). Steidl et al. (1993) found when observers were camped 400 meters from nests of Golden Eagles, adults spent less time near their nests, fed their juveniles less frequently, and fed themselves and their juveniles up to 67% less food than when observers were camped 800 meters from nests. In studies of Golden Eagle populations in the southwest (New Mexico and Texas) and the Front Range of the Rocky Mountains (New Mexico, Colorado and Wyoming), Boeker and Ray (1971) reported that human disturbance accounted for at least 85% of all known nest losses. Breeding adults are sometimes flushed from the nest by recreational climbers and researchers, sometimes resulting in the loss of the eggs or juveniles due to nest abandonment, exposure of juveniles or eggs to the elements, collapse of the nest, eggs being knocked from the nest by startled adults, or juveniles fledging prematurely. However, Golden Eagles rarely flushed from the nest during close approaches by fixed-wing aircraft and helicopters during various surveys in Montana, Idaho, and Alaska (Kochert et al. 2002).

Golden Eagles nest on cliffs, in the upper one third of deciduous and coniferous trees, or on artificial structures (windmills, electricity transmission towers, artificial nesting platforms, etc.; Phillips and Beske 1990, Kochert et al. 2002). Golden Eagles build nests on cliffs or in the largest trees of forested stands that often afford an unobstructed view of the surrounding habitat (Beecham 1970, Menkens and Anderson 1987). Usually, sticks and soft material are added to existing nests, or new nests are constructed to create a strong, flat or bowl shaped platform for nesting (Palmer 1988, Watson 1997, Kochert et al. 2002). Sometimes Golden Eagle will decorate multiple nests in a single year; continuing to do so until they lay eggs in the selected nest. The completed nest structure(s) can vary from large and multi-layered; or a small augmentation of sticks in caves with little material other than extant detritus (Ellis et al. 2009). Most Golden Eagle territories have up to 6 nests, but they have been found to contain up to 14 nests (Palmer 1988, Watson 1997, Kochert et al. 2002).

Onset of courtship and nesting chronology

Courtship for Golden Eagles involves stick-carrying, display flights, and vocalization (Ellis 1979, Kochert et al. 2002). Golden Eagles partake in undulating flight, however undulating flight has been observed year-round and is thought to be associated more with aggression and territory defense than with courtship (Newton 1979, Harmata 1982, Collopy and Edwards 1989, Watson 1997).

Nesting chronologies vary however there are some generalities. In California and in Texas, courtship at territories start in mid to late December (Palmer 1988, Hunt et al. 1997, D. Bittner pers. com); in Texas eggs have been detected as early as November (Olberholser and Kincaid 1974, *in lit.*). In Utah, courtship can commence in January. In northern tier states at upper latitudes and higher elevation sites, egg laying can occur as early as February and March, before late winter snows and storms have abated (Palmer 1988).

Golden Eagles lay 1 to 4 eggs, with 4 egg clutches rare. Most nests have 2 eggs. The laying interval between eggs ranges between 3 to 5 days. Incubation commences as soon as the first egg is laid, and hatching is asynchronous and can begin as early as late January in southern California (Dixon 1937, Hickman 1968), mid April to late May in southwest Idaho (Kochert et al. 2002) and late March–early May in central and northern Alaska (McIntyre 1995, Young et al. 1995; Fig. 3). In Texas, eggs have been noted from November to June (Oberholser and Kincaid 1974, in lit.). In the northeast United States, eggs have been laid in March/April (Palmer 1988). For more detail, please refer to Kochert et al. (2002, Appendix 2).

Migration and Wintering

Golden Eagles will migrate from the Canadian provinces and northern tier and northeastern states to areas that are milder in the winter and/or may have less snow cover. Wintering Golden Eagles have been noted in all states in the continental U.S. (Wheeler 2003, 2007). Some segments of the population can be found near their nest sites throughout the year. See Kochert et al. (2002) for detailed listing of winter range.

Roosts or gathering behavior

Golden Eagles are not known to roost communally as is common with wintering Bald Eagles in some areas of the United States, but will gather together if local food sources are abundant. A caveat to this is that Golden Eagles have perched with bald eagles where there have been large concentrations of waterfowl or carrion (Palmer 1988).

V. Golden Eagle Responses to Disturbance

Golden Eagles,visibly display behavior that signifies disturbance when they are stressed by anthropogenic activities; whether it is a lone hiker walking 1000 meters or more from a nest, or extended construction or recreation activities 2000 – 5000 meters from a territory. These postures, movements and behaviors can be overt. However with Golden Eagles, disturbance behaviors are often subtle and require an experienced observer. Olendorff (1971), Fyfe and Olendorff (1976), and Olsen and Olsen (1978) identified considerations when human interactions may disturb nesting activities, and how to ascertain critical distances to avoid agitating nesting, roosting, and foraging raptors. Factors affecting critical distances included:

1. Mannerisms of intruder,
2. Size of intruder,
3. Stage of breeding cycle, and
4. Topography and exposure of intruder in relation to bird.

Golden eagle behavior varies among individuals and can be affected by previous experiences. However, some behavioral generalities relative to direct and indirect disturbance include the following:

1. Agitation behavior (displacement, avoidance, and defense),
2. Increased vigilance at nest sites,
3. Change in forage and feeding behavior, and/or
4. Nest site abandonment.

Of the preceding behaviors, nest-site abandonment constitutes take under the Eagle Act, as it is specifically cited in the definition of 'disturb'. The other behaviors, when considered cumulatively, may be evidence that activities are interfering with normal breeding behavior and are likely to lead to take. Human intrusions near Golden Eagle nest sites have resulted in the abandonment of the nest; high nestling mortality due to overheating, chilling or desiccation when young are left unattended; premature fledging; and ejection of eggs or young from the nest (Boeker and Ray 1971, Suter and Joness 1981).

VI. Overall Objectives of the Golden Eagle Survey Protocol

This survey protocol is intended to standardize procedures to inventory and monitor Golden Eagles within the direct and indirect impact areas of planned or ongoing projects where disturbance or lethal take from otherwise permitted human activities is possible. This protocol will identify eagle use areas and identify and minimize potential observer-related disturbance to Golden Eagles by surveys when conducted by qualified and experienced raptor biologists.

Additionally, data collected using this protocol may be used for, at a minimum, 1), sampling other geographic areas where suitable habitat may be present; 2) short and long-term analysis of Golden Eagle occupancy and productivity at known nest sites, and historical locations where observation to determine occupancy maybe necessary; 3) identification and evaluation of potential disturbance factors. This protocol will standardize data collection for potential local and regional analysis of long-term occupancy, productivity and eagle use trends. It was developed as minimum standards, and as such may require additional area-specific detail if used for research purposes.

Objectives of inventory and monitoring

The first objective of these surveys is to provide methods to identify areas occupied by Golden Eagles and select factors their behavior ecology. Additional objectives of these surveys include the following.

1. Record and report occupancy and productivity of local Golden Eagle territories.
2. Document and list historical and unsurveyed habitat for future analysis to assist in determining local and regional population trajectories.
3. Determine nesting chronologies.
4. Provide information to document whether local Golden Eagle conservation efforts meet permit conditions or goals for improvements in the status of Golden Eagles.
5. Provide a foundation to evaluate whether and which activities or conditions may be affecting Golden Eagles.
6. Document foraging behavior, diet and habitat use within breeding and non-breeding home ranges.

VII. Inventory Techniques

CAUTION

Golden Eagles are one of several cliff and tree dwelling species sensitive to human disturbance. Monitoring eagles in a manner that 'disturbs' them, and causes them to be 'agitated or bothered' can cause nesting failure, and permanent site abandonment, constituting take under the Eagle Act.

These monitoring protocols should facilitate observer caution and identify techniques that will minimize potential for take of Golden Eagles. For additional information regarding preventing observer disturbance while surveying raptors, please refer to Fyfe and Olendorff (1976).

Inventory

Inventories for Golden Eagles should occur if nesting, roosting, and foraging habitat are contained within the project boundary and exist within 10 miles of the project boundary. Local and regional Golden Eagle habitat variability will dictate the distance from the project boundary where surveys will occur; distances will be greater in xeric or other habitats where local prey may not be abundant. The Service will be basing its site-specific evaluations and final determinations on local conditions, not national averages.

Nesting habitat

This account is not intended as a compendium of Golden Eagle habitat available and used in North America; please refer to Palmer (1988) and Kochert et al. (2002) for more detailed information.

Golden Eagles use a wide variety of habitat throughout North America. Small xeric mountain ranges in the Mohave and Great Basin deserts, forested habitat in the Pacific coastal, southern desert, Great Basin, Rocky, Sierra, and Cascade Mountain ranges are also key nesting areas. Local and regional variation of nesting habitat should be considered prior to surveys; however should include cliff, desert scrub, juniper woodland, and forested habitat. For example, in the northern Great Basin, Golden Eagles nest on cliff and in scrub-forest habitat; surveys of both types of substrates are urged prior to projects that have a potential to affect eagles. Identification criteria for nesting habitat at the local scale should take place in coordination with the Service, State, or Tribal wildlife agencies, and raptor experts.

VII.a. Procedures for aerial and ground inventory and monitoring surveys

Golden Eagles generally show strong fidelity to the nesting area annually. Occupancy determination is the most important goal of nest searches. Considerable suitable habitat exists in western North America that has never been adequately surveyed. Inventory surveys should examine habitat where Golden Eagles are not currently known to exist but habitat may be present, as well as previously inventoried areas to detect new activity. Monitoring surveys examine all historical and extant territories where Golden Eagles have been detected either previously or in the current survey.

A nesting territory or inventoried habitat should be designated as unoccupied by Golden Eagles ONLY after at least 2 complete aerial surveys in a single breeding season. In circumstances where ground observation occurs, at least 2 ground observation periods lasting at least 4 hours or more are necessary to designate an inventoried habitat or territory is unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods should be at least 30 days apart for inventory, and at least 30 days apart for monitoring

of known territories. Intervals between observations at occupied nesting territories may need to be flexible and should be based on the behavior of the adults observed, the age of any young observed, and the data to be collected (see below, Section IX). Dates of starting and continuing inventory and monitoring surveys should be sensitive to local nesting (i.e. laying, incubating, and brooding) chronologies, and would be conducted during weather conditions favorable for aerial survey and/or monitoring from medium to long range distances (+ 300 – 700 meters).

The first inventory and monitoring surveys should be conducted during courtship when the adults are mobile and conspicuous. When survey of historical territories is conducted, observers should focus their search on known alternative nests, and also carefully examine the habitat for additional nests which may have been overlooked or recently constructed. A 'decorated' nest will be sufficient evidence to indicate the probable location of a nesting attempt. If a decorated nest or pair of birds is located, the search can then be expanded to inventory likely habitat adjacent to the discovered territory to see if additional golden eagle territories can be observed.

Note: Identification of alternate nests will be required by the Service for determination of relative value of individual nests to a territory in cases of applications for permits to take 'inactive' nests, and when determining whether abandonment of a particular nest is likely to result in abandonment of a territory. The Service has determined that territory loss or permanent abandonment of a territory is a greater impact to populations than temporary abandonment of a nest.

Weather: Avoid searching potential and known nesting locations during periods of heavy rain, snow, high winds, or severe cold weather. Golden Eagles should not be induced to flush at any time during the survey period. Flushing when the adults are incubating or have small young can be particularly hazardous for successful nesting, and could constitute lethal disturbance take. High temperatures also may cause problems for successful viewing over long distances due to heat waves. Further, observer related incidences of causing flight of adults that are shading young to prevent overheating during high temperatures may cause mortality of the young. Observation for Golden Eagles during inclement weather is impractical, uncomfortable, and unsafe for Golden Eagles and observers. Weather will be recorded by the observer.

Time of day: Aerial surveys should be conducted at the beginning of the day if winds permit. Likewise, ground surveys should be initiated, where possible, in morning hours when the air is still to avoid heat waves. Prime observation periods are around dawn, or shortly thereafter. In some cases the angle of the sun in relation to the cliff can be a more important issue, and some cliffs are better observed in

afternoon light, however observations of adult behavior that are used to determine nesting chronologies may be conducted during most of the day. Observers should be aware of the angle of the sun in relation to the observation post and the nest. Some sites are plagued by afternoon winds, heat waves, or dust storms; local observation conditions should be taken into account prior to establishing viewing periods. Time of day will be recorded by the observer.

Time of year: Breeding surveys for Golden Eagles are latitude and elevation dependent; however, their nesting season ranges in the contiguous United States from 01 January to 31 August (Kochert et al. 2002). Nesting failures and seasonal variations should be considered as potential anomalies to 'normal' behavior and nesting chronologies. Dates to be used as a cut-off period for observation and reporting of nesting failures or non-nesting status will vary per region. The dates listed below are to be used as general guides, and should not be used as final nest site failure survey determination dates. Location-specific determination dates should be developed in coordination with the Service, State, or Tribal wildlife agencies, and raptor experts.

Duration of stay at observation points: Ground observers will survey from observation points for a minimum of 4 hours, unless observations yield Golden Eagle presence, or Golden Eagle behavior indicate eggs or young, or observation suggests the observer is disturbing the birds. Slowly walking and observing all potential nesting substrate can be used to completely inventory potential habitat. Observation periods may last longer as longer observation periods may be necessary to accurately determine nesting chronologies. Duration of stay at known or suspected territories during helicopter reconnaissance, or during ground observation periods will be recorded by the observer.

VII.b Aerial surveys

Helicopters are an accepted and efficient means to monitor large areas of habitat to inventory potential habitat and monitor known territories only if accomplished by competent and experienced observers. They can be the primary survey method, or can be combined with follow-up ground monitoring. Disturbance to eagles is minimal only WHEN accepted aerial practices and techniques are followed. NOTE: Ground surveys can be used when their use is more efficient, or when other circumstances (e.g. bighorn sheep lambing areas) require this method.

Coordination between state and federal agencies is an important aspect of aerial surveys to develop acceptable search criteria to be used for identifying likely suitable nesting habitat and

locating nests, as well as to be become acquainted with potential hazards and air space restrictions. Survey pilots should be aware of potential ground hazards within the habitat to be examined, including marked and unmarked transmission and wires. Other hazards to surveyors include rock-fall or tree fall from above the helicopter, raptors or other birds colliding with the helicopter, and collision with other aircraft. Although pilots are often the first to note a flying raptor during surveys, some accidents involving wildlife researchers have been attributed to the pilots focusing on the survey, rather than giving their complete attention to flying the helicopter.

Helicopters used for surveying Golden Eagle habitat should be light utility, small to medium sized (such as the MD-500/520, Eurocopter 145, Bell Jet-Ranger 206, or UH-72). The aircraft should be capable of vertical mobility in warm temperatures and at higher elevations. Inventories for raptors can be conducted with the main observer door(s) removed (which may provide more lateral and horizontal visibility), or with the doors closed. The decision regarding observer doors should remain a personal choice, with the safety of pilots and observers as the primary determinant.

Cliffs should be approached from the front, rather than flying over from behind, or suddenly appearing quickly around corners or buttresses. Inventories should be flown at slow speeds, ca. 30 – 40 knots. However, detection of nests may require slower speeds, e.g. 20 knots, while between nest speeds can be higher (+ 60 knots). All potentially suitable nesting habitats (as identified in coordination with the Service) should be surveyed; multiple passes at several elevation bands may be necessary to provide complete coverage when surveying potential nesting habitat on large cliff complexes, escarpments, or headwalls. Hovering for up to 30 seconds no closer than a horizontal distance of 20 meters from the cliff wall or observed nests may be necessary to discern nest type, document the site with a digital photograph of the nest, and if possible, allow for the observer to read patagial tags, count young, and age young in the nest (Hoechlin 1976). Confirmation of nest occupancy may be confirmed during later flights at a greater horizontal distance.

Re-nesting is rare, but Golden Eagles may fail at their first nest attempt, and move to, or create, an alternate nest site. Multiple visits to known or potential nesting habitat may be necessary to provide complete observation and coverage of habitat.

To inventory for the purpose of documenting presence/absence of Golden Eagles in potential habitat, at least 2 aerial observation flights of habitat are necessary. These flights will be spaced no closer than 30 days apart. Additional inventory work in the territory is not necessary after nests have been located where Golden Eagles are found incubating, or where eggs or young and number of eggs or young are noted. At this point, the observation effort should

switch to monitoring of the known territory. The nest location should be documented (see territory/nest naming convention, pp. 20.

Inventory and monitoring flights will be based on local knowledge of known nesting chronologies for that latitude and elevation, and should be timed to be the most efficient to reduce the number of visits to the nest site. Flights may occur preferentially during a) late courtship, b) egg-laying though hatch, and/or c) when the young are between 20 and 51 days old. Productivity surveys are best scheduled when the young are 51 days old or more, but prior to fledging. Aerial visits at known nests may be augmented or replaced by ground observation (see below).

Other raptors or special status species may be observed during the flight, and should be recorded/reported. Coordination with state and federal agencies will be necessary when state or federally listed Threatened, Endangered or special status (species of concern, sensitive, etc.) species are present in the flight survey area (i.e. big-horn sheep, peregrine falcons, etc.). Bighorn sheep share the same type of cliff complexes Golden Eagles use for nesting, and are hyper-sensitive to helicopters (Weyhausen 1980, Bleich et al. 1990). Specifically for bighorn sheep lambing areas, helicopter reconnaissance and surveys for Golden Eagles are not possible as these flights will induce unpermitted take during the lambing season; all helicopter survey work for Golden Eagles should be avoided in known lambing areas. Ground observation will be necessary for inventory of cliff complexes and monitoring of potential and known Golden Eagle territories in bighorn sheep lambing areas.

Most Golden Eagle respond to fixed wing aircraft and helicopters by remaining on their nests, and continuing to incubate or roost (DuBois 1984, McIntyre 1995). Perched birds may flush. During aerial surveys, deference to flying eagles should be given at all times. Flights at nest sites should be terminated and the helicopter should bank away and move to the next location if Golden Eagles appear to be disturbed; i.e. behavior that indicates the birds are agitated by the presence of the helicopter. In short, observers should obtain their data, and leave as soon as possible.

Any disturbance behavior observed should be noted so that consecutive aerial surveys would be sensitive to Golden Eagles at that location. Aerial reconnaissance to inventory/survey for potential habitat and additional visits at known nests may be augmented/replaced by ground observation from a safe distance (see below). Ground observation may be the recommended alternative to additional survey flights due to convenience or necessitated by other sensitive wildlife species. Follow-up ground observation from a safe distance may also be the recommended alternative for additional nest site monitoring.

Observers in helicopters have specific duties. At least two observers may be best for aerial surveys; one the lead observer, the other(s) supplement survey effort. One observer is assigned to record data on a recorder (unless the verbal interchange can be recorded on the helicopters internal communication system), and the other briefly records data on hard-copy and with digital photographs. Aerial observation routes should be recorded, downloaded, and reported using Global Positioning System track routes or applicable software programs. Observation locations and time-on-site should be recorded on applicable maps to ascertain coverage of cliff systems and other potentially suitable habitat.

Summary:

- Qualified observer(s) (as defined in section VIII).
- No closer than 10-20 meters from cliff; no farther than 200 meters from cliff (safety dependent).
- Close approach and extended hovering is allowed when there are no birds on the nest to allow observers to count eggs, dead young, or confirm nest failure.
- Multiple passes or 'bands' (back and forth at different elevations above ground level) of observation across cliff habitat may be necessary to achieve complete coverage of a large cliff complex.
- Occupied territories and current and alternative nest sites will be documented; nests containing fresh branches should also be delineated.
- After a nest with eggs, young, or an incubating adult has been located, there is no need to search for other nests within the territory.
- Minimal hovering time at a known or potential nest should be less than 30 seconds.
- At least 2 surveys of previously unsurveyed habitat will be spaced at least 30 days apart.

VII.c. Ground Surveys

Ground surveys of potential habitat

Ground surveys for Golden Eagles in potential habitat may be achieved without aerial support, or may be used to augment extant aerial surveys. Ground surveys to detect Golden Eagle nests and the selected nest at known territories are effective in habitat where observation points are established to observe areas on cliffs, utility towers, or in trees suspected to be nesting habitat. As with aerial surveys, identification criteria for nesting habitat should take place in coordination with the Service, State or Tribal wildlife agencies, and raptor specialists.

Observation posts (OPs) are established during initial reconnaissance of potential or known nest cliffs, and are established in locations that are far enough from the potential nest site to

effectively observe the behavior of the adults (if present) without disturbing nesting behavior. Well-placed OPs provide unobstructed viewing of the potential nest location or of the area to be surveyed; including a broad panorama of the surrounding habitat. Multiple OPs or walking surveys may be necessary to observe potential nest sites. OPs located in front of, and below the potential nest cliff or tree are best. Placing OPs below the potential nest cliff reduces stress if an incubating adult may be present. The distance from an OP to the potential nest site may range from 300 – 1600 meters (latter represents extreme circumstances) from the cliff base to the observer, and generally no greater than 700 meters.

Golden Eagles may use alternative nests. Detection of previously unknown alternate nests and observation of all known alternative nests will become important if Golden Eagles fail in their initial nesting attempt, or are not observed at the probable nest location.

Ground monitoring; known territories

Monitoring to document nesting success at known territories may occur solely via ground observations. Observation of known territories should use the methodology described for ground monitoring of potential habitat (see section VIIc). Dates of all visits to the nesting territory will be recorded; date of confirmation of nesting failure will be key data for site specific and regional analysis.

Nesting outcomes

Fledging success will be determined via the observation of young that are at least 51 days of age, or are known to have fledged from the observed nest. If there is whitewash (Golden Eagle defecation) and a well worn nest, young were previously observed in the nest to be > 4 weeks old during a previous visit, and the young would have been > 51 days old at the time of the visit, and no dead young are found after a thorough ground search, the nesting attempt can be deemed successful.

Nesting failure occurs when a nest where eggs were laid or where incubation behavior was observed fails to have any young reach 51 days of age. If necessary, nesting failure will be confirmed by using a spotting scope to view the nest to determine if dead young are observed. Nesting failures may also be determined if observations of the nest prior to the projected fledge date yields no young or fledglings where eggs or young were previously observed. In these instances observation periods should last 4 hours (consecutively), or are confirmed by aerial survey. If dead young are observed in the nest (i.e. all young are dead), monitoring efforts may cease. Nest failures may also be confirmed by an approach (walk-in) to the nest no more than 4 weeks after fledging was scheduled to occur. Observers will look for dead chicks at the base of the nest cliff or tree, where access is reasonable and safe.

Observers must document the criteria they use to conclude that success or failure occurred.

Summary

- Observation posts for monitoring known territories will be no closer than 300 meters for extended observations, and generally no further than 700 meters, where terrain allows. Maximum OP distance would be 1600 meters.
- To inventory and determine occupancy of cliff systems, there will be *at least* 2 observation periods per season. To determine fledging success, additional observations may (or may not) be necessary.
    - Observation periods will last at least 4 hours for known nest sites, or until territory occupancy can be confirmed.
    - Observation periods will last for at least 4 hours per 1.6 km of cliff system, based from the center point of that cliff complex.
    - Observation periods will be at least 30 days apart for monitoring efforts.
- To collect monitoring data at a known nest territory, there will be at least 2 observation periods per season.
    - Observation periods from ground observation points will last at least 4 hours for known nest sites or until nesting chronology can be confirmed per visit. Observation periods will be at least 30 days apart.

VIII. Observer qualifications

Surveyor experience affects the results of protocol-driven raptor surveys. All observers should have the equivalent of 2 seasons of intensive experience conducting survey and monitoring of Golden Eagle and/or cliff dwelling raptors. That experience may include banding, intensive behavioral monitoring, or protocol-driven survey work. Experience should be detailed and confirmed with references, and provided to action and regulatory agencies. All surveyors should be well-versed with raptor research study design and Golden Eagle behavior and sign, including nests, perches, mutes, feathers, prey remains, flight patterns, disturbance behavior, vocalizations, age determination, etc. **Aerial surveys will be conducted by raptor specialists who have at least 3 field seasons experience in helicopter-borne raptor surveys around cliff ecosystems.**

In lieu of limited or no Golden Eagle experience, ground surveyors should attend at least a 2-day Golden Eagle training session convened with classroom and field components; trainers will be designated by the USFWS/USGS. Inexperienced or limited experience surveyors will be mentored by Golden Eagle specialists for at least 1-2 field seasons, depending on their experience level, and should assist with the preparation of at least 3 surveys and reports over at least 3 years. A Golden Eagle specialist is defined as a biologist or ecologist with 5 or more years of Golden Eagle or cliff dwelling raptor research/survey experience, possession of

state/federal permit allowing capture, handling, and/or translocation of Golden Eagles and/or cliff dwelling raptors; and/or relevant research on raptors published in the peer reviewed literature.

IX. Documentation and accepted notation of territory/nest site and area surveyed

Data for each territory/nest site(s) and area visited will be reported annually to the applicable regional office of the USFWS Division of Migratory Bird Management for collation into a national database.

Minimum data collected at known Golden Eagle territories

Observation of potential sites and known nest territories will produce data helpful to determine territory occupancy, productivity, and fate of the nesting attempt. Each observation and all site specific data collected should include at least;

a) Date of observation,
b) Time of observation(s),
c) Weather during observation,
d) Duration of observation,
e) Name of observer(s),
f) Location of observation,
g) Description of observation.

Data collected during inventory and monitoring will include (at least) the following:

- Territory status [Unknown; Vacant; Occupied-1 eagle; Occupied-2 eagles- laying or non-laying; Breeding successful (chick observed to be at least +51 days-fledging), Breeding unsuccessful (failed-nesting attempt failed after eggs were laid)].
- Nest location (decimal degree lat/long or UTM).
- Nest elevation.
- Age class of Golden Eagles observed.
- Document nesting chronology;
    - Date clutch complete (estimated). Describe incubation behavior observed to derive this date, and/or use backdating from known nestling age);
    - Hatch date (estimated from age of nestlings);
    - Fledge date (known or estimated; see nesting outcomes, pp. 18);
    - Date nesting failure first observed and/or confirmed;
    - Number of young at each visit and at >51 days of age;
    - Digital photographs; a) landscape view of area inventoried, b) landscape view of territory, and c) nest(s); and
    - Substrate upon which the nest is placed (tree species, cliff, or structure).

Additional data that can be collected include (but are not limited to):

- Presence or absence of bands (USGS and VID), patagial tags (number and color), or telemetry unit;
- Forage location (if known);
- Prey items noted (if discerned);
- Height of nest on cliff or in tree, and description of technique used to estimate height;
- Species of tree, type of rock, or type of structure used to support the nest;
- Overall cliff or tree height, and description of technique used to estimate height;
- Nest aspect; and
- Other nesting raptors present nearby.

Each area surveyed under the requirements of this protocol, including surveyed habitat, occupied nesting territory, historical territory, and suspected/alternative nests will be recorded in a standardized manner to allow local, regional, and national data analysis.

Recommended Golden Eagle Territory/site naming convention:

XX^1-XXX^2-XXXXX/XX^3-XXX^4-XX^5 Territory name

XX^1 = State (two letter alpha)

XXX^2 = County (three letter alpha)

XX^3= USGS Quad [five numeric/two letter alpha] (when the territory straddles adjacent quad maps, the quad in which the first nest was found will be used to describe the territory; XX^5 is used to document the locations of alternate nests within a territory)

XXX^4=Assigned Territory number within USGS quad (three numeric)

XX^5=Assigned Nest number within territory in instances of alternate nests (two numeric)

Site name=traditional site name, or if new, use local naming convention (e.g. Upper fork Amundsen Creek, Fort Peck flatland, Farmer Jane's back 40)

Example CA-KER-38512/DG-03-02 Abbot Creek

X. Additional considerations

This interim document primarily contains methods for inventorying and monitoring at nest sites, but the prohibitions against take and the new regulations apply at nest sites and foraging areas, as well as during migration and other non-breeding times. The Service will develop or adopt recommendations for surveys applicable to non-nesting in other documents.

Suitable foraging habitat

Golden Eagles forage close to and far from their nests, i.e. < 6 km from the center of their territories, but have been observed to move 9 km from the center of their territories in favorable habitat (McGrady et al. 2002). These distances may be further in xeric habitat.

Suitable wintering habitat

During winter, Golden Eagles are found throughout the contiguous United States. Inventories for wintering Golden Eagles will encompass all habitat where Golden Eagles have been known to nest, roost, and forage. Refer to Wheeler (2003, 2007) for maps elucidating suitable wintering range.

Winter surveys

Survey information gathered during the non-breeding period is needed to identify foraging areas and determine numerical estimates of use by Golden Eagles. Presence of Golden Eagles during winter surveys does not necessarily mean that breeding individuals are present; however follow-up surveys during the breeding season are necessary to denote occupancy at suspected or known territories.

Migration surveys

The location of migration routes or areas in relation to a proposal that are likely to take Golden Eagles through injury or mortality may have critical implications. Therefore, evaluations should assess whether migratory or transient Golden Eagles are likely to be present during the construction and the life of the project. Other factors to consider include numbers of Golden Eagles moving through the project area, movement patterns (including a three-dimensional spatial analysis), time of day, and seasonal patterns. In the case of wind development, surveys will need to identify the locations of migration routes and movements during migration in relation to proposed turbines and rotor-swept area.

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XIII Glossary

Action agency – an agency or entity authorizing an action or plan, or providing funding for actions and plans.

Active nest (from the regulations**) —** a Golden Eagle nest characterized by the presence of any adult, egg, or dependent young at the nest in the past 10 consecutive days immediately prior to, and including, at present. Applies only to applications for permits to take eagle nests.

Breeding home ranges - the spatial extent or outside boundary of the movement of individuals from Golden Eagle pairs during the course of everyday activities during the breeding season.

Inactive nest (from the regulations**) —** a Golden Eagle nest that is not currently being used by eagles as determined by the continuing absence of any adult, egg, or dependent young at the nest for at least 10 consecutive days immediately prior to, and including, at present. An inactive nest may become active again and remains protected under the Eagle Act.

Inventory –systematic observations of the numbers, locations, and distribution of Golden Eagles and eagle resources such as suitable habitat and prey in an area.

Local area population — the population within the average natal dispersal distance of the nest or nests under consideration (43 miles for bald eagles, 140 miles for golden eagles). Effects to the local area population are one consideration in the evaluation of the direct, indirect, and cumulative effects of take, and the mitigation for such take, under eagle take permits.

Migration corridors - the routes or areas where eagles may concentrate during migration. Golden Eagles begin migrating across a broad front, but tend to concentrate along leading lines (geographical features such mountain ridges) as they move between geographic locations. Golden Eagles are observed in largest numbers along north-south oriented mountain ranges where they soar on mountain updrafts. The species typically avoids lengthy water-crossings. In North America, migrating Golden Eagles concentrate along the Appalachian Mountains in the East and Rocky Mountains in the West.

Management agency - see Action Agency.

Monitoring - inventories over intervals of time (repeated observations), using comparable methods so that changes can be identified. Monitoring includes analysis of inventory data or measurements to evaluate change within or to defined metrics. Monitoring also includes repeated observations of a known nesting territory.

Occupied Nest – a nest used for breeding in the current year by a pair. Presence of an adult, eggs, or young, freshly molted feathers or plucked down, or current years' mutes (whitewash) suggest site occupancy. Additionally, for the purposes of these guidelines, all breeding sites

within a breeding territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site remains occupied throughout the periods of initial courtship and pair-bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

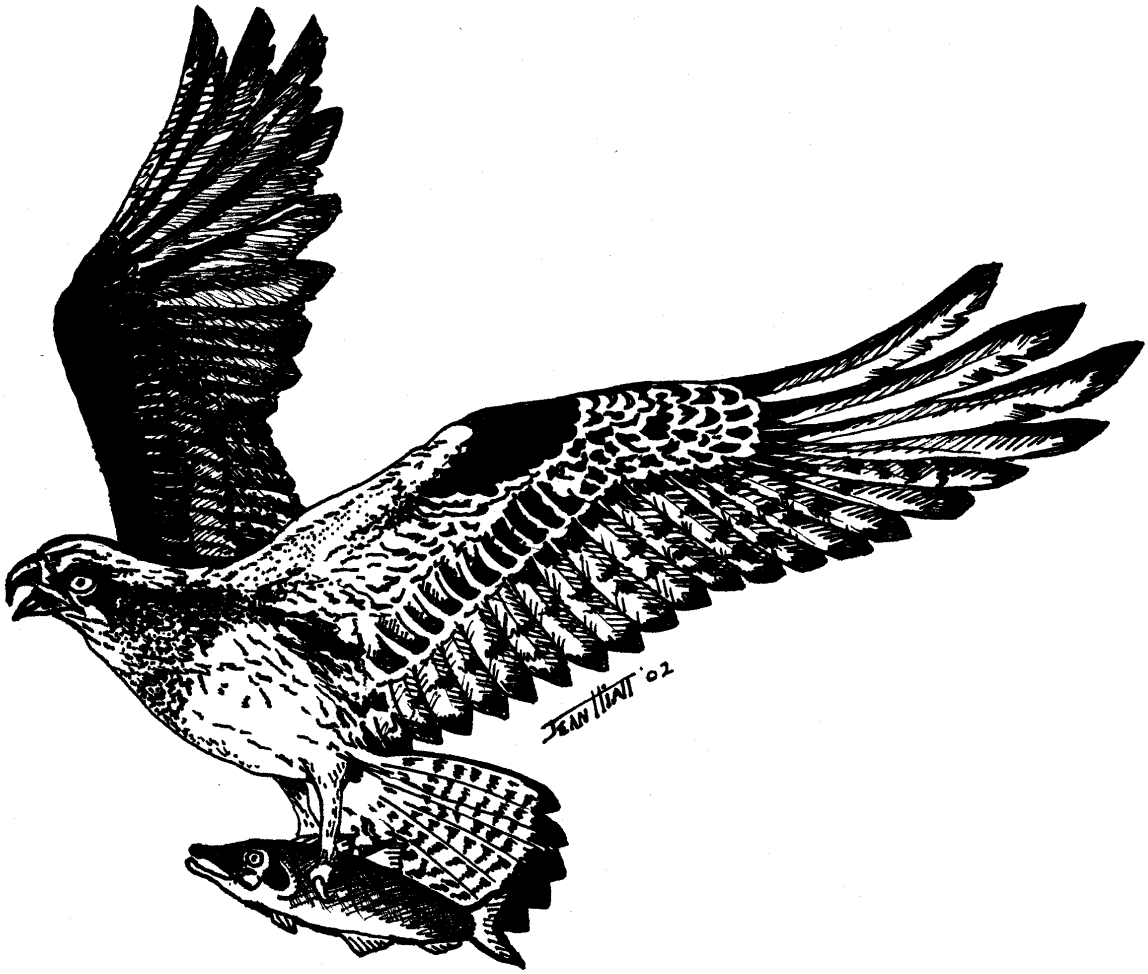
Unoccupied Nests - those nests not selected by raptors for use in the current nesting season. Nests would also be considered unoccupied for the non-breeding period of the year. The exact point in time when a nest becomes unoccupied should be determined by a qualified wildlife biologist based upon observations and that the breeding season has advanced such that nesting is not expected. Inactivity at a nest site or territory does not necessarily indicate permanent abandonment.

Productivity — the mean number of individuals fledged per occupied nest annually.

Survey –is used when referring to inventory and monitoring combined.

Exhibit 9. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances

UTAH FIELD OFFICE GUIDELINES FOR RAPTOR PROTECTION FROM HUMAN AND LAND USE DISTURBANCES



U.S. Fish and Wildlife Service, Utah Field Office
Salt Lake City
January 2002 update

Prepared by Laura A. Romin and James A. Muck

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SUMMARY

Proponents of land-use activities are responsible for determining potential impacts to raptors of those activities. Appropriate management strategies for conservation and restoration of raptor populations and their habitats associated with the proposed actions should be devised. The following steps should become routine during initial project planning:

1. Coordinate with appropriate U.S. Fish and Wildlife Service (Service), Utah Division of Wildlife Resources (UDWR), and/or land management agency wildlife biologists at the onset of project planning.

2. Identify species and distribution of raptors occurring within the project area by evaluating existing data and/or conducting on-site surveys.

3. Determine location and distribution of important raptor habitat, raptor nests, and available prey base associated with proposed developments and activities.

4. Ascertain the type, extent, timing, and duration of development or human activities proposed to occur.

5. Consider cumulative effects to raptors of proposed projects when added to past, present, and reasonably foreseeable actions.

6. Minimize, to the extent feasible, loss of raptor habitats and avoid long-term habitat degradation. Mitigate for unavoidable losses of high-valued raptor habitats, including (but not limited to) nesting, winter roosting, and foraging areas.

7. Plan and schedule short-term and long-term project disturbances and human-related activities to avoid raptor nesting and roosting areas, particularly during crucial breeding and wintering periods.

8. Post-project and post-mitigation monitoring are necessary to document stability of raptor populations and their prey base, and to evaluate success of mitigation efforts.

PREFACE

The following raptor protection guidelines were prepared by the Service in coordination with various federal, state, tribal, and private entities with an interest in raptor protection. These guidelines are intended to provide an advisory framework for consistent raptor management approaches statewide.

Incorporation of habitat management and nest/roost site protection measures into land use plans is recommended to ensure project compatability with the biological requirements of raptors and regulatory statutes. These guidelines are not all-inclusive of available mitigation strategies, nor are all recommendations intended to apply to every project. Project proponents should select applicable management recommendations and/or develop other protective measures based on the project and its potential impacts. Biologists from the Service, UDWR, and land management agencies are available to assist with the identification of impacts (both positive and negative) and the selection and implementation of appropriate protective measures.

These guidelines are also intended to provide land use planners with the means to avoid the direct or incidental take of raptors, their nests, or eggs (as prohibited under parts of the Migratory Bird Treaty Act, Eagle Protection Act, and Endangered Species Act; see *Regulatory Authority* section for further information). In addition, these guidelines provide up-front recommendations to assist land use planners through the National Environmental Policy Act process; essentially, implementation of protective methodologies could reduce potential impacts to raptors and their habitat to insignificant levels and eliminate the need for more extensive discussion of losses in an Environmental Impact Statement.

It is important to realize that these are guidelines and are subject to modification on a site-specific and project-specific basis dependent on knowledge of the birds; topography and habitat features; and level of the proposed activity. Site-specific modifications should be coordinated with appropriate Service, UDWR, and/or land management agency biologists to ensure that the intent of these guidelines is maintained. Revisions to these guidelines may also occur as our knowledge of raptor ecology improves.

INTRODUCTION

PURPOSE

Responsibility for protection of wildlife is rendered in part by the Service's mission to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. Raptors (birds of prey) are protected wildlife and are widely accepted indicator species of environmental quality due in part to their position at the top of biological food chains. Aesthetically, raptors are highly regarded by the public, and anthropomorphic qualities such as nobility, bravery, and wisdom have been widely used to describe these birds. Native Americans hold raptors in high regard for spiritual and religious reasons.

The status of raptors can reflect either numbers or inherent biological characteristics such as sensitivity to environmental conditions. In the western United States, the status of raptors is considered stable for some species, declining for others, and uncertain for still others (White 1994). Currently the status of raptors in Utah is uncertain (J. Parrish, UDWR, 1998, pers. comm.). Certain life history characteristics, including typically long life spans, slow reproductive rates, and specific habitat requirements for nesting and foraging, make raptor

populations particularly vulnerable to disturbances and may retard recovery of some populations (Brown and Amadon 1968, Nelson 1979, Scott 1985, McCallum 1994). An increase in raptor-human interactions resulting from industrial, municipal, transportation, and recreational activities have thus prompted development of the Service's *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances.*

Objectives of these guidelines are to maintain and enhance all raptor populations in Utah by avoiding, minimizing, or mitigating effects of the following human induced impacts:

- Physical destruction of important raptor habitat components;
- Disturbance resulting in displacement of raptors from high-valued habitat and use areas during crucial time periods (i.e., nesting, winter roosting);
- Direct human caused stress, physical impairment, or mortality; and
- Environmental degradation and contamination.

These guidelines are intended to provide land use planners and resource managers with raptor protection recommendations within the area of influence of land use activities. Protection of nesting, wintering, and foraging activities are considered essential. Implementation of these guidelines is recommended whenever there is potential for an action or project to negatively affect these birds or supporting resources.

REGULATORY AUTHORITY

Raptors as a group are considered migratory birds. As such, federal and state protection is provided for raptors and their habitat through various legal mandates. The following are brief descriptions of provisions included in applicable federal and state laws:

Migratory Bird Treaty Act (MBTA); 16 U.S.C. 703-712

Under authority of the MBTA, it is unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs. Take is defined (50 CFR 10.12) as to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect. Proscription against killing birds, contained in the MBTA and the Eagle Protection Act, applies to both intentional and unintentional harmful conduct and is not limited to physical conduct normally exhibited by hunters and poachers [U.S. v. Moon Lake Electric Association, Inc. (98-CR-228-B; 10th Circuit 1998)].

When taking of raptors, their parts, nests, or eggs is determined by the applicant to be the only alternative, application for federal and state permits must be made through the appropriate authorities. Migratory Bird Permits must be obtained through the Service's Migratory Bird

Permit Office for take of raptor nests (50 CFR 13, 21). The list of migratory birds protected by the MBTA includes raptors and is found in 50 CFR 10.13.

On July 18, 2000, the United States Court of Appeals for the District of Columbia Circuit held in Humane Society v. Glickman, 217 F. 3d 882 (D.C. Cir. 2000), that the MBTA applies to Federal agencies. The United States had previously taken the position that the MBTA only applied to individuals, and not to the Federal Government [Sierra Club v. Martin, 113 F 3d 15 (11th Cir. 1997); Newton Cty Wildlife Assn v. U.S. Forest Service, 113 F 3d 110 (8th Cir. 1997)]. Since the Federal Government decided not to appeal Humane Society v. Glickman, and because all Federal agencies are subject to the jurisdiction of the D.C. Circuit, the Service will implement the MBTA consistent with this decision.

Federal agencies are consequently required to obtain permits for activities covered by migratory bird permit regulations (50 CFR Part 21). Director's Order 131 (December 20, 2000) clarified that permits from the Service are required for any action resulting in intentional take of migratory birds. Permits are not issued for the unintentional take of migratory birds, including raptors; however, unintentional take is still prohibited by the MBTA, as it is a strict liability law.

Executive Order 13186 (66 FR 3853, January 17, 2001) reinstated the responsibilities of Federal Agencies to comply with the Migratory Bird Treaty Act of 1918 (MBTA). The Executive Order establishes a process for Federal Agencies to conserve migratory birds by avoiding or minimizing unintentional take and taking actions to benefit species to the extent practical. The EO, while not eliminating the possibility of violations of the MBTA, is designed to assist Federal Agencies in their efforts to comply with the MBTA.

Eagle Protection Act; 16 U.S.C. 668

Specific protection for bald and golden eagles is authorized by the Eagle Protection Act. It is illegal to take, possess, sell, purchase, barter, or transport any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. "Take" includes to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb (50 CFR 22.3). Recent case law [U.S. v. Moon Lake Electric Association, Inc. (98-CR-228-B; 10th Circuit 1998)] concluded that proscription against killing birds, contained in the MBTA and the Eagle Protection Act, applies to both intentional and unintentional harmful conduct and is not limited to physical conduct normally exhibited by hunters and poachers.

The Eagle Protection Act was amended in 1978 to authorize the Secretary of the Interior to publish regulations that may permit the taking of golden eagle nests that interfere with resource development or recovery operations. Thus, the Service provides for the issuance of permits to "take" inactive golden eagle nests that interfere with resource development or recovery operations if the taking is compatible with the preservation of the area nesting population (50 CFR 22.25). The area nesting population is determined as the number of pairs of golden eagles known to have attempted nesting during the preceding 12 months within a 10-mile radius of a

golden eagle nest (50 CFR 22.3). The Service will issue a take permit when there is a reasonable expectation that no significant long-term loss of eagle habitat will result from the proposed action.

The Eagle Protection Act applies to Federal Agencies as well as individuals. A Solicitor's Opinion dated June 30, 1982 initially concluded that the Eagle Protection Act did not apply to the United States because the United States was not listed among the persons in 16 U.S.C. 668(c) to whom the Act applies. However, following recent court (Humane Society v. Glickman: see above description in the Migratory Bird Treaty Act section) and policy decisions, this Opinion was subsequently revoked by a January 19, 2001 Department of Solicitor Opinion. Eagle permits are also required under 50 CFR Part 22 for Federal Agency actions.

It is the policy of the Department of the Interior that all projects by Departmental bureaus comply with the Eagle Protection Act and to urge other Federal agencies to follow this policy as well. Activities of the Federal government should comply with the intent of the Eagle Protection Act and should refrain from actions that would result in the taking of bald or golden eagles.

Endangered Species Act (ESA); 16 U.S.C. 1513-1543

The ESA provides protection to threatened and endangered raptors and their critical habitats. As of this writing, the ESA protects the following raptor species in Utah: bald eagle (proposed for delisting) and the Mexican spotted owl (threatened). In addition, the California condor was released in northern Arizona as an experimental population (50 CFR 17, Subpart H). Current lists of endangered and threatened species in Utah can be obtained from the Service's Utah Field Office.

Section 9 of the ESA, as amended, prohibits any taking of listed species of fish or wildlife without special exemption. "Take" under the ESA means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harass is further defined by the Service to include an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is further defined by the Service to include an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3).

The National Environmental Policy Act of 1970 (NEPA); 42 U.S.C. 4321

NEPA was enacted to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment [40 CFR 1500.1 (c)]. NEPA requires all federal agencies or project proponents using federal monies to prepare environmental documentation to analyze the environmental impacts of major

federal actions affecting the quality of the human environment. The level of NEPA documentation; Environmental Impact Statement (EIS), Environmental Assessment (EA), or Categorical Exclusion; is determined by the degree of environmental impact. Generally, an EIS level analysis is required for projects with significant environmental impacts.

Mitigation measures can be incorporated into project plans to reduce impacts to the degree that they are insignificant. If that is accomplished, an EA and Finding of No Significant Impact (FONSI) would be appropriate. Mitigation as defined under NEPA (40 CFR 1508.20) includes:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance.
5. Compensating for the impacts by replacing or providing substitute resources or environments.

The Wildlife Resources Code of Utah; Title 23, Utah State Code

Activities regulated under Utah Code Annotated, Title 23, includes any act, attempted act, or activity prohibited or regulated under any provision of Title 23 or the rules, and proclamations promulgated thereunder pertaining to protected wildlife including: fishing; hunting; trapping; taking; permitting any dog, falcon, or other domesticated animal to take; transporting; possessing; selling; wasting; importing; exporting; rearing; keeping; utilizing as a commercial venture; and releasing to the wild. The terms "endangered" and "threatened" under State Code means wildlife designated as such pursuant to Section 3 of the federal Endangered Species Act of 1973. The term "take" under State Code means to hunt, pursue, harass, catch, capture, possess, angle, seine, trap or kill any protected wildlife or attempt any of such actions. Under Section 23-13-3 of Title 23 of the State Code all wildlife existing within Utah, not held by private ownership and legally acquired, is declared as property of the state. Under Section 23-20-3, Section 23-20-4, and Section 23-20-4.5 of the State Code, the taking, transporting, selling, purchasing or wanton destruction of protected wildlife are further detailed and declared illegal and as such are punishable offenses subject to restitution, reimbursement for damages, and incarceration among other actions.

Federal agencies are not bound to follow Utah law. However, federal activities should be sensitive to Utah concerns.

BACKGROUND

Each raptor nest, its offspring, and supporting habitats are considered important to the long-term viability of raptor populations and are vulnerable to disturbance by many human activities.

Existing literature details site- and species-specific raptor responses to human disturbances and habitat alteration.

There have been sufficient studies of intact raptor populations to suggest certain common factors that act to regulate density. Without human intervention, population regulation in many raptor species comes through competition for breeding space, assisted by the presence of surplus adults which breed only when an existing nesting territory becomes vacant. In habitat where nest sites are widely available, breeding density fluctuates generally in synchrony with availability of preferred prey (Pitelka et al. 1975, Woffinden and Murphy 1977, Newton 1979, Smith and Murphy 1979, Smith et al. 1981, Korpimaki 1984, 1986, Hamerstrom 1986, Hornfeldt et al. 1986, Ridpath and Booker 1986, Wiklund and Stigh 1986, Bates and Moretti 1994). The presence of alternate prey species may allow continued breeding success during periods when the availability of preferred prey species is low (Johnstone 1980, Thompson et al. 1982). In other areas, breeding density may be regulated by a shortage of nest sites to a lower level than would occur normally with available food supply (Edwards 1969, Boeker and Ray 1971, Smith and Murphy 1978). Hence, in relatively undisturbed raptor habitat, breeding density is naturally limited primarily by food supply or nest sites, whichever is most limited (Newton 1979, 1991).

Loss and fragmentation of raptor habitat often accompany industrial, transportation, municipal, recreational and other developments. Losses or alterations of habitat can result in a loss or change in the raptor prey base or a loss of historical nesting territories (Thompson et al. 1982, Schmutz 1984, Postovit and Postovit 1987, Williams and Colson 1989). Long term raptor population responses to habitat loss and human disturbances are not well documented for many raptor species. However, there are indications that alterations of the natural environment can strongly influence nesting raptor populations. For instance, local declines in the number of nesting ferruginous hawks in Canada and Idaho resulted from the increased cultivation of native grasslands (Schmutz 1984, Bechard et al. 1986). Golden eagle breeding territories were less successful in areas lacking a mosaic of native vegetation (Thompson et al. 1982) since the habitat was unable to support abundant jackrabbit populations, their preferred prey. Red-shouldered hawk populations in Iowa decreased in response to the clearing of woodlots and bottomland hardwood forests (Brown 1964). Accelerated commercial and urban development was attributed to golden eagle nesting declines along the Colorado Front Range (Boeker 1974). Similarly, Utah's Wasatch Front experienced the loss of many historically occupied raptor nests, likely in partial response to increased urbanization (Murphy 1975). Scott (1985) suggested that nest abandonment may be affected by regional patterns and increases in human disturbance more than by habitat destruction at a specific nest site.

Not all habitat alterations are detrimental to all raptor populations. Bechard et al. (1986) suggested that conversion to irrigated hay lands which support many nest trees and rodent prey may have contributed to local increases in Swainson's hawk nesting density. Habitat alterations may also result in species composition changes. Conversion of grasslands to cultivated fields may have resulted in reduced ferruginous hawk populations with increases in red-tailed hawk populations (Harlow and Bloom 1987).

Besides habitat loss and modification, human activities and development have frequently resulted in disturbances at wintering locations and aborted or reduced nesting attempts. Studies of human disturbances at winter roosting areas have mostly concerned bald eagle responses. Human disturbances may constitute a threat to wintering eagle populations by causing displacement to areas of lower human activity (Shea 1973, Servheen 1975, Stalmaster 1976, Stalmaster and Newman 1978, Brown and Stevens 1997). Human disturbances may also interfere with foraging behavior of eagles (Mathiesen 1968, Stalmaster 1976).

Human disturbances near nest sites have resulted in the abandonment of the nest; high nestling mortality due to overheating, chilling or desiccation when young are left unattended; premature fledging; and ejection of eggs or young from the nest (Bent 1938, Woffinden 1942, Boeker and Ray 1971, Snow 1974, Fyfe and Olendorff 1976, Call 1979, Swenson 1979, Craighead and Mindell 1981, Suter and Joness 1981, Postovit and Postovit 1987, Palmer 1988, Tella et al. 1996, Anderson and Squires 1997). Raptors which successfully nest during a disturbance may abandon the nesting territory the year following the disturbance (Fyfe and Olendorff 1976, Platt 1977, Ratcliffe 1980, White and Thurow 1985). Responses of nesting raptors to human disturbances are generally determined by the type, duration, magnitude, noise level, and timing of activity relative to nesting phenology (Suter and Joness 1981, Götmark 1992, Richardson and Miller 1997).

Overall, raptors display a high degree of fidelity to nest sites and nesting territories (Newton 1979). Certain physiographic features such as elevation, slope, aspect, habitat diversity, prey availability, nest height, and nest substrate have been measured in attempts to characterize site selection by nesting raptors (Murphy et al. 1969, Apfelbaum and Seelbach 1983, MacLaren 1986, Kirmse 1994). The majority of raptor species are firmly fixed on a special type of nest site according to a narrow genetical disposition (Kirmse 1994).

Flushing responses of adult raptors during the breeding season may be related to the duration and frequency of disturbance events, and may vary between species (Fraser et al. 1985, White and Thurow 1985, Holmes 1994). Some level of habituation to continuous or repetitive disturbances may occur (Knight and Temple 1986). Even so, repeated flushing responses by adult raptors due to disturbance may increase energy expenditure during foraging and decrease energy ingestion. Accelerated depletion of energy reserves may result in premature mortality of raptors during harsh conditions (Stalmaster 1983, Knight and Skagen 1987).

Sensitivity of adults and young to disturbance may vary during the nesting cycle (Nelson 1979, Holmes 1994). Generally, courtship, nest construction, incubation, and early brooding are considered higher risk periods during which adults are easily prone to desert temporarily or permanently abandon nests in response to disturbance, leaving the eggs and/or young susceptible to the effects of inclement weather, solar radiation, and predation. The days immediately before and during egg laying and early incubation are the most critical stages of the nesting cycle with respect to abandonment. Disturbance of even limited duration during this time can result in immediate and permanent departure by adults from the breeding territory. During post-brooding

and post-fledging dependency periods, feather development of the young is sufficiently advanced to provide some protection from the elements. Nevertheless, even temporary flushing from nests by adults due to disturbance during these periods can still result in mortality of the young which continue to be dependent on parental care and are at risk of predation.

The type of disturbance can determine to some degree the response of raptors. Declines of local and regional raptor populations can result from aborted or reduced nesting attempts, particularly when the disturbance is prolonged or permanent such as industrial and transportation developments or urban expansion (Boeker and Ray 1971, Craighead and Mindell 1981, Bednarz 1984, Gerard et al.1984). Dispersed recreational activities can deter nesting success. Out-of-vehicle recreational activities are generally considered more disturbing to raptors than in-vehicle recreational activities (French 1972, Garber 1972, Kahl 1972, Skagen 1980, Fraser et al. 1985, Holmes et al. 1993, Holmes 1994). Stopped vehicles, particularly when occupants exit the vehicle, have been reported to provoke negative responses from nesting or perching raptors more often than moving vehicles (Steenhof 1976, Beck 1980, Scott 1985, White and Thurow 1985). Reactions of raptors to fixed-wing aircraft and helicopters are reportedly mixed and may be related to the amount of helicopter hovering time spent above a nest, height above the nest, or the frequency of aircraft flights within a nest's vicinity (Hancock 1966, Carrier and Melquist 1976, White and Sherrod 1973, Call 1979). Associated high noise levels and increased human activity may preclude use of otherwise acceptable raptor habitats. Areas with limited human access tend to exhibit higher nesting densities and higher fledging success for raptors (Fitzner 1980, Harmata 1991).

Raptor tolerance levels to disturbance can be species-specific. Evidence suggests that some falcons, ospreys, and owls are generally more tolerant of human-induced disturbance and human environments. Golden eagles, turkey vultures, northern harriers, Cooper's hawks, northern goshawks, and sharp-shinned hawks appear much less tolerant of disturbances. Buteos (ferruginous hawk, red-tailed hawk, swainson's hawk) exhibit a wide range of acceptance levels (Thomsen 1971, Martin 1973, Herron et al. 1985, Hayward 1994, Bloom and McCrary 1996), however, some have speculated that the ferruginous hawk should be considered the most sensitive raptor to human disturbance (Woffinden and Murphy 1977, Olendorff 1993). Bechard et al. (1990) found that ferruginous hawks nested twice as far away from human habitation than red-tailed or Swainson's hawks. Additional disturbances within already altered environments may be less disruptive than disturbances associated with isolated breeding pairs of raptors in unaltered habitats. Raptor species may be less tolerant of disturbances when populations of prey species are at low levels (Snow 1974, White and Thurow 1985, Call and Tigner 1991, Holmes 1994).

Some individual breeding pairs appear relatively unperturbed by human disturbance and human-induced impacts and continue to breed successfully amid development (Mathisen 1968, Bird et al. 1996). In addition, some land-use actions are potentially beneficial for some raptor species, such as: selective logging, utility lines, dams and reservoirs, farming, grazing, fire, mechanical/chemical, and public observation (Olendorff et al. 1989). For example, peregrine

falcons and prairie falcons have been observed nesting on transmission towers, bridges, and buildings in many cities and raptors, including bald eagles and golden eagles, have nested within a few hundred meters of airports, blasting, construction, quarry, and mine sites (Pruett-Jones et al. 1980, Haugh 1982, White et al. 1988, Holthuijzen et al. 1990, Russell and Lewis 1993, Steenhof et al. 1993, Bird et al. 1996, Carey 1998). In Utah, peregrine and prairie falcons have nested in abandoned raven nests on 340 kV transmission towers and a peregrine falcon pair nested on a building in downtown Salt Lake City (Bunnell et al. 1997). Observations of a great horned owl nesting repeatedly atop a coal loadout facility in Carbon County, Utah, suggested a measure of tolerance for that breeding pair (L. Dalton, UDWR, 1998, pers. comm.). It is not fully understood what motivates individual breeding pairs occasionally to select nesting sites within or near human-altered habitats. Nesting within or near human-altered environments may be a manifestation of the decreased availability of high-quality natural nest sites due to increasing development; indicative of high densities of breeding birds; indicative of abundant and available prey; or simply a display of higher tolerance for disturbance by certain breeding pairs.

Much more research regarding raptor responses to human activities and land use is warranted, particularly with respect to long term population responses to habitat degradation. However, the literature suggests that under many circumstances, human land-use patterns can have a negative affect on individual raptors and raptor populations. The concern is compounded when cumulative effects of various land-use activities are considered. It is likely that some threshold level of land use could be reached in a given area beyond which raptor and other wildlife populations could be seriously impacted.

GUIDELINES

Human activities can result in disturbance to raptors and their habitats, potentially resulting in population declines. It is the Service's Mitigation Policy (Fed. Reg. Vol. 46, No. 15, pp. 7644-7663) to "seek to mitigate losses of fish, wildlife, their habitats, and uses thereof from land and water developments." Mitigation as defined [40 CFR Part 1508.20 (a-e)] by the President's Council on Environmental Quality has been incorporated into the Service's Mitigation Policy to sequentially include avoidance, minimization, rectification, reduction over time, and compensation for negative impacts to wildlife and habitats.

To facilitate maintenance and enhancement for all raptor populations amid continued human encroachment into their habitats, the following guidelines, developed according to the Service's Mitigation Policy, provide a framework to:

1. Identify raptor resources potentially affected by proposed land use activities, including raptor nesting, wintering, and foraging habitats.

2. Assess potential level of impacts (both positive and negative) to raptors and their habitats.

3. Protect and enhance high-valued raptor habitat components.

4. Provide reasonable protection for individual raptors and their nesting, winter-roosting, and foraging activities.

5. Document changes in raptor populations in an area during and following a proposed action.

Recommendations provided herein for habitat protection and nest/roost site protection are intended to facilitate a consistent approach to raptor management. As stated previously, it is important to also realize that these guidelines can be modified on a site-specific and project-specific basis based on field observations and knowledge of local conditions. Revisions to these guidelines may also occur as our knowledge of raptor ecology improves. The resulting management actions should always ensure protection of individual raptors and raptor populations.

Guideline modifications should be coordinated with appropriate Service, UDWR, and/or land management agency biologists to ensure that the intent of these guidelines is maintained. Other interested resource specialists such as rock climbing groups (e.g., the Access Fund) or raptor groups (e.g., Hawkwatch International) should also be included as appropriate in efforts to develop raptor management actions and apply these guidelines at specific locales. Guidance specific to certain activities continue to be developed and should be used in combination with these guidelines as appropriate: for example, the Avian Power Line Interaction Committee[1] (APLIC 1994, 1996) has developed practices for raptor protection on power lines and the Access Fund (Pyke 1997) provides guidance for raptor/rock climber interactions.

These guidelines do not supersede provisions of the MBTA, Eagle Protection Act, ESA or associated Recovery Plans.

RESOURCE IDENTIFICATION

In assessing the degree of land use impacts to raptors, it is important first to document the occurrence and distribution of raptors and their habitats within and proximal to areas slated for development or increased human activity.

Existing data -- Proponents of land use activities should assess all existing data available on raptors, including their nests, winter roosts, and foraging habitats within and proximal to areas slated for development or increased human activity. The UDWR maintains a computerized database regarding raptors, which can be accessed for consultation purposes and project impact assessment. Other land management agencies (U.S. Bureau Land Management, U.S. Forest

[1] APLIC is comprised of the Bonneville Power Administration, Edison Electric Institute, 13 electric utility companies, and the U.S. Fish and Wildlife Service.

Service, National Park Service, etc.) also possess site-specific information and should be consulted as appropriate.

- Raptors occurring in the State of Utah are identified in Table 1. Statewide seasonal occurrences for each species are also presented as well as habitats considered important for breeding, wintering, and foraging activities (Wagner 1980, Walters 1981, Palmer 1988, Dalton et al. 1990; UDWR 1997; L. Dalton, F. Howe, and J. Parrish, UDWR, pers. comm.). In addition, Table 1 identifies level of state and/or federal protection provided for each species (the Service and UDWR should be contacted for the most current legal status of each species).

Surveys -- When existing raptor information is unavailable or determined to be insufficient, raptor surveys should be conducted to determine species and locate nests, winter roosts, and other important habitats (e.g., foraging). This will assist in a determination of potential impacts from the proposed action. Terrain and habitat types should be evaluated when selecting an appropriate method for conducting raptor surveys (e.g., aerial surveys vs. ground surveys, walking transects vs. driving transects). Biologists from the Service, UDWR, and/or the land management agency are available to assist with the selection of appropriate and site-specific survey techniques. Since surveys can be interactive with nesting raptors, federal and state permits will likely be required.

- Surveys for broad-scale or permanent developments are advised for a minimum three year period prior to the start of construction unless there is existing information about the local raptor population. These surveys should include species use, status, and locations of raptor nest sites (occupied or unoccupied), winter roost sites, and associated habitat use areas.

- Where feasible, pre-project surveys should include at least one cycle of a known prey's population fluctuation since raptor densities are partly responsive to prey fluctuations. Microtine rodents have been documented with fluctuations of 3-4, 4-7, and 9-10 year intervals (Speirs 1939, Elton 1942, Dymond 1947, Keith 1963); prairie dogs and ground squirrels with population fluctuations of 3-5 years (Barnes 1982); and jackrabbit populations have been suggested to fluctuate at 7-10 year intervals (Clark 1972, Wagner and Stoddart 1972, Newton 1979, McAdoo and Young 1980, Thompson et al. 1982, K. Keller, 1998, pers. comm.).

- For the life of the project, a qualified wildlife biologist should be retained to annually inventory and document raptor nesting and winter roosting status within the proposed land use impact area and at least one mile distant to external project boundaries.

- Data and overall results from baseline and annual surveys should be provided to the Service and UDWR for incorporation into UDWR's computerized raptor database. Publishing data and results should also be considered to develop information regarding

raptor populations and responses to human activities and developments.

Prior disturbance history and tolerance of raptors -- As mentioned previously, some individual and breeding pairs of raptors appear relatively unperturbed by some human disturbance and human-induced impacts and continue to breed successfully amid these activities. Nesting within or near human-altered environments may be a manifestation of the decreased availability of high-quality natural nest sites; indicative of high densities of breeding birds; indicative of abundant or available prey; or simply a display of higher tolerance for disturbance by certain individuals or breeding pairs. Accordingly, it is not the intent of these guidelines to restrict current land use activities in those situations where raptors appear to have acclimated to the current level of disturbance and human-induce impacts. However, these Guidelines should be closely followed if proposed land use activities may result in exceeding the current levels and timing of disturbances. Coordination with Service, UDWR, and/or land management agency wildlife biologists should be accomplished when proposed land use activities will result in increasing the current disturbance levels in or near raptor use areas. An assessment of raptor population status/trends in a project area may be important in determining current and projected levels of impact to raptors and their habitats.

POTENTIAL LEVEL OF IMPACT TO RAPTOR POPULATIONS

Consequences of human activities to raptor populations will depend in large part on the proportion of nests and habitats affected by a disturbance. The potential level of impacts should be determined prior to proceeding with proposed land use activities:

1. Impacts to raptor habitat should be assessed by quantifying and/or qualifying losses of habitat value. The Service's Mitigation Policy considers habitat value to be the primary measure for determining impacts to wildlife habitat, including raptors. The Service's Mitigation Policy further suggests application of methods such as Habitat Evaluation Procedures (HEP) to evaluate project impacts to wildlife habitats, including raptor habitats as identified in Table 1. Other evaluation methods may be used, including best professional judgement by qualified biologists. Whether a habitat alteration is an adverse impact to raptors and whether it requires mitigation should be determined in coordination with appropriate Service, UDWR, and/or land management agency wildlife biologists.

2. Impacts to raptor population levels can be evaluated in part by determining the proportion of nests potentially affected by project activities for each species. Size of area selected for this analysis should be dependent on the type of disturbance, species of raptors, and topographical and vegetation features. Generally, broad scale land use activities are likely to impart more devastating population effects than single, point disturbances (Nelson 1979).

To ensure comprehensive analysis of proposed project impacts to raptors, evaluations should

address, but not necessarily be limited to the following:

1. Direct and indirect impacts to raptor habitat and nesting success. Direct impacts may include, but are not limited to: loss of foraging habitat from the project footprint, direct mortality of raptors (e.g., due to collisions with vehicles, electrocution on power lines), and loss of nest sites or winter roost sites. Indirect impacts may include, but are not limited to: noise disturbance, degradation of habitat adjacent to the project area, habitat fragmentation, contamination of food sources, and reduction or changes in available prey species.

2. Cumulative impacts of the proposed project to raptor habitat and nesting success when added to past, present, and reasonably foreseeable future actions.

3. Raptor population and habitat trends on "control areas" outside the proposed project area that are not impacted by similar actions as the proposed action.

HABITAT MANAGEMENT

General Guidelines

Habitat loss, degradation, and fragmentation are widely accepted causes contributing to raptor population declines worldwide (Snyder and Snyder 1975, Newton 1979, LeFranc and Millsap 1984). Availability of nests and food supply are considered limiting factors for raptor populations (Whitcomb et al. 1981, Temple 1986, Wilcove et al. 1986, Cline 1988, Watson and Langslow 1989). Raptors compensate for the loss of foraging and nesting habitat by abandoning established territories and/or attempting to utilize less productive or already occupied territories (Nelson 1979, Newton 1979). Other factors affecting raptor distributions and densities include human persecution, exposure to toxic chemicals, diseases, parasites, and predators (Mersmann and Fraser 1988, Newton 1988).

Habitat management recommendations should be planned to:

1. Avoid or minimize impacts to habitats which could reduce or change raptor prey populations beyond the natural range of variation.

2. Avoid or minimize impacts to habitats preferred by raptors for nest and roost locations.

3. Mitigate for unavoidable habitat losses.

Recommendations in the following sections are intended to facilitate project planning efforts in light of regulatory requirements of various wildlife laws and provisions of NEPA. These recommendations are not all-inclusive of available strategies, but provide a framework for land use planners to follow. Project proponents should select from these management

recommendations and/or develop other protective measures based on the raptor species, the project and its potential impacts. Generally, project proponents should first avoid impacts to raptors and only then minimize and mitigate unavoidable impacts. Coordination with biologists from the Service, UDWR, and/or the respective land management agency will help ensure that the objectives and recommendations of these guidelines are achieved. The occurrence and habitat requirements of other wildlife species in the area should also be taken into account when selecting and implementing these habitat management plans.

Guidelines for Avoiding and Minimizing Impacts

Raptor Foraging Habitat

A variety of birds, small mammals, reptiles, amphibians, and insects constitute the bulk of the prey base for raptor species (Steenhof 1983, Palmer 1988). Some species will forage on carrion as well as live prey, some are specialists that primarily take fish, while others are generalists (Steenhof 1983). Construction of facilities, transportation infrastructure, power lines, and other needs contributing to habitat loss and fragmentation are often required by many types of industrial development and can directly and indirectly affect diversity, abundance, and availability of raptor prey populations. Road developments in particular have been shown to restrict movements of small mammals and birds which may affect their dispersal and population levels (Oxley et al. 1974). Management and mitigation efforts should be focused on maintaining and improving habitats sufficient to support healthy prey populations. Some raptors such as burrowing owls use human-altered environments and human structures such as culvert drains and pipes (Botelho and Arrowood 1996). In certain circumstances, these features may be emphasized in management and mitigation efforts.

Recommendations:

1. Avoid disturbance to raptor habitats. Despite limited geographic extent, riparian vegetation provides extraordinary wildlife value, and should be given special attention.

2. Retain or increase snags within and adjacent to project areas as hunting perches for raptors. Prey species also utilize snags as nesting areas, food sources, and overwintering habitat.

3. Minimize impacts over broad areas, to the extent feasible. Place proposed new construction and human activities within already disturbed areas whenever possible.

4. Limit the project footprint to the smallest area necessary to meet project needs.

5. Reclaim disturbed areas and obliterate roads as soon as possible following construction, operation, and completion of project activities.

6. Close or reduce use of roads within known high-use raptor areas, particularly during crucial

raptor breeding or winter roosting periods.

7. Increase prey habitat through measures such as vegetation plantings or thinnings, depending on the target species.

Nesting and Roosting Habitat

Preservation of nesting and roosting habitat is important to maintaining raptor populations. Where feasible, activities should be managed to improve the nest stand structure and roosting habitat for raptors.

Recommendations:

1. Place proposed project developments to avoid direct or indirect loss or modification of nesting and roosting habitat.

2. Enhance nest and roost site availability to increase attractiveness to raptors. For some species, artificial nest sites can be constructed to enhance use of previously or currently disturbed areas. In some situations, natural substrates can be modified or developed to attract nesting raptors.

    a. Plant trees to expedite replacement in areas suffering effects of habitat degradation. Trees commonly utilized by nesting raptors include aspen, cottonwoods, willows, junipers, ponderosa pines, and other conifers. Where livestock grazing occurs, plantings may need to be protected from livestock damage until they become established. Livestock grazing strategies should be developed to ensure maintenance or improvement of raptor nesting/roosting habitat.

    b. Trees or snags with existing raptor nests can be stabilized if alternative sites are limited.

    c. Rockpiles can be constructed to provide perches and nest sites for some raptor species. Prey species also benefit from the hiding and denning values provided by rockpiles.

    d. Ledges and crevices can be widened or deepened on cliffs to encourage nesting by some raptor species.

    e. Artificial nest platforms and nest boxes can be constructed for some raptor species to increase potential nesting sites (Millsap et al. 1987). Call (1979) provides appropriate specifications for tree-nesting, cavity nesting, and underground-nesting raptors. Individual artificial nest platform designs are available on a species by species basis for most raptors.

3. Improve existing nest sites. Quality of existing nests may be more important than the quantity

in some areas (Millsap et al 1987).

a. Remove excessive accumulations of nest material (primarily for cliff-nesting raptors). Long-term buildup of nest material can bring a nest into reach of a cliff top, increasing accessibility by predators.

b. Remove rocks or other debris which have fallen into nests, rendering them unusable by raptors (primarily for cliff-nesting raptors).

c. Reinforce and stabilize trees, snags, and cliff ledges which contain existing nests to perpetuate continued use of these established sites.

Direct Mortality within Habitat Use Areas

Of 25 types of land-use actions identified by Olendorff et al. 1989, at least 8 (32%) of these are known to cause individual raptor mortalities, including: wind energy, roads/railroads, utility lines, fire, mechanical/chemical, illegal harvest, heavy metals, and rodent control agents/pesticides. For example, direct mortality of raptors occurs along roadways and railways from collisions with moving vehicles. Raptors foraging along roadside habitats or on road-killed carcasses increase the potential for raptor-vehicle collisions. For instance, in a two-year study, 26 observations were made of young ferruginous hawks eating dead jackrabbits on roads in northern Utah and southern Idaho (Howard 1975). Road-killed jackrabbits have also been identified as a primary food source for bald eagles wintering in Utah (Platt 1976a). Traffic collisions are a significant factor of mortality for many species of owls and at certain levels may result in local population declines (Glue 1971, Shawyer 1987, Moore and Mangel 1996). Illner (1992) documented 21 times greater vehicle-owl collisions along roads with car speeds of more than 50 mph than on roads with slower traffic.

Raptor mortality on roadways is not well documented in Utah. However, 15 eagles (other raptors were not documented) were reported killed in Carbon and Emery counties in 1996-1997 (M. Milburn, UDWR, 1998, pers. comm.); most of the collisions were reported to involve coal-hauling trucks. Many other raptor deaths likely occurred, but were not reported. Of note, in response to high eagle mortality along I-70 in Emery County, the Utah Department of Transportation in 1989 posted "Eagles on Highway" signs to warn motorists of the bird's tendency to forage on carcasses.

Other causes of direct mortality include improperly constructed power lines which can result in the electrocution of raptors attempting to utilize these structures for perching and nesting sites. Collisions with transmission lines and towers also result in direct mortality of raptor species (APLIC 1994, 1996).

Many human activities and proposed developments increase human access to previously remote areas. Many projects include development of access roads which may remain following project

completion. These roads encourage public use for recreational purposes, unfortunately resulting in illegal shooting and other types of persecution of raptors (Newton 1979).

Recommendations:

1. Reduce maximum allowable speeds on roadways as much as practicable, taking into account the type and service area of the road.

2. Implement a removal program for wildlife carcasses along roadways to avoid further mortality of raptors which are attracted to carcasses. Distribution of carcasses to appropriate areas could be considered to supplement food sources for some raptor species, especially during winter periods.

3. Establish educational programs for project area employees to increase awareness of the potential for vehicular collisions and other encounters with raptor species within the project area.

4. Place road signs indicating raptor use areas at appropriate locations along existing and newly constructed roads. Some caution is warranted here. It may be undesirable to alert the public to the presence of raptors in some areas where the potential for illegal take may increase because of such actions.

5. Install and maintain power line facilities in a way that will reduce raptor collisions and electrocution, and encourage nesting/roosting use of properly constructed transmission towers and power poles where appropriate. Reference guidelines are provided in two state-of-the-art reports by the Avian Power Line Interaction Committee (APLIC 1994 and 1996). Additional recommendations and references are provided in Musclow and Dalton (1990, Section H).

6. Limit the number and extent of access roads to minimize recreational use of previously isolated areas, thus reducing human-raptor interactions and probable conflicts.

7. Remove and reclaim roads as soon after requirements for their use have ended.

Guidelines for Mitigating Unavoidable Impacts

In accordance with Service Mitigation Policy, we advise mitigation for replacement of raptor habitat values lost to unavoidable impacts. Mitigation can be accomplished by increasing habitat values of existing raptor use areas on or adjacent to project lands; restoring or rehabilitating previously altered habitat; acquiring land through fee title acquisition, conservation easements, legislative protective designations, and managing acquired land for raptor habitat values; and/or other land management strategies. Where appropriate, mitigation should be developed to contribute toward implementation of other priority action items such as those included in conservation agreements and recovery plans.

STEP 1

Determine the extent and duration of unavoidable losses of raptor habitat (refer to discussion on *Potential Level of Impact to Raptor Populations*). All opportunities to avoid or minimize impacts should already have been considered.

STEP 2

Determine impacts and mitigation for all phases of proposed land use activities, including construction, operation, and reclamation. Generally, mitigation should be determined by the degree of impact to raptors. The duration of an activity (short-term or long-term) would be part of this determination as follows:

For these guidelines, short-term is defined as an activity which would begin outside of a given breeding season and end prior to initiation of a given nesting season. Long-term is defined as an activity which would continue into or beyond a given nesting season.

1. If the proposed project activity is short-term, reclamation of disturbed areas can be accomplished during and following project completion. Habitat reclamation should involve seeding and/or vegetation plantings with native materials to approximate or improve pre-project conditions. Specification of seed mixes and plant types should be coordinated with local natural resource managers to ensure selection of appropriate species. Seedings and plantings should be selected which provide diverse and native vegetation, encouraging habitat diversity, which supports abundant prey populations. Fertilization and/or watering programs may be necessary to successfully establish the vegetation.

2. If the proposed project is long-term or permanent, up-front habitat acquisition, development and/or improvement to mitigate for impacted areas should be considered prior to initiation of the proposed activity. The amount and type of mitigation should be based on losses in habitat value. On-site, in-kind mitigation is preferred, however, off-site and/or out-of-kind mitigation may be considered if the resulting benefits to raptor populations offset the predetermined losses for the project area.

STEP 3

Post-project monitoring to determine the effectiveness of habitat mitigation measures on raptor populations should be an integral component of the mitigation plan. Publishing data and results should also be considered to develop information regarding raptor populations and responses to human activities and developments.

NEST AND ROOST PROTECTION

General Guidelines

Raptors typically demonstrate a high degree of fidelity to nesting locations. Successful habitat management should be complemented by efforts to attain natural or pre-development nesting success of local raptor populations and protection of winter roosting activities. Spatial and seasonal buffer zones have regularly been used to protect individual nest sites/territories to ensure successful breeding and to maintain high use areas by raptors.

Recommendations provided herein are in accordance with the Service's Utah Field Office policy that:

No temporary or permanent surface occupancy occur within species-specific spatial and seasonal buffer zones.

Coordination with appropriate Service, UDWR, and/or land management agency biologists should occur when implementing nest/roost site protective measures to ensure that the intent of these guidelines and associated state and federal regulations are realized.

Buffer zones are defined as seasonal or spatial areas of inactivity in association with individual nests or nesting territories. *Spatial buffers* are defined as radii from known occupied and unoccupied nest sites. *Seasonal buffers* are restrictions on the times when human activities should be allowed to occur within the spatial buffers.

Raptor nesting information and buffer recommendations provided in these guidelines were developed for Utah following review of pertinent literature and coordination with knowledgeable wildlife professionals (Call 1979, Jones 1979, Fitzner 1980, Wood 1980, Dubois 1984, USDI Fish and Wildl. Serv. 1984, White and Thurow 1985, Palmer 1988, Johnsgard 1988, Johnsgard 1990, Dalton et al. 1990, Harmata 1991, USDI Fish and Wildl. Serv. 1995, Richardson and Miller 1997, Calif. Burr. Owl Cons. 1997, L. Dalton, F. Howe, and J. Parrish, UDWR, 1998, pers. comm., C. White, Brigham Young Univ., 1998, pers. comm.). While much of this information would be relevant in other states, particularly within the Rocky Mountain region, adjustments may be needed if applying these guidelines outside Utah.

Recommended buffers should be considered as optimal stipulations intended to protect nesting and roosting under a wide range of activities statewide. However, they are not necessarily site-specific to proposed projects. Land use planners should evaluate the type and duration of the proposed activity, position of topographic and vegetative features, habituation of breeding pairs to existing activities in the proposed project area, and the local raptor nesting density when determining site-specific buffers.

Nest site protection recommendations are devised to:

1. Provide reasonable levels of protection during the raptor nesting and wintering periods by applying appropriate spatial and seasonal buffers zones to nest and roost sites.

2. Preclude impacts to nest sites where possible.

3. Mitigate unavoidable impacts to nest sites.

Protection of both occupied and unoccupied nests is important since not all raptor pairs breed every year or utilize the same individual nest within a nesting territory (Scott 1985). Individual raptor nests left unused for a number of years are frequently reoccupied. For instance, non-use may occur over one prey fluctuation period (7 ± years) for species such as golden eagles or ferruginous hawks (C. White, BYU, 1998, pers. comm.). The importance of individual nest site(s) to overall population stability is unknown, but it is likely that individual sites are selected by breeding pairs for the preferred attributes provided at that location.

Occupied Nests are defined as those nests which are repaired or tended in the current year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or nest marking, freshly molted feathers or plucked down, or current years' mute remains (whitewash) suggest site occupancy. Additionally, all nest sites within a nesting territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site remains occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

Unoccupied Nests are defined as those nests not selected by raptors for use in the current year. Nests would also be considered unoccupied for the non-breeding period of the year (see Table 2). The exact point in time when a nest becomes unoccupied should be determined by a qualified wildlife biologist based upon a knowledge that the breeding season has advanced such that nesting is not expected. Inactivity at a nest site or territory does not necessarily indicate permanent abandonment.

Guidelines for Avoiding and Minimizing Impacts

STEP 1

Determine the appropriate species-specific spatial and seasonal buffer zones as presented in Table 2 for raptors that may be impacted by the proposed land-use activity.

Nesting

- Seasonal buffers represent the outermost dates known in Utah for the arrival of adult

birds at nesting territories through post-fledging dependency of the young. Actual dates for each stage of nesting can vary by region, elevation, and weather conditions; as well as individual pairs. For instance, sharp-shinned hawks in Washington County in southwestern Utah nest two to three weeks earlier than those in Cache County in northern Utah [Platt 1976 (b)]. Routine, annual surveys of nesting localities may provide more precise on-site information regarding individual nests. Survey results should be clearly documented to augment available information on raptors. Biologists from the Service, UDWR, and/or land management agency should be consulted for site-specific nesting chronlogy which would allow adjustment of these recommended seasonal buffers.

- Typically, the recommended spatial buffers (Table 2) for threatened and endangered species are 1.0 miles (except 0.5 miles for the Mexican spotted owl); recommended spatial buffers for other diurnal raptors are 0.5 miles except 0.25 miles for the prairie falcon; and no buffer is presently considered necessary for the American kestrel and common barn-owl. Exceptions are based in part on suspected tolerance levels within Utah and existing Recovery Plans.

Winter Roosting

- Spatial buffer zones recommended for raptor nesting protection are also encouraged for activities occurring proximal to raptor winter concentration areas from *November through March*. We recommend maintaining a spatial buffer equal to one-half of the recommended buffers for nests (Table 2) unless site-specific topography or vegetation allow for smaller buffers. Appropriate Service, UDWR, and/or land management agency biologists should be consulted prior to adjusting buffers for winter concentration areas.

- Daily activities which must occur within recommended spatial buffers at winter night roost sites should be scheduled *after 0900 hours*, after which most raptors have vacated their roost. Likewise, daily activities should terminate *at least one hour prior to official sunset* to allow birds an opportunity to return to the roost site undisturbed (Call 1979).

STEP 2

Consult Table 3 for recommendations to avoid and/or minimize human impacts to raptor nesting success during the breeding season. Recommendations in the table are NONE, HALF, and FULL; referring to the proportion of the spatial buffer (as presented in Table 2) recommended during progressive points in the nesting chronology.

- Aircraft flight paths should also respect recommended spatial and seasonal buffer zones. Where intrusions within the recommended buffers must occur, flights should maintain a *minimum* 1000 feet elevation and *minimum* 30 mph speed during overflights

to minimize disturbance to raptors and raptor nest sites.

STEP 3

Apply the information attained in Steps 1 and 2 to the following guidelines for occupied and unoccupied nest sites to avoid or minimize effects of proposed land use activities to nesting raptors:

- Occupied raptor nests: Activities should not occur within the spatial/seasonal buffer of any nest (occupied or unoccupied) when raptors are in the process of courtship and nest site selection. Egg laying, incubation, fledging, brooding, and post-fledging dependency periods are protected by varying seasonal and spatial buffers (Tables 2 and 3).

  Short term land use and human use activities should only proceed within the spatial buffer of an occupied nest outside the seasonal buffer, after coordination with appropriate Service, UDWR, and/or land management agency biologists. Mitigation for habitat loss or degradation should be planned. Long term land use activities and human use activities should not occur within the species-specific spatial buffer zone of occupied nests.

- Unoccupied raptor nests: If a nest site within a territory is deemed unoccupied after sufficient time has elapsed in a specified breeding season and prior to the beginning of the next year's breeding season, human activity could be allowed within the nesting area. This period varies dependent on raptor species. However, as a general rule, even renesting will usually not occur later than May 30 (C. White, BYU, 1998, pers. comm.).

  Short term land use and human activities may progress near a nest or nest territory designated as unoccupied. For long term land use activities, unoccupied nests should be protected for 7 years, or the period a known preferred prey species fluctuates from population highs to lows. At the end of the 7-year period, each nest should be evaluated by a qualified wildlife biologist as to its potential future use. Criteria could include the raptor species current population trend in the local area, the corresponding prey species population levels and trends, as well as past, current, and future impacts of the proposed action. Nests could also be considered permanently abandoned if the nest has been physically damaged past the point of repair by raptors.

  Long-term land use activities and human use activities should not occur proximally to unoccupied nests unless it is determined that mitigation is appropriate and can be accomplished prior to initiation of the long-term disturbance. Coordination with Service, UDWR, and/or land management agency

biology is recommended when completing this assessment.

STEP 4

Establish and ensure implementation of post-project and post-mitigation monitoring plans to determine possible impacts to the local raptor population as well as success of mitigative measures. Monitoring should include documentation of raptor nesting success, use of historical roost concentration areas, as well as recovery of affected prey base and habitats.

Permits for Unavoidable Impacts

Situations may arise where human activity must occur within recommended spatial and seasonal buffers provided for raptors. For instance, a raptor may decide to construct a new nest in an area already threatened by mining subsidence or within an area previously unused by raptors and scheduled for development. When taking of nests is determined by the applicant to be the only alternative, application for federal and state permits must be made through the appropriate authorities. Coordination with appropriate Service, UDWR, and/or land management agency biologists should occur to ensure compliance with State and Federal wildlife regulations.

Federal Permits

Migratory Bird Permits and Eagle Permits must be obtained through the Service's Migratory Bird Permit Office for take of raptor nests (50 CFR 13, 21-22). The Service will determine upon application whether there is a valid justification for the permit. Permits will not be issued if they would potentially threaten a wildlife or plant population [50 CFR 13.21 (b)(4)]. Permits may be revoked if continuation of the permitted activity would be detrimental to maintenance or recovery of the affected population [50 CFR 13.28 (a)(5)]. Golden eagle nests may only be taken when they are inactive[2] and only if the taking is compatible with the preservation of the area nesting population [50 CFR 22.25(c)]. The applicant is responsible for determining population level and habitat impacts of the proposed project and developing mitigation measures. For instance, mitigation measures may include reclaiming disturbed land to enhance golden eagle nesting and foraging habitat as per 50 CFR 22.25 (a)(9).

State Permits

Take of protected wildlife is not allowed without having obtained necessary State of Utah permits and/or certificates or registration. UDWR will determine upon application whether there is a valid justification for the permit and/or certificate of registration. Additional permits and/or certificates of registration may be deemed necessary by the Wildlife Board whenever proposed

[2] Inactive nest in this context means a golden eagle nest that is not currently used by golden eagles as determined by the absence of any adult, egg, or dependent young at the nest during the 10 days before the nest is taken (50 CFR 22.3).

actions are deemed detrimental to wildlife populations in the State of Utah. Each applicant for appropriate permits and/or certificates of registration for a take of protected wildlife is required to provide detailed information why a take of protected wildlife is considered necessary.

Guidelines for Mitigating Unavoidable Impacts

Mitigation Techniques

Examples of techniques to mitigate unavoidable impacts to raptors and their habitats follow. These recommendations are not all-inclusive of available strategies, but provide a framework for land use planners to follow. Project proponents should select management recommendations and/or develop other techniques based on the raptor species, the project and its potential impacts. Success of these techniques is generally varied and somewhat dependent on the species, individual raptors, individual breeding pairs, and type of disturbance:

1. *Relocation of young and nests*

Extensive coordination with Service, UDWR, and/or resource management wildlife biologists is highly encouraged when attempting relocation of young and nests of raptors. Techniques involving relocation of raptor young and nests have been successfully accomplished for some species and are intended to maintain a breeding pair's use of their home range despite disturbance or loss of the traditional nest site (Postovit et al. 1982). Nonmigratory species such as golden eagles, which maintain an average of four to six nests per nesting territory in Utah, may be more accepting of this strategy than migratory raptors which may shift territories in response to prey availability (Postovit and Postovit 1987). Case studies in Wyoming (Postovit et al. 1982, Parrish et al. 1994) showed high success rates for relocation of golden eagle and ferruginous hawk nests and nestlings. Relocations of great horned owls, short-eared owls, prairie falcons, and red-tailed hawks also have met with success. The following recommendations from Postovit and Postovit 1987 have been provided to foster successful relocation efforts:

a. Determine a raptor pair's home range and movement patterns.

b. Select a relocation site as far from disturbance as possible, but within the home range and near preferred use areas such as roosts, perches, and foraging sites.

    - Line of sight visibility to original nest sight should be considered. If distant or not visible from original nest, the relocation may be made in stages with a mobile platform. Moves greater than 1/4 mile distant from the original nest are not recommended. Selection of previously used nest locations or natural substrates for relocation is preferred.

c. Establish new nest sites at least two years prior to planned relocation to allow acclimation by the adult birds.

d. Schedule nest relocations to occur outside the raptor's breeding season.

e. Nestlings should only be moved when they are one-half way through the nestling period since they no longer require continuous brooding by the adults.

2. *Deterring use of an existing nest*

Extensive coordination with Service, UDWR, and/or resource management wildlife biologists is highly encouraged when attempting to discourage use of an existing nest by raptors. Deterrence measures are restricted to non-lethal methods intended to prevent nesting in areas under active development and at nests where destruction or high levels of disturbance are likely to occur. Nesting raptors would be afforded complete protection until fledging of young is completed. Deterrence is not always successful; consideration should be given to whether other potential nests or nests sites are available within the area. Postovit and Postovit (1987) recommended the following deterrence methods:

a. Blocking access to nests with welded wire to prevent egg laying.

- Blocking access to nests has resulted in breeding pairs building new nest sites and accepting existing alternate nests (Parrish et al. 1994). At a coal mine in southeastern Utah, a golden eagle pair succeeded at removing the nesting material from beneath the wire cage, to rebuild the nest at a nearby location (B. Bates, UDWR, 1998, pers. comm.).

b. Removing nest starts or rendering a nesting substrate unusable.

c. Repeated disturbance using loud noises.

- Some wildlife may become habituated over time to loud noises or scare tactics, so this may provide only short-lived deterrence.

3. *Habituating raptors to increased disturbance or noise levels*

Beginning land use, human activities, or construction prior to the breeding season will allow a pair of raptors to "choose" whether the nest site is still acceptable considering the disturbance. Warning sirens at regular intervals have also been used to alert raptor pairs to potentially startling noises such as blasting. This technique has generally been used where there is no acceptable alternative to the proposed action. While loss of the nest site may occur, the goal of this technique is to avoid the loss of eggs or young and allow the adults an opportunity to select an alternate nesting site.

Monitoring and documentation of results is recommended following any of the aforementioned techniques to maximize success of efforts. Publishing data and results should also be considered to widely circulate information regarding success of raptor mitigation techniques.

CONCLUSION

It has been the intent of these guidelines to provide land use planners with the tools to develop successful raptor management and mitigation strategies proximal to disturbances from land use activities. Raptor survey information attained through implementation of these guidelines will also provide a means to track raptor population trends and document population responses to human use of their environments.

The guidelines have presented recommendations for protection of raptor life stages (i.e., nesting and wintering) as well as raptor habitats. The recommendations are hardly exhaustive of available protective strategies, nor are all recommendations intended to be incorporated on every proposed project. Coordination with appropriate Service, UDWR, and/or land management agency biologists is important during the analysis of project impacts and selection of protective measures.

Project proponents should seek first to avoid or minimize impacts. Where there are inevitable losses or degradations of habitat or disturbance to individual birds, mitigation can be incorporated to lessen the impact. Overall, these guidelines have been designed to maintain viable raptor populations amid continued human use of the environment.

QUATTRO PRO -- TABLE 1 INSERT

Table 2. Nesting periods and recommended buffers for raptors in Utah

Species	Spatial Buffer (miles)	Seasonal Buffer	Incubation, # Days	Brooding, # Days Post-Hatch	Fledging, # Days Post-Hatch	Post-fledge Dependency to Nest, # Days[1]
Bald eagle	1.0	1/1-8/31	34-36	21-28	70-80	14-20
Golden eagle	0.5	1/1-8/31	43-45	30-40	66-75	14-20
N. Goshawk	0.5	3/1-8/15	36-38	20-22	34-41	20-22
N. Harrier	0.5	4/1-8/15	32-38	21-28	42	7
Cooper's hawk	0.5	3/15-8/31	32-36	14	27-34	10
Ferruginous hawk	0.5	3/1-8/1	32-33	21	38-48	7-10
Red-tailed hawk	0.5	3/15-8/15	30-35	35	45-46	14-18
Sharp-shinned hawk	0.5	3/15-8/31	32-35	15	24-27	12-16
Swainson's hawk	0.5	3/1-8/31	33-36	20	36-40	14
Turkey vulture	0.5	5/1-8/15	38-41	14	63-88	10-12
California condor	1.0	NN yet	56-58	5-8 weeks	5-6 months	2 months
Peregrine falcon	1.0	2/1-8/31	33-35	14-21	35-49	21
Prairie falcon	0.25	4/1-8/31	29-33	28	35-42	7-14
Merlin	0.5	4/1-8/31	28-32	7	30-35	7-19
American kestrel	NN[2]	4/1-8/15	26-32	8-10	27-30	12
Osprey	0.5	4/1-8/31	37-38	30-35	48-59	45-50
Boreal owl	0.25	2/1-7/31	25-32	20-24	28-36	12-14
Burrowing owl	0.25	3/1-8/31	27-30	20-22	40-45	21-28
Flammulated owl	0.25	4/1-9/30	21-22	12	22-25	7-14
Great horned owl	0.25	12/1-9/31	30-35	21-28	40-50	7-14
Long-eared owl	0.25	2/1-8/15	26-28	20-26	30-40	7-14
N. saw-whet owl	0.25	3/1-8/31	26-28	20-22	27-34	7-14
Short-eared owl	0.25	3/1-8/1	24-29	12-18	24-27	7-14
Mex. Spotted owl	0.5	3/1-8/31	28-32	14-21	34-36	10-12
N. Pygmy owl	0.25	4/1-8/1	27-31	10-14	28-30	7-14
W. Screech owl	0.25	3/1-8/15	21-30	10-14	30-32	7-14
Common Barn-owl	NN[2]	2/1-9/15	30-34	20-22	56-62	7-14

[1] Length of post-fledge dependency period to parents is longer than reported in this table. Reported dependency periods reflect the amount of time the young are still dependent on the nest site; i.e. they return to the nest for feeding.

[2] Due to apparent high population densities and ability to adapt to human activity, a spatial buffer is not currently considered necessary for maintenance of American kestrel or Common barn-owl populations. Actions resulting in direct mortality of individual birds or take of known nest sites is unlawful.

Table 3. Recommended proportion (None, Half, or Full) of the species-specific spatial buffer zones for level and duration of activities during raptor nesting				
NESTING PHENOLOGY (Risk Level)				
	Courtship and Nesting (High)	**Incubation, and Brooding (High)**	**Post-Brooding Nestling Period (Moderate)**	**Post Fledging Dependency (Moderate)**
In-Vehicle, Recreational[a] Activity: Any recreational vehicle driving off-road, or on dirt roads, and not part of a routinely used transportation corridor.				
less than 1 hour[b]	NONE	NONE	NONE	NONE
less than 1 hour[c]	HALF	HALF	NONE	NONE
greater than 1 hour	FULL	FULL	HALF	HALF
Out-of-Vehicle, Recreational Activity: including, but not limited to hiking, dispersed camping, rock climbing, birdwatching, fishing, hunting, biological surveys.				
less than 1 hour[b]	HALF	HALF	NONE	NONE
less than 1 hour[c]	FULL	FULL	HALF	HALF
greater than 1 hour	FULL	FULL	FULL	FULL
Developed Recreation: including, but not limited to ski resorts, snowmobile and off-road vehicle courses, developed campground sites, and group tour operations.				
	FULL	FULL	FULL	FULL
Industrial, Municipal, and Transportation Disturbance: including, but not limited to urbanization; mining; oil and gas development; logging; power line construction; road construction & maintenance; use of explosives; agricultural operations; fixed wing and helicopter overflights.				
less than 1 hour[b]	FULL	FULL	HALF	HALF
less than 1 hour[c]	FULL	FULL	FULL	HALF
greater than 1 hour	FULL	FULL	FULL	FULL

[a] Recreational activities are defined as those providing outdoor recreation, entertainment, or adventure.

[b] No more than 1 repetition in a 24 hour period for a duration of less than 1 hour is allowable.

[c] More than one repetition per 24 hours, spaced no less than 2 hours apart, occurs during daylight hours. Full buffer zone is required for any activities occurring during nighttime hours

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Exhibit 10. Project Recommendations for Migratory Bird Conservation. U.S. Fish and Wildlife Service, Utah Field Office

Project Recommendations for Migratory Bird Conservation
U.S. Fish and Wildlife Service, Utah Field Office (May 2020)

The Migratory Bird Treaty Act (MBTA) is the cornerstone of migratory bird conservation and protection in the United States. The MBTA implements four treaties that provide for international protection of migratory birds. The USFWS maintains a list of all species protected by the MBTA at 50 C.F.R. § 10.13. This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and songbirds. The MBTA does not protect introduced species such as the house (English) sparrow, European starling, rock dove (pigeon), Eurasian collared-dove, and non-migratory upland game birds.

The U.S. Fish and Wildlife Service (USFWS) recommends that the following migratory bird conservation measures be implemented as you complete your project:

a. Wherever possible we recommend that projects be completed outside the migratory bird nesting season to avoid and minimize impacts to migratory birds.

b. If the project includes the loss or degradation of migratory bird habitat then complete all portions of the project that could impact migratory birds outside the maximum migratory bird nesting season. This includes ground-disturbing activities, habitat removal, clearing or cutting of vegetation, grubbing, burning, etc. If that is not feasible, we recommend that you complete the project outside the minimum migratory bird nesting season.

    The time period associated with the maximum migratory bird nesting season is approximately December to August. The time period associated with the minimum migratory bird nesting season is April 1 to July 15 (time-frame when the majority of annual bird nesting occurs).

c. If the project needs to occur during the migratory bird nesting season, impacts to birds can be avoided or minimized by completing vegetation treatments and vegetation clearing and removal actions during the fall and winter (outside the migratory bird nesting season per above) prior to the nesting season when the project will begin.

d. If a project may impact migratory birds and/or cause the loss or degradation of migratory bird habitat, and such work cannot occur outside the migratory bird nesting season, we recommend surveying impacted portions of the project area to determine if migratory birds are present and nesting. Surveys should emphasize detecting presence of USFWS Birds of Conservation Concern, take place during the nesting season the year before the nesting season in which project is scheduled to occur, and should document presence of migratory birds at least throughout the entire minimum migratory bird nesting season (April 1 to July 15). Nest surveys should be conducted by qualified biologists using accepted survey protocols.

e. If your project must occur during the maximum migratory bird nesting season, implement measures to prevent migratory birds from establishing nests in the potential impact

area. These steps could include covering equipment and structures and hazing birds away from the project footprint. Migratory birds can be hazed to prevent them from nesting until egg(s) are present in the nest. However, we acknowledge that hazing migratory birds away from a project site is likely only practical for projects with a relatively small footprint (i.e. projects about 5 to 10 acres in size or smaller). Do not haze or exclude access to nests for bald or golden eagles or any migratory bird species federally listed under the Endangered Species Act (ESA), as these actions are prohibited without a permit for these species.

f. If your project must be scheduled during the maximum migratory bird nest season, and vegetation clearing and removal work cannot be completed prior to the nesting season, then we recommend performing a site-specific survey for nesting birds no more than 7 days prior to all ground-disturbing activities or vegetation treatments.

    If you document active migratory bird nests during project nest surveys, we recommend that a spatial buffer be applied to these nests for the remainder of the nesting season. Vegetation treatments or ground-disturbing activities within the buffer areas should be postponed until after the birds have fledged from the nest. A qualified biologist should confirm that all young have fledged.

We recommend the use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck 2002) to provide consistent application of raptor conservation measures to your project or action in Utah. We provide recommendations for raptor surveys and conservation measures in the Guidelines to ensure that proposed projects will avoid adverse impacts to raptors. Locations of existing raptor nests should be identified prior to the initiation of project activities. We recommend that appropriate spatial buffers and timing limits be applied to your project for raptors during crucial breeding and nesting periods relative to raptor nest sites or territories per our Guidelines. Raptors may initiate nesting as early as December for certain species. Nesting and fledging can continue through August and for some species the young may not fledge from nests until September.

Exhibit 11. Handbook of Field Methods for Monitoring Landbirds, U.S. Department of Agriculture

placeholder to be provided in final

Exhibit 12. Burrowing Owl Survey Protocol and Mitigation Guideline

BURROWING OWL SURVEY PROTOCOL AND MITIGATION GUIDELINES

Prepared by:

The California Burrowing Owl Consortium

April 1993

INTRODUCTION

The California Burrowing Owl Consortium developed the following Survey Protocol and Mitigation Guidelines to meet the need for uniform standards when surveying burrowing owl *(Speotyto cunicularia)* populations and evaluating impacts from development projects. The California Burrowing Owl Consortium is a group of biologists in the San Francisco Bay area who are interested in burrowing owl conservation. The following survey protocol and mitigation guidelines were prepared by the Consortium's Mitigation Committee. These procedures offer a decision-making process aimed at preserving burrowing owls in place with adequate habitat.

California's burrowing owl population is clearly in peril and if declines continue unchecked the species may qualify for listing. Because of the intense pressure for development of open, flat grasslands in California, resource managers frequently face conflicts between owls and development projects. Owls can be affected by disturbance and habitat loss, even though there may be no direct impacts to the birds themselves or their burrows. There is often inadequate information about the presence of owls on a project site until ground disturbance is imminent. When this occurs there is usually insufficient time to evaluate impacts to owls and their habitat. The absence of standardized field survey methods impairs adequate and consistent impact assessment during regulatory review processes, which in turn reduces the possibility of effective mitigation.

These guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or the resources that support them. The process begins with a four-step survey protocol to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures are followed to minimize impacts to burrowing owls, their burrows and foraging habitat on the site. These guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

Each project and situation is different and these procedures may not be applicable in some circumstances. Finally, these are not strict rules or requirements that must be applied in all situations. They are guidelines to consider when evaluating burrowing owls and their habitat, and they suggest options for burrowing owl conservation when land use decisions are made.

Section 1 describes the four phase Burrowing Owl Survey Protocol. Section 2 contains the Mitigation Guidelines. Section 3 contains a discussion of various laws and regulations that protect burrowing owls and a list of references cited in the text.

We have submitted these documents to the California Department of Fish and Game (CDFG) for review and comment. These are untested procedures and we ask for your comments on improving their usefulness.

SECTION 1 BURROWING OWL SURVEY PROTOCOL

PHASE I: HABITAT ASSESSMENT

The first step in the survey process is to assess the presence of burrowing owl habitat on the project site including a 150-meter (approx. 500 ft.) buffer zone around the project boundary (Thomsen 1971, Martin 1973).

Burrowing Owl Habitat Description

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of burrowing owl habitat: both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable burrowing owl habitat can be verified at a site by an observation of at least one burrowing owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

The Phase II burrow survey is required if burrowing owl habitat occurs on the site. If burrowing owl habitat is not present on the project site and buffer zone, the Phase II burrow survey is not necessary. A written report of the habitat assessment should be prepared (Phase IV), stating the reason(s) why the area is not burrowing owl habitat.

PHASE II: BURROW SURVEY

1. A survey for-burrows and owls should be conducted by walking through suitable habitat over the entire project site and in areas within 150 meters (approx 500 ft.) of the project impact zone. This 150-meter buffer zone is included to account for adjacent burrows and foraging habitat outside the project area and impacts from factors such as noise and vibration due to heavy equipment which could impact resources outside the project area.

2. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approx. 100 ft.), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (approx. 160 ft.) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons.

3. If burrows or burrowing owls are recorded on the site, a map should be prepared of the burrow concentration areas. A breeding season survey and census (Phase III) of burrowing owls is the next step required.

4. Prepare a report (Phase IV) of the burrow survey stating whether or not burrows are present.

5. A preconstruction survey may be required by project-specific mitigations no more than 30 days prior to ground disturbing activity.

PHASE III: BURROWING OWL SURVEYS, CENSUS AND MAPPING

If the project site contains burrows that could be used by burrowing owls, then survey efforts should be directed towards determining owl presence on the site. Surveys in the breeding season are required to describe if, when, and how the site is used by burrowing owls. If no owls are observed using the site during the breeding season, a winter survey is required.

Survey Methodology

A complete burrowing owl survey consists of four site visits. During the initial site visit examine burrows for owl sign and map the locations of occupied burrows. Subsequent observations should be conducted from as many fixed points as necessary to provide visual coverage of the site using spotting scopes or binoculars. It is important to minimize disturbance near occupied burrows during all seasons. Site visits must be repeated on four separate days. Conduct these visits from two hours before sunset to one hour after or from one hour before to two hours after sunrise. Surveys should be conducted during weather that is conducive to observing owls outside their burrows. Avoid surveys during heavy rain, high winds (> 20 mph), or dense fog.

Nesting Season Survey. The burrowing owl nesting season begins as early as February 1 and continues through August 31 (Thomsen 1971, Zam 1974). The timing of nesting activities may vary with latitude and climatic conditions. If possible, the nesting season survey should be conducted during the peak of the breeding season, between April 15 and July 15. Count and map all burrowing owl sightings, occupied burrows, and burrows with owl sign. Record numbers of pairs and juveniles, and behavior such as courtship and copulation. Map the approximate territory boundaries and foraging areas if known.

Survey for Winter Residents (non-breeding owls). Winter surveys should be conducted between December 1 and January 31, during the period when wintering owls are most likely to be present. Count and map all owl sightings, occupied burrows, and burrows with owl sign.

Surveys Outside the Winter and Nesting Seasons. Positive results, (i.e., owl sightings)- outside of the above survey periods would be adequate to determine presence of owls on site. However, results of these surveys may be inadequate for mitigation planning because the numbers of owls and their pattern of distribution may change during winter and nesting seasons. Negative results during surveys outside the above periods are not conclusive proof that owls do not use the site.

Preconstruction Survey. A preconstruction survey may be required by project-specific mitigations and should be conducted no more than 30 days prior to ground disturbing activity.

PHASE IV: RESOURCE SUMMARY, WRITTEN REPORT

A report should be prepared for CDFG that gives the results of each Phase of the survey protocol, as outlined below.

Phase I: Habitat Assessment

1. Date and time of visit(s) including weather and visibility conditions; methods of survey.

2. Site description including the following information: location, size, topography, vegetation communities, and animals observed during visit(s).

3. An assessment of habitat suitability for burrowing owls and explanation.

4. A map of the site.

Phase II: Burrow Survey

1. Date and time of visits including weather and visibility conditions; survey methods including transect spacing.

2. A more detailed site description should be made during this phase of the survey protocol including a partial plant list of primary vegetation, location of nearest freshwater (on or within one mile of site), animals observed during transects.

3. Results of survey transects including a map showing the location of concentrations of burrow(s) (natural or artificial) and owl(s), if present.

Phase III: Burrowing Owl Surveys, Census and Mapping

1. Date and time of visits including weather and visibility conditions; survey methods including transect spacing.

2. Report and map the location of all burrowing owls and owl sign. Burrows occupied by owl(s) should be mapped indicating the number of owls at each burrow. Tracks, feathers, pellets, or other items (prey remains, animal scat) at burrows should also be reported.

3. Behavior of owls during the surveys should be carefully recorded (from a distance) and reported. Describe and map areas used by owls during the surveys. Although not required, all behavior is valuable to document including feeding, resting, courtship, alarm, territorial, parental, or juvenile behavior.

4. Both winter and nesting season surveys should be summarized. If possible include information regarding productivity of pairs, seasonal pattern of use, and include a map of the colony showing territorial boundaries and home ranges.

5. The historical presence of burrowing owls on site should be documented, as well as the source of such information (local bird club, Audubon society, other biologists, etc.).

Burrowing: Owl Survey Protocol

April 1993

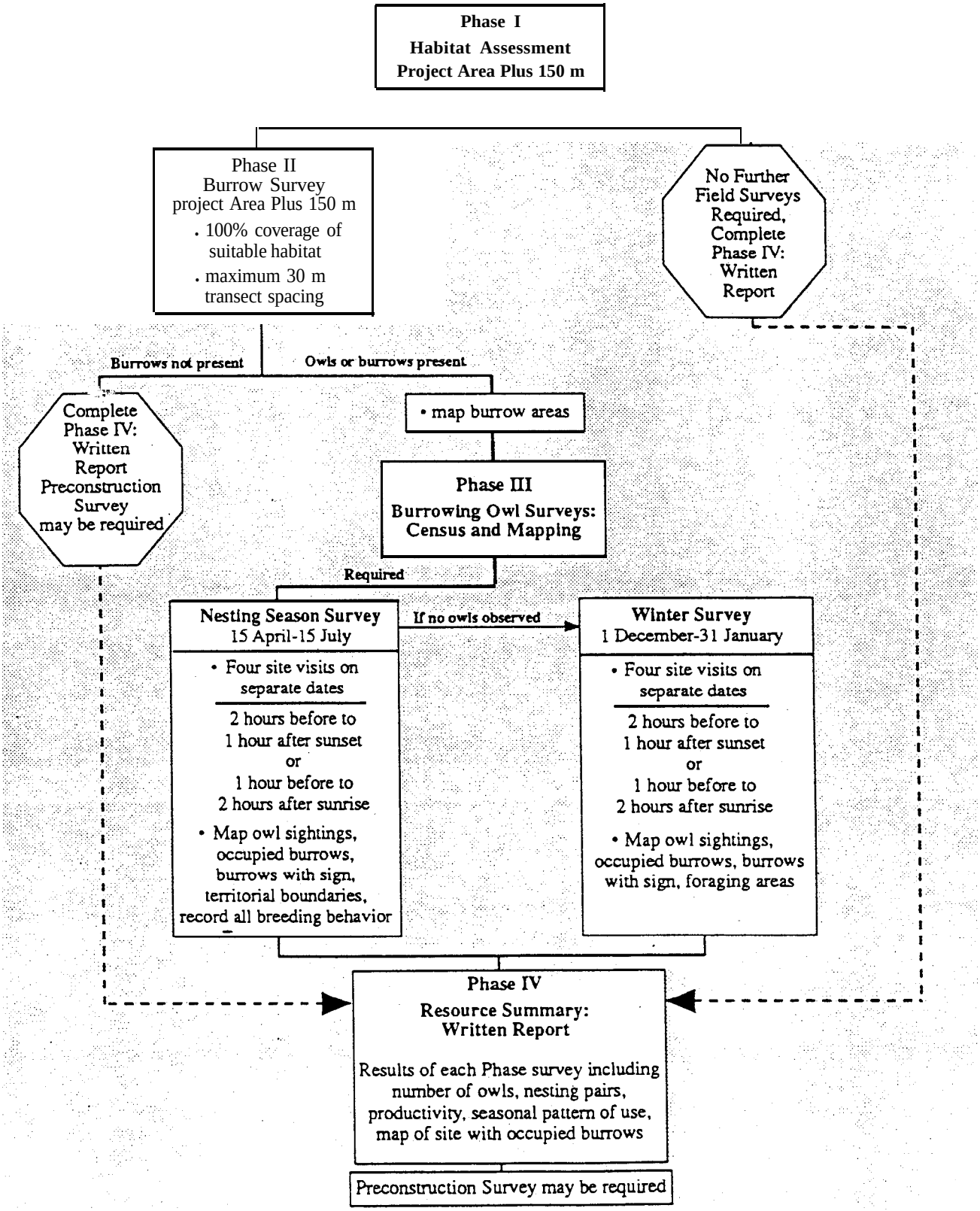

Figure 1.

SECTION 2 BURROWING OWL MITIGATION GUIDELINES

The objective of these mitigation guidelines is to minimize impacts to burrowing owls and the resources that support viable owl populations. These guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or their resources. The process begins with a four-step survey protocol (see *Burrowing Owl Survey Protocol)* to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures described below are followed to minimize impacts to burrowing owls, their burrows and foraging habitat on the site. These guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

Mitigation actions should be carried out prior to the burrowing owl breeding season, generally from February 1 through August 31 (Thomsen 1971, Zarn 1974). The timing of nesting activity may vary with latitude and climatic conditions. Project sites and buffer zones with suitable habitat should be resurveyed to ensure no burrowing owls have occupied them in the interim period between the initial surveys and ground disturbing activity. Repeat surveys should be conducted not more than 30 days prior to initial ground disturbing activity.

DEFINITION OF IMPACTS

1. Disturbance or harassment within 50 meters (approx. 160 ft.) of occupied burrows.

2. Destruction of burrows and burrow entrances. Burrows include structures such as culverts, concrete slabs and debris piles that provide shelter to burrowing owls.

3. Degradation of foraging habitat adjacent to occupied burrows.

GENERAL CONSIDERATIONS

1. Occupied burrows should not be disturbed during the nesting season, from February 1 through August 31, unless the Department of Fish and Game verifies that the birds have not begun egg-laying and incubation or that the juveniles from those burrows are foraging independently and capable of independent survival at an earlier date.

2. A minimum of 6.5 acres of foraging habitat, calculated on a 100-m (approx. 300 ft.) foraging radius around the natal burrow, should be maintained per pair (or unpaired resident single bird) contiguous with burrows occupied within the last three years (Rich 1984, Feeney 1992). Ideally, foraging habitat should be retained in a long-term conservation easement.

3. When destruction of occupied burrows is unavoidable, burrows should be enhanced (enlarged or cleared of debris) or created (by installing artificial burrows) in a ratio of 1:1 in adjacent suitable habitat that is contiguous with the foraging habitat of the affected owls.

4. If owls must be moved away from the disturbance area, passive relocation (see below) is preferable to trapping. A time period of at least one week is recommended to allow the owls to move and acclimate to alternate burrows.

5. The mitigation committee recommends monitoring the success of mitigation programs as required in Assembly Bill 3180. A monitoring plan should include mitigation success criteria and an annual report should be submitted to the California Department of Fish and Game.

AVOIDANCE

Avoid Occupied Burrows

No disturbance should occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding Season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding Season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird (Figure 2).

MITIGATION FOR UNAVOIDABLE IMPACTS

On-site Mitigation

On-site passive relocation should be implemented if the above avoidance requirements cannot be met. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 m from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls (Figure 3). Relocation of owls should only be implemented during the non-breeding season. On-site habitat should be preserved in a conservation easement and managed to promote burrowing owl use of the site.

Owls should be excluded from burrows in the immediate impact zone and within a 50 m (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances: One-way doors should be left in place 48 hours to insure owls have left the burrow before excavation. One alternate natural or artificial burrow should be provided for each burrow that will be excavated in the project impact zone. The project area should be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels

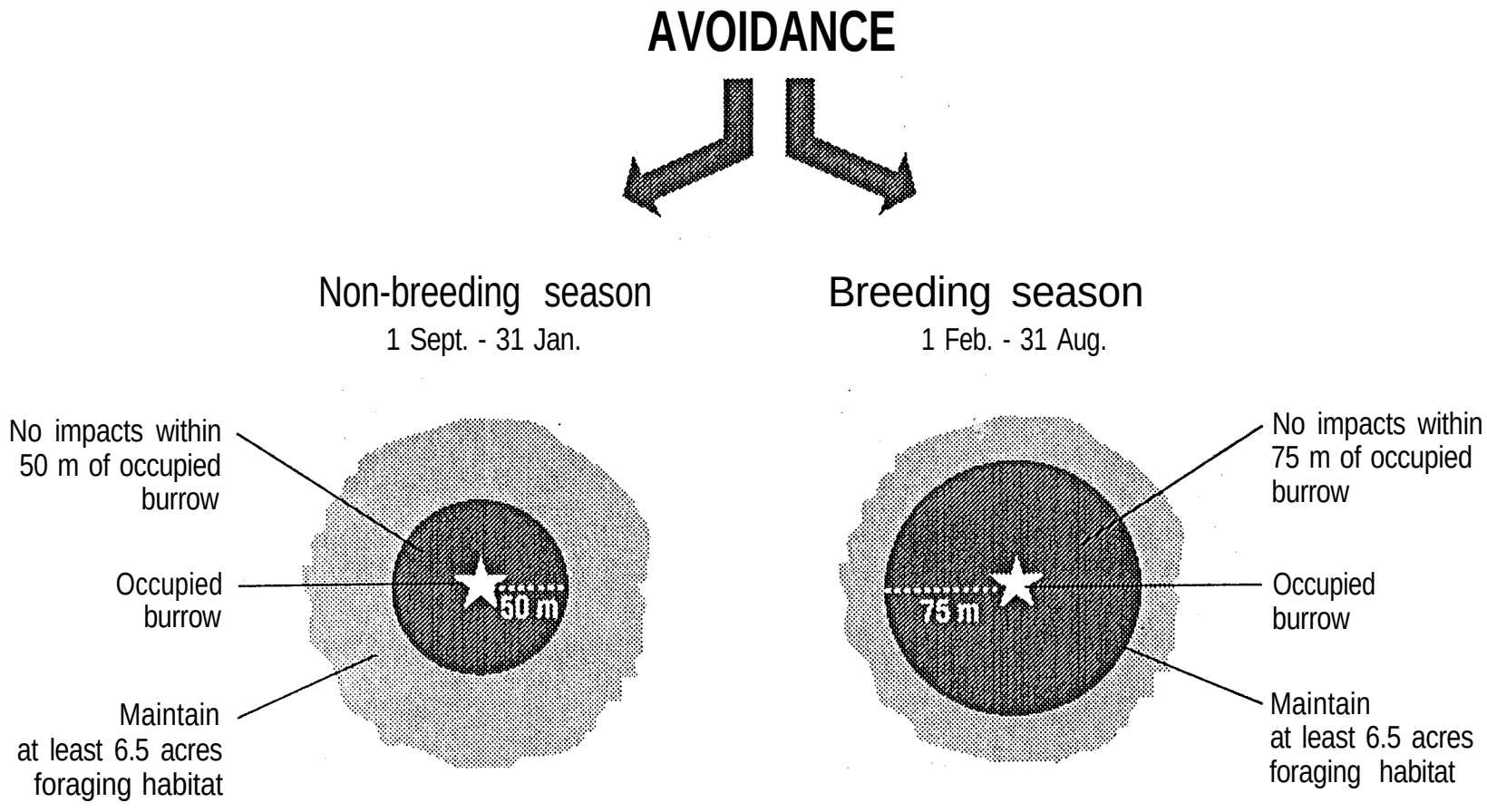

Figure 2. Burrowing owl mitigation guidelines.

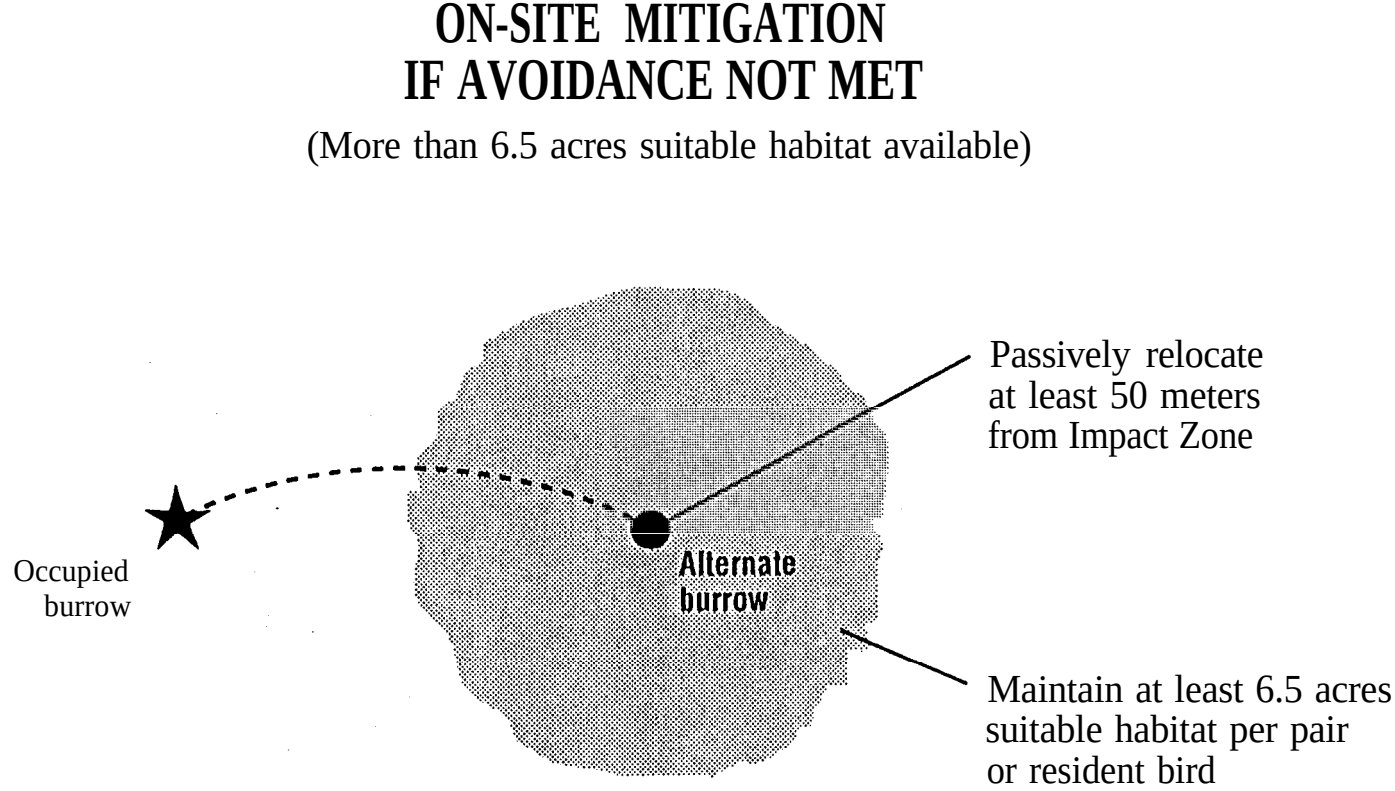

Figure 3. Burrowing owl mitigation guidelines.

during excavation to maintain an escape route for any animals inside the burrow.

Off-site Mitigation

If the project will reduce suitable habitat on-site below the threshold level of 6.5 acres per relocated pair or single bird, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat, as defined in the *Burrowing Owl Survey Protocol*, and the site approved by CDFG. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios:

1. Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.

2. Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.

3. Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.

SECTION 3 LEGAL STATUS

The burrowing owl is a migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter, any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend is considered "taking" and is potentially punishable by fines and/or imprisonment. Such taking would also violate federal law protecting migratory birds (e.g., MBTA).

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur (Sections 21001(c), 21083. Guidelines 15380, 15064, 15065). Avoidance or mitigation must be presented to reduce impacts to less than significant levels.

CEQA AND SUBDIVISION MAP ACT

CEQA Guidelines Section 15065 directs that a mandatory finding of significance is required for projects that have the potential to substantially degrade or reduce the habitat of, or restrict the range of a threatened or endangered species. CEQA requires agencies to implement feasible mitigation measures or feasible alternatives identified in EIR's for projects which will otherwise cause significant adverse impacts (Sections 21002, 21081, 21083; Guidelines, sections 15002, subd. (a)(3), 15021, subd. (a)(2), 15091, subd. (a).).

To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; "minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action." (Guidelines, Section 15.370).

Section 66474 (e) of the Subdivision Map Act states "a legislative body of a city or county shall deny approval of a tentative map or parcel map for which a tentative map was not required, if

it makes any of the following findings:... (e) that the design of the subdivision or the proposed improvements are likely to cause substantial environmental damage or substantially and avoidably injure fish and wildlife or their habitat". In recent court cases, the court upheld that Section 66474(e) provides for environmental impact review separate from and independent of the requirements of CEQA (Topanga Assn. for a Scenic Community v. County of Los Angeles, 263 Cal. Rptr. 214 (1989).). The finding in Section 66174 is in addition to the requirements for the preparation of an EIR or Negative Declaration.

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Attachment B: Biological Resources Monitoring Plan

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C1: Biological Resources Conservation Plan

Attachment B: Biological Resources Monitoring Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Tables

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measure
BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
EIS	Environmental Impact Statement
Forest Service	U.S. Department of Agriculture Forest Service
MBTA	Migratory Bird Treaty Act
Plan	Biological Resources Monitoring Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROD	Record of Decision
ROW	Right-of-Way
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

The purpose of this Biological Resources Monitoring Plan (Plan) is to identify biological monitoring requirements to be implemented by the Construction Contractor(s) and their biological monitors during construction of the Cross-Tie 500-kV Transmission Project (Project). Construction-phase and construction reclamation-phase monitoring will be required to ensure that the mitigation and conservation measures provided in the Plan of Development (POD) are adhered to in accordance with the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (Forest Service) Records of Decision (RODs). This Plan also includes biological monitoring requirements during the post-construction (operation and maintenance) phase of the Project, as applicable.

To ensure that biological resources are appropriately monitored during construction, operations, and maintenance phases, this Plan contains the following:

- Roles and responsibilities of involved parties specific to biological monitoring
- Communication and decision-making protocols between federal agencies; TransCanyon, LLC, (the Company); the Compliance Inspection Contractor (CIC); and the Construction Contractor(s)
- Procedures established for communication and cooperation between Project personnel and biological monitors
- Instructions for monitoring and reporting on biological resources for the Project

1.1 Compatibility to Other Plans

Species included in this Plan are discussed in the POD Appendix C1: Biological Resources Conservation Plan and the POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resource Survey Requirements. Special-status species and their habitats documented within or adjacent to the Project are depicted on POD Appendix A: Detailed Route Alignment Figures. Map set data will be updated by the Construction Contractor(s) based on required surveys (refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements). This Plan also builds on and provides additional details related to the roles and responsibilities of the parties described in POD Appendix B6: Environmental Compliance Inspection Plan.

2 ROLES AND RESPONSIBILITIES

The following section summarizes the responsibilities of entities specifically responsible for biological monitoring during construction of the Project that are not included in POD Appendix C1: Biological Resources Conservation Plan, Section 3. Additional details of the roles and responsibilities of parties involved in the Project are described in POD Appendix B6: Environmental Compliance Inspection Plan.

The various parties involved with construction monitoring include the Company, the BLM, the Forest Service, the CIC, the Construction Contractor(s), and their biological monitors. The role of the Company, the BLM, the Forest Service, CIC, and Construction Contractors are fully or partially detailed in POD Appendix C1: Biological Resources Conservation Plan, Section 3.

2.1 Construction Contractor(s)

The Construction Contractor(s) are contractually bound to comply with all laws, regulations, and permit requirements, including all Project-specific permitting documents and landowner agreements, throughout all phases of the Project. During construction, the Construction Contractor(s) are responsible for understanding the construction monitoring needs, providing an appropriately qualified lead biological monitor and biological monitors, and communicating construction plans and schedules to the biological monitors and CIC.

Biological monitoring will be a responsibility of the Construction Contractor(s). The Construction Contractor(s) will contract or employ an appropriate number of environmental inspectors that will include a lead biological monitor and biological monitors, as further described below. The Construction Contractor(s) are responsible for ensuring the biological monitors have the appropriate qualifications and are qualified to conduct the monitoring work prior to initiating work and ensuring that all biological monitoring reporting needs are met.

2.1.1 Lead Biological Monitor

During construction, the lead biological monitor will be retained by the Construction Contractor(s) and is responsible for coordinating the efforts of the biological monitors, serving as the lead for all reporting, and acting as a lead point of contact for the biological monitors and the CIC. The lead biological monitor may also serve as the lead environmental inspector, as described in POD Appendix B6: Environmental Compliance Inspection Plan, if qualified for both roles.

The Company/Construction Contractor(s) are responsible for ensuring that the lead biological monitor qualifies under the functional classification series for either 0486 Wildlife Biologist or 0430 Botanist as defined under the U.S. Office of Personnel Management. The lead biological monitor must be highly experienced in the following topics: 1) preparing, evaluating, and conducting biological analyses of land and water resources projects and federal permit applications to ensure compliance with appropriate laws and to mitigate or avoid adverse impacts on resources; 2) classifying members of the plant and animal kingdom by name and description and arranging them according to their natural relationships into species, genera, families, and orders; and 3) describing the form and structure of plants and wildlife and tracing underlying similarities in form among various plant and wildlife groups. This person will have at least a master's degree in biology or ecology.

Responsibilities of the lead biological monitor include, but are not limited to, the following:

- Oversee biological monitors' surveying for special-status plants or wildlife, and compile and report survey findings in weekly reports to the CIC, who will be responsible for submitting them to the BLM or Forest Service (as appropriate based on land jurisdiction)
- Ensure all elements of this Plan are successfully implemented
- Oversee and coordinate the activities of all biological monitors
- Coordinate and conduct biological monitoring during construction
- Conduct training classes for biological monitors on identifying plant and wildlife species and habitats that support, or potentially could support, plant and wildlife species of concern on the Project

- Ensure quality assurance and quality control for all aspects of this Plan
- Identify specific special-status plants and wildlife or listed plants and wildlife in areas of Project disturbance
- Prepare and submit a weekly report to the CIC and the Construction Contractor(s) summarizing daily report findings, concerns, or issues encountered during monitoring activities
- Provide a summary of Plan compliance to the CIC, Company, Construction Contractor(s), and federal agency upon completion of the construction phase of the Project
- Issue stop-work orders, when safe to do so, if, at any stage, monitoring detects an impact on:
  - Special-status species
  - Raptor (all hawks, eagles, and owls) behavior, territory establishment, nest attendance, or nest site conditions
  - Big game species within mapped seasonal habitats during crucial periods

2.1.2 Biological Monitors

To help ensure that construction activities are conducted in a manner that complies with all federal, state, and local regulations, the Construction Contractor(s) will contract or employ a team of environmental inspectors that includes biological monitors. The biological monitors will work under the lead biological monitor to facilitate the implementation of this Plan. Biological monitors may also serve as environmental inspectors, as described in POD Appendix B6: Environmental Compliance Inspection Plan, if qualified for both roles.

The Company/Construction Contractor(s) are responsible for ensuring that the biological monitors meet federal agency requirements, including educational requirements (or possess a combination of education and experience), for Wildlife Biologist Occupational Series 0486 and/or Botany Occupational Series 0430. It is necessary for biological monitors to meet the requirements for occupational series based on the work being performed.

The responsibilities of a biological monitor during construction will include, but are not limited to, the following:

- Identify specific special-status plants and wildlife or listed plants and wildlife in areas of Project disturbance
- Coordinate the identification of resource presence/absence in biologically sensitive areas
- Provide daily briefing of construction crews outlining restrictions associated with biologically sensitive areas
- Conduct daily contact with the environmental inspectors and lead biological monitor
- Immediately notify the lead biological monitor in the event construction activities violate the terms and conditions of the POD and/or grants/easements

- Prepare and submit daily summaries of biological monitoring efforts and Plan compliance to the lead biological monitor
- Conduct construction monitoring, reporting, and other field-based tasks described in this Plan, or as required
- Issue stop-work orders, when safe to do so, if, at any stage, monitoring detects an impact on:
  - Special-status species
  - Raptor (all hawks, eagles, and owls) behavior, territory establishment, nest attendance, or nest site conditions
  - Big game species within mapped seasonal habitats during crucial periods

3 PROJECT PHASES

3.1 Construction

The biological resources construction phase monitoring requirements for special-status plant and wildlife species, including survey area, year of last survey, timing, and methodology, are located in Table 1 and the Exhibits. For information on the responsible parties related to construction phase biological resource monitoring see Section 2 of this Plan and POD Appendix C1: Biological Resources Conservation Plan, Section 3.

3.2 Operations and Maintenance

The biological resources operations and maintenance phase monitoring requirements for special-status plant and wildlife species, including survey area, year of last survey, timing, and methodology, are located in Table 1 and the Exhibits. Additionally, information regarding protective measures during operations and maintenance are provided in POD Appendix B7: Operation and Maintenance Plan, and the Project's Avian Protection Plan. For information on the responsible parties related to construction phase biological resource monitoring see Section 2 of this Plan and POD Appendix C1: Biological Resources Conservation Plan, Section 3.

4 BIOLOGICAL MONITORING

Biological monitoring is required to ensure that biological resource Applicant Committed Environmental Protection Measures (ACEPMs) and mitigation measures provided in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources and in POD Appendix C1: Biological Resources Conservation Plan, Attachment F: Biological Opinion (*to be updated* if applicable) are adhered to during construction, operation and maintenance phases of the Project. In general, biological monitoring is required in locations where construction or maintenance activities are occurring in or near habitat for Endangered Species Act–listed species; BLM-, Forest Service-, or state-sensitive species; or in some cases, common species. Species of concern and their habitats are depicted in POD Appendix A: Detailed Route Alignment Figures. Map set data will be updated by the Construction Contractor(s) based on required surveys (refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements), which will then be used to determine specific monitoring locations during construction. Biological monitoring may also be required for certain biological resources as a condition of an approved wildlife

variance request (refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan).

4.1 Monitoring Requirements

Table 1 lists the plant and wildlife species and/or groups and habitats that will require biological monitoring during construction and potentially operations and maintenance of the Project. If at any stage monitoring detects an impact beyond that authorized for any given special-status species, the biological monitor will issue a stop work order, as soon as safe to do so, and notify the Construction Contractor's lead biological monitor and environmental manager who will then notify the CIC and the Company so that impacts are avoided, minimized and/or mitigated.

Table 1. Biological Resources Monitoring Requirements (*to be updated as applicable*)

Species [1]	Status	Monitoring Requirement [2]	Time of Year Monitoring is Required [3]	Monitoring Location
BLM sensitive plants	BLM Sensitive	• Flag avoidance areas in accordance with POD Appendix B2: Flagging, Fencing, and Signage Plan during construction • Provide full-time biological monitoring during all surface-disturbing activities in the area of known BLM sensitive plants • Ensure compliance with all applicable sensitive plant avoidance measures	Year-round monitoring of sensitive plant locations identified during the appropriate survey season	At mapped plant locations and identified in POD Appendix A: Detailed Route Alignment Figures. Based on spatial restrictions in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources
Raptors (non-eagle) [4]	Protected by the MBTA Many are BLM and Forest Service Sensitive	• Flag avoidance areas in accordance with POD Appendix B2: Flagging, Fencing, and Signage Plan during construction • Refer to Section 4.3 • Romin and Muck 2002 • Refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan for additional information	Within species-specific seasonal restrictions identified in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources	At known nest locations identified in POD Appendix A: Detailed Route Alignment Figures, as amended through preconstruction surveys. Within species-specific spatial restrictions identified in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources

Species [1]	Status	Monitoring Requirement [2]	Time of Year Monitoring is Required [3]	Monitoring Location
Bald and golden eagles	Protected by the Bald and Golden Eagle Protection Act	• Flag avoidance areas in accordance with POD Appendix B2: Flagging, Fencing, and Signage Plan during construction • Refer to Section 4.3 • Refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan for additional information	January 1 through August 31 as listed in (Romin and Muck 2002).	At known nest locations identified in POD Appendix A: Detailed Route Alignment Figures, as amended through preconstruction surveys. Within species-specific spatial restrictions identified in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources
Non-raptorial migratory birds [4]	Protected by the MBTA	• Flag avoidance areas in accordance with POD Appendix B2: Flagging, Fencing, and Signage Plan during construction • Refer to Section 4.4 • Refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan for additional information	Within species-specific seasonal restrictions identified in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources	At known nest locations identified in POD Appendix A: Detailed Route Alignment Figures, as amended through preconstruction surveys. Within species-specific spatial restrictions identified in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources
Kit fox	BLM Sensitive	• Flag avoidance areas in accordance with POD Appendix B2: Flagging, Fencing, and Signage Plan during construction	Year-round	At known kit fox burrow locations identified in POD Appendix A: Detailed Route Alignment Figures, as amended through preconstruction surveys. Within species-specific spatial restrictions identified in POD Appendix C1: Biological Resources Conservation Plan

Species [1]	Status	Monitoring Requirement [2]	Time of Year Monitoring is Required [3]	Monitoring Location
		• Conduct a preconstruction sweep ahead of vegetation removal activities to flush kit fox from the area • Escort all equipment and vehicles within occupied (known burrow) kit fox habitat • Provide full-time biological monitoring during all surface-disturbing activities in areas within 0.25-miles of known burrows		Attachment E: Seasonal and Spatial Restrictions for Biological Resources
Pygmy rabbit	USFWS Species of Concern BLM Sensitive	• Flag avoidance areas in accordance with POD Appendix B2: Flagging, Fencing, and Signage Plan during construction Conduct a preconstruction sweep ahead of vegetation removal activities to flush pygmy rabbit from the area • Escort all equipment and vehicles within occupied (known burrow) pygmy rabbit habitat • Provide full-time biological monitoring during all surface-disturbing activities in areas with known burrows	Year-round	At known pygmy rabbit burrow locations identified in POD Appendix A: Detailed Route Alignment Figures, as amended through preconstruction surveys. Within species-specific spatial restrictions identified in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources

Species [1]	Status	Monitoring Requirement [2]	Time of Year Monitoring is Required [3]	Monitoring Location
Big game habitats [4]	Utah Division of Wildlife Resources and Nevada Department of Wildlife Managed Habitat	• Assess whether Project activities impact big game behavior • Refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan for additional big game monitoring requirements	Within species-specific seasonal restrictions identified in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources	Within species-specific big game habitat identified in POD Appendix C1: Biological Resources Conservation Plan Attachment E: Seasonal and Spatial Restrictions for Biological Resources Seasonal ranges are also presented in POD Appendix A: Detailed Route Alignment Figures

1. Specific monitoring for species and species-groups not discussed in this table are not anticipated for construction, operations, or maintenance. ACEPMs would provide appropriate protective measures for those species.
2. Biological monitoring requirements will be identified in the final EIS and Biological Opinion
3. Biological monitoring in any given area is required only when construction is occurring in that area.
4. A variance request will be required to work within seasonal and spatial restrictions for raptors, non-raptorial migratory birds, and big game habitats. Refer to POD Appendix C1: Biological Resources Conservation Plan Attachment C: Wildlife Variance Management Plan for details.

4.2 Appropriate Monitoring Levels

The number and expertise of monitors will depend on the sensitive resources present at any specific location and the nature of the construction activities occurring. The Construction Contractor(s), along with the lead biological monitor, will determine an appropriate monitoring level based on these variables. Activities that occur in biologically sensitive areas or during periods of heightened sensitivity will require higher levels of monitoring.

4.3 Eagle and Raptor Nest Monitoring Protocol

4.3.1 Establishment of Eagle and Raptor Seasonal and Spatial Restrictions

All identified eagle and raptor nests will be considered occupied[1] when the seasonal restrictions identified in Attachment E: Seasonal and Spatial Restrictions for Biological Resources of POD Appendix C1: Biological Resources Conservation Plan begin. Nests will be assumed occupied until eagle and raptor nest surveys conducted by the Construction Contractor(s) determine otherwise (refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements for eagle and raptor nest survey protocol). If a nest is determined to be occupied, a biological monitor will establish the seasonal and spatial restriction around the nest using the list of seasonal and spatial restrictions provided in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources, which are based on Romin and Muck (2002). Spatial restriction boundaries in Project approved work areas will be marked using flagging placed at the edge of the spatial restriction for any approved Project facilities. Flagging appearance and protocols will be consistent with the direction provided in POD Appendix B2: Flagging, Fencing, and Signage Plan.

4.3.2 Eagle and Raptor Nest Monitoring

In the event that Project activities require encroachment within an established occupied eagle or raptor nest seasonal spatial restriction, a wildlife variance request will be prepared and submitted to the CIC by the Construction Contractor(s), in accordance with the variance process described in POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan and POD Appendix B6: Environmental Compliance Inspection Plan. In the event the variance request is for an occupied eagle nest, coordination with the appropriate state agency and USFWS will be initiated by BLM or Forest Service as defined in POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan. If a wildlife variance request is submitted to the CIC, a biological monitor will be required to visit the nest location during the wildlife variance request review process to determine nest status and eagle or raptor use in the area. There is no need to approach a nest closely to determine the number of eggs or young present if it is observed that an adult is sitting on the nest in an incubating or brooding position or if an adult is observed feeding nestlings (conspicuous vocalizations made by nestlings during food delivery are another clue to exact or approximate nest location). These behaviors indicate that the nest is occupied. The presence of recently fledged young

[1] Occupied nests are defined as those nests that are repaired or tended in the current year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or nest marking, freshly molted feathers or plucked down, or current year's mute remains (whitewash) suggest site occupancy. Additionally, all nest sites in a nesting territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site remains occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young (Romin and Muck 2002).

nearby will suggest that the nest has been successful and subsequently abandoned. Refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan for nest survey requirements associated with a wildlife variance request.

If a wildlife variance request to an eagle or raptor nest seasonal and spatial restriction is approved for an occupied nest, the biological monitor will monitor the nest site daily during all authorized activities that may affect behavior or survival of eagles or raptors at the site. The use of both a high-powered telescope and binoculars is required to enable biological monitors to make observations far enough away from nests to minimize stress and flushing and to avoid eliciting a sustained territorial behavior. Monitoring must begin in the early morning, no less than 1 hour prior to construction personnel arriving in the area.

Biological monitors must remain in the monitoring area to monitor eagle or raptor activity for the daily duration of construction activities. The biological monitors will document nest site conditions, eagle or raptor behavior, and authorized activities each day on the daily inspection report (Section 5). If the biological monitor detects an impact on bird behavior, territory establishment, nest attendance, or nest site conditions, the biological monitor will order work to stop for the source of disturbance, as soon as safe to do so, and notify the Construction Contractor(s) lead biological monitor and environmental manager, who will notify the CIC and the Company. The Construction Contractor(s) will take immediate and appropriate actions to avoid nest or roost abandonment or take.

4.3.3 Termination of Raptor Nest Monitoring Activities

Monitoring for a given nest will terminate when the final nest determination (fledged or failed) is made by the biological monitor or the Project activity and construction that may disturb the nest are no longer occurring within the spatial restriction, whichever occurs first. The biological monitor will notify the lead biological monitor of the final nest determination, who will then notify the CIC. The CIC will be responsible for confirming the nest determination within 48 hours and informing the Construction Contractor(s) of the results of the nest determination confirmation as soon as the results are available. If the CIC confirms that the raptor chicks have fledged or the nest has failed, then construction activities will be authorized to resume without the presence of a biological monitor. As eagles and raptors may attempt to renest after a failed attempt, the biological monitor will survey the area on a weekly basis to ensure no renesting has occurred. This will occur until such time as initiation of a new nesting attempt becomes unlikely or Project activities are no longer within spatial restriction buffers for the nesting species. All flagging associated with the original establishment of the restriction area will remain in place until the nest is no longer considered occupied, or all activities have ceased in the area, whichever occurs first.

4.4 Non-raptorial Migratory Bird Nest Monitoring Protocol

The following section describes the monitoring protocol for passerine and other non-raptorial nests.

4.4.1 Establishment of Non-raptorial Migratory Bird Nest Seasonal and Spatial Restrictions

Non-raptorial migratory bird surveys will be conducted by the biological monitors employed or contracted by the Construction Contractor(s) in accordance with POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements. If active nests (defined as having eggs or chicks) are observed during the surveys, a biological monitor will establish a seasonal and spatial restriction within the approved Project work area using the list of seasonal and spatial restrictions provided in POD Appendix C1: Biological Resources Conservation Plan, Attachment E:

Seasonal and Spatial Restrictions for Biological Resources. Distances will be measured using a hand-held laser range finder in open habitats and a 300-foot survey tape in forested habitats.

Spatial restriction boundaries in Project-approved work areas will be marked using flagging placed at the edge of the spatial restriction for any approved Project facilities. No flagging will be located within 60 feet of an active nest to avoid attracting predators. Flagging appearance and protocols will be consistent with the direction provided in POD Appendix B2: Flagging, Fencing, and Signage Plan.

4.4.2 Non-raptorial Migratory Bird Nest Monitoring

All active nests for which a seasonal and spatial restriction is established in the approved work area, and all active nests within approved protection buffers (See POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources) and active work area boundaries, will be monitored by a biological monitor. Active nests will be monitored weekly at minimum and ideally at 4- to 5-day intervals but monitoring frequency may vary depending on Project activity or other factors as determined by the lead biological monitor. Nest monitoring visits shall never occur when a Woodhouse's scrub-jay (*Aphelocoma woodhousii*), Steller's jay (*Cyanocitta stelleri*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), or female brown-headed cowbird (*Molothrus ater*) is visible in the nest vicinity to protect the nesting species from harm.

Remote observations shall be the technique of choice for nest monitoring observations because of the danger of causing extreme disturbance to the nest and attending adult birds by closely examining nest contents. Remote observations using binoculars or a spotting scope at a distance of 60 feet or more will be used to monitor active nests as often as possible. There is no need to approach a nest closely to determine the number of eggs or young present if it is observed that an adult is sitting on the nest in an incubating or brooding position or if an adult is observed feeding nestlings (conspicuous vocalizations made by nestlings during food delivery are another clue to exact or approximate nest location). These behaviors indicate that the nest is active, as does an observation of an adult carrying food in its bill. The presence of recently fledged young nearby will suggest that the nest has been successful and subsequently abandoned. Determining if and when a nest is still active and/or has fledged by observing the number of eggs or nestlings present will likely be impossible at cavity nests, underground burrow nests, nests located more than 15 feet above ground level, magpie nests, and oriole nests. In these cases, monitoring visits may require up to 30 minutes to observe adult behavior at and near the nest, which will indicate nest status and subsequent need for nest monitoring.

Nests located up to 15 feet above ground level can be monitored by looking directly into the nest or with a mirror mounted on a pole to determine nest contents if there are no indications and behaviors, as described above, that the nest might be active. A bucket truck should be used when safe to allow biological monitors to inspect nests located more than 15 feet above ground level in the immediate vicinity of reasonable road access, particularly for common raven and American crow nests on telephone poles or other structures. If no eggs and/or nestlings are present in nests that are inspected, then the nest may be destroyed to prevent it from becoming an active nest.

Biological monitors conducting nest-monitoring activities will be aware of the possibility that new nests may have been initiated in previously surveyed areas since the last monitoring visit. Additionally, nests used by a breeding pair early in the breeding season may be used by a second pair later in the season. If any bird behavior observed during monitoring suggests that a newly initiated nest of any species is nearby, an attempt will be made to find it. If a new nest is found or a nest become occupied a second time, it will be documented by the biological monitor, a construction activity buffer area will be established and

marked in accordance with POD Appendix A: Detailed Route Alignment Figures, and it will be monitored appropriately.

4.4.3 Termination of Non-raptorial Migratory Bird Nest Monitoring Activities

Monitoring for a given nest will terminate when the final nest determination (fledged or failed) is made by the biological monitor or the Project activity and construction that may disturb the nest are no longer occurring within the approved buffer for that species of the spatial restriction, whichever occurs first. The biological monitor will notify the lead biological monitor of the final nest determination, who will then notify the CIC. The CIC will be responsible for confirming the nest determination within 48 hours and informing the Construction Contractor(s) of the results of the nest determination confirmation as soon as the results are available. If the CIC confirms that the chicks have fledged or the nest has failed, then construction activities will be authorized to resume without the presence of a biological monitor. All flagging associated with the original establishment of the restriction area will be removed by the biological monitor upon termination of nest monitoring activities or when Project activity and construction are no longer occurring in the spatial restriction and potential disturbance is no longer a concern.

5 REPORTING AND COORDINATION REQUIREMENTS

Throughout construction, when biological monitoring is required, biological monitoring reporting will be completed by the biological monitor(s) on a daily basis to document the ongoing biological monitoring actions and implementation of the Plan (note that reporting requirements differ for non-raptorial migratory bird nest monitoring, as described in Section 5.1 below). Biological monitors will be required to fill out the biological monitoring section of the daily inspection report (see POD Appendix B6: Environmental Compliance Inspection Plan) to document monitoring activities, issues that arose, and compliance with required stipulations. Daily inspection reports will be submitted to the lead biological monitor (who may also be the lead environmental inspector) at the end of each day that monitoring has occurred, and the report will include digital photographs and additional supporting documentation, as necessary.

The lead biological monitor will prepare weekly reports that summarize the daily inspection reports from the biological monitors. The Construction Contractor(s) will submit the weekly reports to the CIC and the Company. The CIC will be responsible for submitting the weekly reports to the BLM or Forest Service (as applicable based on land jurisdiction) and to the USFWS and/or state agencies if directed to by the applicable land-management agency. For activities on private lands, the CIC will be responsible for maintaining weekly reports which can be made available to USFWS and/or state agencies upon request. The BLM or Forest Service may disseminate data to other agencies that have management responsibility.

The lead biological monitor will also be responsible for preparing an annual report summarizing the findings of the weekly reports for the Project's administrative record. Annual reports will present information showing the effectiveness of mitigation and conservation measures implemented during construction of the Project for sensitive biological resources covered under this Plan, with the exception of non-raptorial migratory birds (see Section 4.1.3 below). These reports will be submitted by the Construction Contractor(s) to the CIC and the Company by January 31 of each year. Similarly, the CIC will be responsible for submitting the annual reports to the BLM and Forest Service no later than January 31 of each year. Additional information on avian-specific reporting is provided in the Avian Protection Plan.

5.1 Non-raptorial Migratory Bird Nest Reporting

Reporting for non-raptorial migratory bird nest monitoring differs from the reporting requirements for other species covered under this plan. The following section describes the reporting specific to non-raptorial migratory bird nest monitoring.

5.1.1 Digital Archiving of Nest Survey and Monitoring Data

Biological monitors will use a handheld tablet device to record all non-raptorial migratory bird nest data from monitoring activities. This field data collected by the biological monitors will be downloaded to a centralized database on a daily basis to be available to environmental inspectors; Construction Contractor(s); the CIC; and the BLM or Forest Service (as applicable based on land jurisdiction) so that up-to-date information may be uploaded as needed for planning, scheduling, and monitoring purposes.

This centralized, digitized database is the nest monitoring log, which will form the basis for the twice-monthly nest survey and monitoring reports.

5.1.2 Twice-Monthly Nest Reports and Summary

A report outlining all non-raptorial migratory bird nest discoveries, nest monitoring, restriction area establishment, and variance activities will be prepared by the lead biological monitor twice each month during the nesting season (March 15 – August 31) and submitted to the CIC electronically by the Construction Contractor(s). The CIC will be responsible for submitting the reports to the BLM or Forest Service, as applicable.

5.1.3 Annual Report on Nest Discovery, Monitoring, and Avoidance/Minimization Activities

An annual report summarizing all non-raptorial migratory bird nest discovery, seasonal/spatial restrictions, monitoring, avoidance or minimization activities, and an evaluation of the effectiveness of the recommended spatial restrictions will be prepared by the lead biological monitor at the end of each nesting season. The Construction Contractor(s) will be responsible for submitting the annual reports to the BLM, Forest Service, and USFWS by January 31 during each year of Project construction.

6 LITERATURE CITED

Romin, L.A., and J.A. Muck. 2002. *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances*. U.S. Fish and Wildlife Service, Utah Ecological Services, West Valley City, Utah.

Attachment C: Wildlife Variance Management Plan

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C1: Biological Resources Conservation Plan

Attachment C: Wildlife Variance Management Plan

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CONTENTS

Exhibits

Tables

Abbreviations

ACEPMs	Applicant Committed Environmental Protection Measures
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Forest Service	U.S. Department of Agriculture Forest Service
MBTA	Migratory Bird Treaty Act
NDOW	Nevada Department of Wildlife
Plan	Wildlife Variance Management Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-Way
UDWR	Utah Division of Wildlife Resources
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

This Wildlife Variance Management Plan (Plan) provides the plan for the Bureau of Land Management (BLM), U.S. Department of Agriculture Forest Service (Forest Service), U.S. Fish and Wildlife Service (USFWS), Utah Division of Wildlife Resources (UDWR), Nevada Department of Wildlife (NDOW), TransCanyon, LLC, (the Company), and the Construction Contractor(s) to engage in flexible management of wildlife resources when conditions warrant during construction and operation and maintenance of the Cross-Tie 500-kV Transmission Project (Project). Flexible management is defined as the appropriate federal land management agency approval, on a case-by-case basis, for site-specific Project activities to occur within spatial restrictions or during seasonal restrictions for sensitive wildlife species when certain criteria are met. For the purposes of this Plan, a wildlife variance request would be used to request a similar variance for special status plant species and any reference to the variance request process would apply to wildlife and plant species.

Biological resources were determined to be suitable for flexible management and mitigation variances by the federal land management agency due to 1) species use intensity of seasonal habitats; 2) timing of proposed Project work; and 3) climatological variation (e.g., mild winters). The mechanism for the BLM, the Forest Service, and state agencies (as needed) to implement flexible management is the variance request process, which allows for case-by-case exceptions to the Project's spatial and/or seasonal wildlife restrictions identified in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources. The methodology that facilitates the approval or denial of these wildlife variance requests through the Level 2 variance request procedure are outlined in POD Appendix B6: Environmental Compliance Inspection Plan.

Adherence to the seasonal and spatial restrictions included in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources will be mandatory unless a wildlife variance request has been approved via the procedures outlined in POD Appendix B6: Environmental Compliance Inspection Plan. Wildlife variances will be based on site-specific conditions and will not be applied Project-wide. The federal land management agency may restore the spatial or seasonal restriction outlined in the POD after granting a variance request in the event that resource conditions change, additional resource protections are needed as determined by a qualified biologist, or in response to a violation of the terms and conditions of the wildlife variance request to a seasonal or spatial restriction.

On federal lands during construction, the Construction Contractor(s) will be responsible for submitting any necessary wildlife variance requests to the BLM or Forest Service, as applicable, consistent with the process outlined in this Plan and also in accordance with the Level 2 variance request procedure outlined in POD Appendix B6: Environmental Compliance Inspection Plan. During operation and maintenance, the Company will assume these responsibilities. This Plan applies to all wildlife variance requests on federal lands. Mitigation measures and other seasonal and spatial restrictions identified in the POD will be implemented over the entire length of the Project, regardless of jurisdiction, while understanding that the BLM and Forest Service do not have the authority to enforce the POD on state and private lands.

On private and state lands during construction, the Construction Contractor(s) will be responsible for submitting wildlife variance requests in accordance with the Level 2 variance request procedure outlined in POD Appendix B6: Environmental Compliance Inspection Plan. In addition, the Construction Contractor(s) will be responsible for coordinating wildlife variance requests for any state-imposed wildlife restrictions with UDWR and NDOW, as applicable, to ensure wildlife variance requests remain consistent with management objectives for the affected resource. During operation and maintenance, the Company will assume these responsibilities.

The Compliance Inspection Contractor (CIC) and/or the federal land management agency will be responsible for reviewing wildlife variance requests on private or state lands to ensure compliance with the Endangered Species Act (ESA), Bald and Golden Eagle Protection Act (BGEPA), Migratory Bird Treaty Act (MBTA), state laws, and consistency with the analysis in the final Environmental Impact Statement (EIS) but will not approve private or state land wildlife variance requests. Wildlife variance requests on private and state lands are not discussed further in this Plan; refer to Appendix B6: Environmental Compliance Inspection Plan for additional details regarding the variance request process for private and state lands.

To ensure wildlife are appropriately protected, this Plan contains the following:

- Roles and responsibilities of involved parties
- Resource conditions that may permit wildlife variances to mitigation measures on federal lands
- Procedures for determining resource conditions
- Procedures for communicating resource conditions and approving variances to mitigation measures
- Procedures for monitoring resource conditions after variances are approved

This Plan contains the following exhibits: Exhibit 1: Variance Request Form; Exhibit 2: Site-Specific Analysis Data Sheet; and Exhibit 3: Wildlife Variance Approval Criteria.

2 ROLES AND RESPONSIBILITIES

The following section summarizes the responsibilities of entities specifically responsible for biological resource variance requests during construction, operation, and maintenance phases of the Project that are not included in POD Appendix C1: Biological Resources Conservation Plan, Section 3. Additional details of the roles and responsibilities of parties involved in the Project are described in POD Appendix B6: Environmental Compliance Inspection Plan.

2.1 Company

During the construction phase, the Company will be responsible for reviewing Construction Contractor–prepared wildlife variance requests that are located on federal lands. During the operation and maintenance phase, the Company will be responsible for preparing and submitting, as applicable, any wildlife variance requests to the BLM and Forest Service. Additionally, during the operation and maintenance phase, the Company will be responsible for contracting and retaining qualified biological monitors, as needed, to support operation and maintenance activities.

2.2 Bureau of Land Management/Forest Service

The BLM or Forest Service will provide either approval or denial of a wildlife variance request based on the resource(s) conditions and will provide such approval or denial in accordance with the process described in POD Appendix B6: Environmental Compliance Inspection Plan. The BLM or Forest Service may cancel an approved wildlife variance request and restore the spatial and seasonal extent of the mitigation measures outlined in the POD in the event that resource conditions change, additional resource protections are needed as determined by a qualified biologist, or in response to a violation of the terms and conditions of the wildlife variance request.

2.3 Utah Division of Wildlife Resources/Nevada Department of Wildlife

The UDWR and NDOW will act as a cooperating agency to the BLM and Forest Service in administration of this Plan for big game resources and other Utah or Nevada wildlife resources.

The UDWR or NDOW will review applicable wildlife variance requests when provided by the BLM and Forest Service. The UDWR or NDOW will provide recommendations to the BLM or Forest Service, as applicable, regarding the wildlife variance requests using professional knowledge, criteria outlined in this Plan, and resource(s) conditions outlined in the wildlife variance request.

2.4 U.S. Fish and Wildlife Service

The BLM and Forest Service will coordinate wildlife variance request reviews with the USFWS for migratory bird, bald and golden eagle nesting, bald eagle roosting, and endangered species act-listed species. The USFWS will provide technical guidance to the appropriate federal agency, if requested, for resources over which the USFWS has authority. . If requested by the BLM or Forest Service, the USFWS will review other wildlife variance requests as well, which will be provided to the USFWS by the BLM and/or Forest Service. For activities in Nevada, coordination would occur with the Nevada Ecological Services Field Office and Region 8 Migratory Birds Office. For activities in Utah, coordination would occur with the Utah Ecological Services Field Office and the Region 6 Migratory Birds Office.

2.5 Compliance Inspection Contractor

The CIC is an on-the-ground agent of the BLM, Forest Service, and other cooperating agencies during the construction phase of the Project. The CIC will be responsible for reviewing and submitting wildlife variance requests to the appropriate federal agency.

If a wildlife variance request is approved by the federal agency, the CIC will be responsible for conducting field inspections and reviewing the Construction Contractor(s) weekly reports to ensure compliance with the terms and conditions of the approved wildlife variance request. The CIC will immediately notify the BLM and/or Forest Service, as applicable, if CIC monitors report that unanticipated resource impacts are occurring, resource conditions have changed and no longer meet the criteria identified in this Plan, or the terms and conditions of the wildlife variance request are violated.

2.6 Construction Contractor(s)

The Construction Contractor(s) will be responsible for developing and maintaining a construction schedule that will avoid wildlife seasonally and/or spatially restricted areas to the extent practicable. In the event that the wildlife seasonally and/or spatially restricted areas cannot be avoided, the Construction Contractor(s) will be responsible for identifying Project locations where work that would otherwise be restricted by the POD may be allowed using the process outlined in this Plan. In these instances, the Construction Contractor(s) will be responsible for preparing a wildlife variance request in compliance with the process provided in this Plan and POD Appendix B6: Environmental Compliance Inspection Plan and submitting the wildlife variance request to the Company and CIC for review.

2.6.1 Biological Monitors

To help ensure construction activities are conducted in a manner that complies with all federal, state, and local regulations, the Construction Contractor(s) will contract a team of environmental inspectors that will include biological monitors. Biological monitors will be contracted by the Construction Contractor(s) during the construction phase of the Project and may be contracted during operation and maintenance if the Company wishes to engage in adaptive management or request a wildlife variance. The biological monitors will work under a lead biological monitor and will coordinate with the CIC to facilitate wildlife variance requests.

When a wildlife variance request is received, biological monitors will be responsible for assessing the status of the affected resources during the wildlife variance request review period while ensuring that the monitoring does not disturb the affected resource. The biological monitors will also conduct monitoring during construction activities for wildlife species that are the subject of variance requests. Biological monitors will document and communicate resource status in writing to the CIC (during construction) or to the BLM and/or Forest Service, as applicable (during operation and maintenance), during all authorized activities that may affect behavior or survival of sensitive wildlife at the site. If a wildlife variance request is approved by the federal agency, it will also be the responsibility of the biological monitor to monitor resource conditions and Project activities in the affected area and to notify the Construction Contractor(s)'s lead biological monitor and environmental manager if Project activities cause unintended impacts to sensitive wildlife resources. If the biological monitor detects an impact on behavior, territory establishment, and for avian species; nest or roost attendance, or nest or roost site conditions (Section 4.3.2), biological monitors will have the authority to issue verbal stop work orders for the affected construction activities to the Construction Contractor(s) during construction. The Construction Contractor's environmental manager then will notify the Company, the CIC, and the appropriate federal land management agency within 24 hours of the impact occurring.

3 WILDLIFE VARIANCE REQUEST PROCESS

The wildlife variance request processes covered under this Plan apply to BLM and Forest Service special-status and state-listed wildlife species, big game, raptors, and non-raptorial migratory birds located on federal lands. Adherence to all seasonal and spatial restrictions for these sensitive wildlife species/resources is mandatory unless a wildlife variance request is approved. Wildlife variance requests will be approved by the appropriate federal land management agency based on biological information, not on the need of the Project. Furthermore, wildlife variance requests may be developed that only pertain to specific construction-related actions and will be based on site-specific conditions as opposed to being applied Project-wide.

This section of the Plan identifies the major steps in the development, review, and approval process of wildlife variance requests for mitigation measures and the spatial and seasonal wildlife restrictions identified in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources. The processes outlined in this section will be implemented in conjunction with the process outlined in POD Appendix B6: Environmental Inspection Compliance Plan for Level 2 variance requests. Agency variance approval criteria for each sensitive wildlife resource are summarized in Exhibit 3.

3.1 Wildlife Variance Request Preparation

Wildlife variance requests will be initiated by the Construction Contractor(s) during the construction phase, and by the Company during the operation and maintenance phase. Each entity will be responsible for determining if the proposed work is appropriate for requesting a wildlife variance. If deemed appropriate and consistent with the requirements of this Plan, the Construction Contractor(s), during the construction phase, and the Company, during the operation and maintenance phase, will perform through contracted biological monitor(s) the necessary fieldwork to determine the condition of the resource(s) (e.g., presence within or near the work area, distance to/from work area, breeding status) for which the wildlife variance request will be prepared.

Upon completion of field work, the Construction Contractor(s) or Company, as applicable, will fill out the required wildlife variance request documentation (Table 1). The wildlife variance request will describe the location, nature, and duration of activities that will be performed if the wildlife variance request is approved, as well as the observed resource(s) conditions at the location. The Construction Contractor(s) or the Company, as applicable, will coordinate with the CIC as appropriate during the variance request preparation to ensure a full understanding of the agency requirements. During construction, the wildlife variance request will be submitted by the Construction Contractor(s) to the Company and CIC for concurrent review and comment prior to any work related to the variance occurring and providing sufficient time for the CIC and the Company to review the wildlife variance request. The wildlife variance request will then be submitted to the BLM and/or Forest Service by the CIC, as applicable, for a decision.

Table 1. Variance Request Forms by Species

Biological Resource	Variance Request Forms Required
Greater sage-grouse (*Centrocercus urophasianus*)	Variance Request Form (Exhibit 1)
Migratory birds	Variance Request Form (Exhibit 1)
Raptors (including bald and golden eagles)	Variance Request Form (Exhibit 1) Site-Specific Raptor Analysis Data Sheet (Exhibit 2)
Big game	Variance Request Form (Exhibit 1)
Other species with specific seasonal or spatial restrictions that are not specifically listed (e.g., kit fox, pygmy rabbit, plants, etc.)	Variance Request Form (Exhibit 1)

3.2 Wildlife Variance Request Review

Upon receipt of a wildlife variance request from the CIC (during construction) or the Company (during operation and maintenance), the BLM and/or Forest Service, will review and determine if the wildlife variance request is complete and if so, coordinate with the USFWS and/or UDWR/NDOW, as appropriate, to determine if resource(s) conditions and required protections are compatible with the wildlife variance request. If the federal land management agency determines that the wildlife variance request is not complete, the CIC will immediately notify the Construction Contractor(s) and the Company. During construction, the CIC will work on behalf of the federal land management agency during the review period to evaluate the location, nature, and duration of activities that are proposed in the wildlife variance request, as well as the observed resource(s) conditions at the location as documented in

the wildlife variance request. Based on the CIC review described above, the CIC will provide a recommended action to the BLM and/or Forest Service, as applicable.

3.3 Agency Decision

Federal land management agency decision criteria vary by land jurisdiction and are summarized in Exhibit 3. Agency coordination, as applicable, and review of a complete wildlife variance request will be completed, and the agency will issue a decision. The BLM and/or Forest Service, as applicable, may approve, approve with condition(s), or deny the wildlife variance request. On issuance of the BLM and/or Forest Service's decision, necessary communications and notifications will include the following:

- The BLM and/or Forest Service, as applicable, will provide the decision of the wildlife variance request as soon as a decision is made to the CIC (during construction) or Company (during operation and maintenance).

- During construction, the CIC will communicate the federal agency's decision immediately upon receipt to the Construction Contractor(s).

3.4 Monitoring of Activities

If a wildlife variance request is approved, the biological monitor(s) will be required to conduct daily monitoring of permitted activities and the conditions of the sensitive resource(s) unless otherwise specified by the BLM or Forest Service. On initiation of the authorized activities, necessary communications and notifications will include the following:

- During the construction phase, the Construction Contractor(s) will coordinate with and notify their biological monitors of the schedule of planned activities in the approved work area.

- During the construction phase, the Construction Contractor(s)'s biological monitors will prepare daily inspection reports, which the lead biological monitor will incorporate into weekly reports. The lead biological monitor will submit the weekly reports to the Construction Contractor(s), who will review them and submit to the Company and the CIC. These weekly reports will include a summary of wildlife variance requests and associated monitoring. The CIC will review and submit the weekly reports to the BLM and/or Forest Service who will be responsible for sharing those reports with cooperating agencies, as applicable. During the operation and maintenance phase, the biological monitor(s) will submit the weekly reports to the BLM or Forest Service, as applicable. The weekly reports will detail work performed and resource(s) conditions in the affected area (see POD Appendix B6: Environmental Compliance Inspection Plan; see POD Appendix C1: Biological Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan for reporting and documentation requirements).

- During the construction phase, the Construction Contractor(s)'s environmental manager will notify the CIC immediately if resource conditions become incompatible with the approved wildlife variance request or if authorized activities may result in unintended impacts on wildlife species. If required by specific variance conditions, a stop work order would be issued; however, most incompatible resources conditions can be remedied on-site through immediate corrective actions. During the operation and maintenance phase, the Company will notify the federal land management agency immediately of incompatible resource conditions or unforeseen impacts to sensitive wildlife resources. If unintended impacts occur, the biological monitor will issue a verbal stop work order for all affected operations, if required to do so based on variance

conditions. All affected operations will stop until the appropriate federal land management agency is notified and approves continued work. At this point, the federal land management agency may cancel or modify the approved wildlife variance request.

4 AFFECTED WILDLIFE RESOURCES

Seasonal and spatial restrictions identified as mitigation measures in the POD (see POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources) to protect special-status wildlife species, non-raptorial migratory birds, raptor nests and roost sites (including eagles), and big game habitats on federal lands may be modified, with agency approval, using this Plan. Wildlife variance requests must consider site-specific resource(s) conditions, resource(s) sensitivity, and reasonably foreseeable future impacts of the proposed wildlife variance request on current and future resource(s) conditions. The assessment of the resource(s) for Plan implementation will occur in a relatively short time frame (i.e., same season) prior to the proposed construction or operation and maintenance activity for which a wildlife variance request is requested. Older records and data of the resource(s) will be used only as supplemental information in addition to the real-time site assessment.

This section of the Plan identifies site-specific resource(s) conditions that will inform the federal agency's decision of suitability of a wildlife variance request and provides a plan for the biological monitor to assess and document those conditions.

4.1 Special-Status Wildlife Species

BLM and Forest Service special-status and state-listed wildlife species and their habitats documented within or adjacent to the Project area are discussed in POD Appendix C1: Biological Resources Conservation Plan and are depicted in the POD Appendix A: Detailed Route Alignment Figures. Special-status wildlife species data will be updated, as applicable, by the Construction Contractor(s) based on preconstruction surveys (POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements).

Wildlife variance requests may be approved for BLM and Forest Service special-status and/or state-listed species and their habitats; however, they will not be approved for stipulations designed to protect federally-listed species, unless the applicable federal agency consults with the USFWS and the USFWS agrees to the variance.

In the event that BLM and Forest Service special-status or state-listed wildlife restricted areas cannot be avoided, work shall cease until there is a determination by the appropriate agency unless a previous agreement or stipulations (e.g., applicant committed environmental protection measures [ACEPMs]) are in place to accommodate the activity. The Construction Contractor(s) (during construction) or the Company (during operation and maintenance) through their respective contracted biological monitors would be responsible for assessing the status of the affected resources in compliance with variance conditions.

4.1.1 Special-Status Wildlife Species Monitoring

If wildlife variance requests to seasonal and spatial restrictions are approved for special-status wildlife species, a biological monitor will monitor the affected area daily during peak or optimal periods of species activity and during authorized construction or operation and maintenance activities that may affect the behavior or survival of the species at the location, unless otherwise specified by the BLM or Forest Service. The biological monitor will prepare daily inspection reports documenting habitat conditions in the affected area, including all conditions and trends identified in the wildlife variance

request. Daily reports will be incorporated into the weekly summaries of habitat conditions, special-status species behavior, and authorized activities and will be submitted to the CIC by the Construction Contractor(s) during construction, and to the appropriate federal land management agency by the Company during operation and maintenance. During construction, if monitoring detects an impact on species behavior or habitat conditions change and are no longer compatible with the approved wildlife variance request, the biological monitor will immediately notify the Construction Contractor(s) environmental manager, who will notify the Company, the CIC, and the appropriate federal land management agency so that further impacts may be avoided. During operation and maintenance, the Company will notify the appropriate federal land management agency.

4.2 Non-raptorial Migratory Birds

Migratory bird nest locations will be documented by the Construction Contractor(s) during the year-of-construction surveys (performed no more than seven days prior to disturbance) (see POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements). If active nests (defined as having eggs or chicks) are observed during the surveys, a biological monitor will establish a spatial restriction within the approved work area using the list of recommended spatial restriction distances provided in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources. A non-raptorial migratory bird spatial restriction variance request will only be considered if the creation of a spatial restriction will conflict with critical Project activity. While the decision regarding whether to approve a wildlife variance request to a spatial restriction will be made by the BLM or Forest Service, coordination with USFWS will occur for any active non-raptorial migratory bird nest spatial restriction variances.

4.2.1 Non-raptorial Migratory Bird Nest Monitoring

An increased level of nest monitoring will be undertaken for any active non-raptorial migratory bird nest subject to a spatial restriction variance, with precautions taken to ensure that the increased level of monitoring will not itself present a risk to the active nest. Any variance from the species-specific recommended spatial restriction and the effectiveness of the revised spatial restriction will be evaluated and recorded in the daily nest monitoring log. Refer to POD Appendix C1: Biological Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan for additional detail regarding non-raptorial migratory bird monitoring reporting requirements.

4.3 Raptors

Species-specific seasonal spatial restrictions will be required in accordance with POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources. Deterrent methods for raptor activity prior to nesting (e.g., courtship) is detailed in the Project's Avian Protection Plan and POD Appendix C1: Biological Resources Conservation Plan, Section 4.3.2.

Raptor nest locations and occupancy will be verified by the Construction Contractor(s) during the year-of-construction surveys (see POD Appendix C1: Biological Resources Conservation Plan, Attachment A: Biological Resources Survey Requirements). If occupied nests are observed during the surveys, a seasonal spatial restriction will be placed around the nest in accordance with POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources. However, there may be instances where Project facilities are located within the seasonal spatial restriction and restrictions cannot be adhered to. In those instances, a variance would be requested unless a prior agreement or ACEPM is in place.

If a Project activity will conflict with an occupied raptor nest seasonal spatial restriction, a wildlife variance request, including both the Variance Request Form (see Exhibit 1) and a Site-Specific Analysis Data Sheet (see Exhibit 2) will be submitted to the BLM or Forest Service, (as applicable based on land jurisdiction) by the Construction Contractor(s) during construction and by the Company during operation and maintenance. The submitted wildlife variance request will follow the process as identified in Section 3 above and also in accordance with the Level 2 variance request procedure outlined in POD Appendix B6: Environmental Compliance Inspection Plan.

Variance requests for bald and golden eagles will require the BLM or Forest Service (as applicable based on land jurisdiction) to coordinate with the designated USFWS office for approval. If adult eagles are observed near a nest during the early breeding season, a variance request should not be requested until it is confirmed that the eagles have selected an alternative nest or that nesting will not occur. Biological monitors will confirm adult eagle pair nest site use during the preconstruction and construction surveys.

Following the submittal of the wildlife variance request, biological monitor(s) will visit the nesting location for which a variance is requested to confirm the nest status as determined during the year-of-construction surveys and to confirm raptor use in the area. The biological monitor(s) must complete a minimum of three visits to the nesting or roosting site during the appropriate nesting or roosting period, separated by a minimum of 3 days each. To avoid inaccurately determining that nests/roosts are unoccupied, the three visits must not occur earlier than the incubation period for species that may inhabit nests in the area of interest. Visits must be completed during periods when raptors are most active (morning and dusk), and a lack of nesting activity must be confirmed at each visit. The use of both a high-powered telescope and binoculars is required to enable biological monitors to make observations far enough away from nests to minimize stress and avoid eliciting a sustained territorial behavior from raptors. Time spent observing the nest to determine status will be a minimum of four hours per USFWS guidance (USFWS 2010). There is no need to approach a nest closely to determine the number of eggs or young present if it is observed that an adult is sitting on the nest in an incubating or brooding position or if an adult is observed feeding nestlings (conspicuous vocalizations made by nestlings during food delivery are another clue to exact or approximate nest location). These behaviors indicate that the nest is occupied. The presence of recently fledged young nearby will suggest that the nest has been successful and subsequently abandoned.

The Construction Contractor(s) will be required to submit the data from the nest site visits to the CIC, who will then coordinate with the federal land management agency. If a nest or roost site is determined to be unoccupied, the federal land management agency may approve the wildlife variance request to allow activities to occur without the need for biological monitoring within the seasonal spatial restriction. If the federal land management agency approves the wildlife variance request for an occupied nest/roost, biological monitoring will be required in accordance with Section 4.3.1 below. If the federal land management agency approves the variance request, no more than 1 week may pass between the last nest/roost visit and the onset of construction activities. In September of each year during construction, the BLM and/or Forest Service will send the USFWS and UDWR/NDOW a summary report on raptor nests where variance requests were approved.

4.3.1 Raptor Nest Monitoring

If seasonal spatial restriction variance requests are approved for occupied raptor nests or roosts due to nest/roost site location, topography, or other factors, a biological monitor will be required to monitor the nest/roost site daily during all authorized activities that may affect behavior or survival of raptors at the site. The use of both a high-powered telescope and binoculars is required to enable biological monitors to make observations far enough away from nests/roosts to minimize stress and flushing and to avoid

eliciting a sustained territorial behavior from raptors. Monitoring must begin in the early morning, no less than 1 hour prior to construction personnel arriving in the area. Biological monitors must remain in the affected area to monitor raptor activity for the daily duration of construction activities. The biological monitors will prepare a daily inspection report documenting nest site conditions, raptor behavior, and authorized activities, which will be included in the weekly reports to the CIC (during construction) or appropriate federal land management agency (i.e., BLM or Forest Service) (during operation and maintenance). These weekly reports will also be summarized and included in the annual report. The BLM and Forest Service will provide the weekly reports associated with monitoring of raptor nest variances to the USFWS and UDWR/NDOW.

If the biological monitor detects an impact on bird behavior, territory establishment, nest or roost attendance, or nest or roost site conditions, the biological monitor will immediately shut down the construction or operation and maintenance activity that is the source of disturbance and for construction, notify the Construction Contractor(s)'s lead biological monitor and environmental manager, who will notify the CIC and the Company within one day. For operation and maintenance, the biological monitor will notify the Company, who will notify the BLM and/or Forest Service (as appropriate based on land jurisdiction). The BLM and/or Forest Service will follow an appropriate course of action, which may include cessation or modification of activities that would avoid, minimize, or mitigate the impact, or, with the approval of the USFWS, the BLM or Forest Service could allow the activity to continue while requiring monitoring to determine the full impact of the activity on the affected raptor nest. If at any time "take" under the BGEPA or the MBTA is confirmed or suspected, the BLM and/or Forest Service (as appropriate based on land jurisdiction) will notify the USFWS immediately. The Construction Contractor(s) will suspend project-related activities that result in take of protected species pending review and a decision by the federal land management agency and USFWS.

4.4 Big Game Habitats

Variances to seasonal restrictions associated with big game habitats will be evaluated based on seasonally variable climate conditions and site-specific determinations of habitat use. Biological monitors will conduct two site visits in support of the variance request to document habitat conditions and use in the affected area for which a wildlife variance is requested. Site visits will occur within the seasonal restriction time frame and temporally reflect peak or optimal activity patterns of the big game species for which a wildlife variance is requested. Biological monitors will perform ocular observations and pellet searches to determine big game use, evaluate annually variable habitat conditions in the affected area, and document conditions, including the following:

- Vegetative status
- Current climatic trends
- Non-Project related disturbance
- Availability and current use of adjacent habitats
- Current and reasonably foreseeable big game use

The Construction Contractor(s) will submit the wildlife variance request with this information to the CIC and the Company during the construction phase, and the CIC will then immediately submit it to the BLM and/or Forest Service, as applicable, for review. During the operation and maintenance phase, the Company will submit the wildlife variance request to the appropriate federal agency. The federal agency will provide any big game habitat wildlife variance requests to UDWR or NDOW for review. The review

and approval process will occur as quickly as possible as to not delay the construction schedule. The appropriate federal agency will have the final approval decision.

4.4.1 Big Game Monitoring

If variances to seasonal and spatial mitigation measures are approved for big game habitats, the biological monitor will monitor the affected area daily during peak or optimal periods of big game activity and during authorized construction activities that may affect behavior or survival of big game at the location. The biological monitor will prepare daily inspection reports documenting habitat conditions in the affected area, including all conditions and trends identified in the request for variance. Daily reports will be submitted to the lead biological monitor, who will incorporate the information into weekly reports detailing habitat conditions, big game behavior, and authorized activities. Weekly reports will be submitted to the CIC (during construction) or BLM and/or Forest Service, as applicable (during operation and maintenance). The federal land management agency will provide weekly reports associated with monitoring big game habitat variances to UDWR or NDOW. If monitoring detects an impact on big game behavior or habitat conditions change and are no longer compatible with adaptive management, the biological monitor will immediately notify the Construction Contractor(s) lead biological monitor and environmental manager, who will notify the CIC and Company (during construction) or appropriate federal land management agency (during operation and maintenance), so that further impacts may be avoided or minimized and identified impacts may be mitigated. If required to do so based on variance approval conditions, the biological monitor would issue a stop work order immediately upon detecting an impact on big game that violates the conditions of the variance; however, most incompatible resource conditions can be remedied on-site through immediate corrective actions.

5 LITERATURE CITED

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U.S. Fish and Wildlife Service (USFWS). 2010. Interim Golden Eagle Inventory and Monitoring Protocols; and other Recommendations. U.S. Fish and Wildlife Service. February 2010.

Exhibit 1. Variance Request Form

CIC USE ONLY

VARIANCE REQUEST FORM
Cross-Tie 500-kV Transmission Project

Variance Request Number:
Click here to enter text.
Date Received by CIC:

Section A – Owner/Contractor to Complete

Descriptive Title: _____ Requested Start Work Date: _____

Variance Level: ☐ Level 1 ☐ Level 2 ☐ Level 3

Location:

Land Jurisdiction: ☐ BLM Fillmore FO ☐ BLM Bristlecone FO ☐ Forest Service ☐ State ☐ Other: _____ ☐ Private: _____

UTMs: _____

Township and Range: _____

Structure(s), Access Road(s), Other: _____

POD Map Set and Panel Number: _____

Purpose and Need Statement:

Description of Request (Include requested construction or maintenance activities, expected timing and duration of activities, and type and number of equipment and personnel required):

Alternatives Considered:

Resource Analysis:

The affected area is analyzed within the EIS: ☐ Yes ☐ No Document Citation: _____

Biological Resources

Activity requires a wildlife exception request: ☐ Yes ☐ No

Activity is within previously surveyed areas: ☐ Yes ☐ No

Activity is within a seasonally or spatially restricted area: ☐ Yes ☐ No

Impact to sensitive resource: ☐ Yes ☐ No Weeds present: ☐ Yes ☐ No

Brief Summary (for non-wildlife variance requests only):

Proposed Mitigation:

For **wildlife variance requests only**, provide the following information:

Resource Type:

- ☐ Special-status wildlife habitat (include species): _____
- ☐ Raptor (include species, if known): _____
- ☐ Non-raptorial migratory bird (include species, if known): _____
- ☐ Big game habitat (include species and habitat type): _____

Habitat Affected by Variance Request:

- ☐ Vegetative status: _____
- ☐ Current climatic trends: _____
- ☐ Presence of non-Project-related disturbance factors: _____
- ☐ Amount of habitat affected: _____
- ☐ Availability of other habitats: _____
- ☐ Extent of topographical and/or vegetative natural sight screening: _____
- ☐ Availability of water: _____

Current and Reasonably Foreseeable Use of Habitat:

- ☐ Ocular observations (e.g., pellet counts): _____
- ☐ Climatic trends: _____
- ☐ Anticipated seasonal movement: _____
- ☐ Availability and use of other habitats: _____
- ☐ Response to other disturbance factors: _____

Potential Effects of Granting Variance Request and Use of Affected and Adjacent Habitats:

- ☐ Direct effects: _____
- ☐ Indirect effects: _____

☐ Cumulative effects on habitat values, individuals, and/or groups of animals: _____

Cultural Resources

Activity is within previously surveyed areas: ☐ Yes ☐ No

Impact to eligible site: ☐ Yes ☐ No

Can site be avoided: ☐ Yes ☐ No

Name of Additional Report: _____

Brief Summary:

Proposed Mitigation:

Paleontological Resources

Activity is within previously surveyed areas: ☐ Yes ☐ No

Name of Additional Report: _____

Brief Summary:

Proposed Mitigation:

Other Resources (potential impacts to other sensitive resources analyzed in the EIS [i.e., noise, air quality, etc.])

Brief Summary:

Proposed Mitigation:

Disturbance Assessment:

Does the request result in additional disturbance not addressed in the POD: ☐ Yes ☐ No ☐ N/A

Disturbance Not Accounted for in the POD:

Activity	**Additional Temporary Disturbance (acres)**	**Additional Permanent Disturbance (acres)**
Total (acres):		

Disturbance Notes:

Support Materials:
Provide a map (required), supporting graphic, information, and resource reports that support or explain the proposed activity, as needed.

☐ Map/Drawing ☐ Photos ☐ Additional Resource Reports ☐ Engineering Drawing

Owner Authorization of Variance:

☐ TransCanyon confirms that the request made in this variance provides a prudent alternative means to support the Project, provides updated Project documentation, and/or reduces resource impacts of the Cross-Tie 500-kV Transmission Project. It has been thoroughly vetted for completeness and addresses potential impacts to resources analyzed in the EIS.

Land Management Agency Authorization of Variance:

Approved by: ☐ BLM ☐ Forest Service Authorizing Officer (name): _____

or

Denied by: Authorizing Officer (signature): _____

☐ BLM ☐ Forest Service

Date of Approval: _____

This variance request is approved with the follow condition(s):

☐ Condition 1.

☐ Condition 2.

☐ Condition 3.

Additional variance request reviewer(s):

☐ BLM

☐ Forest Service

☐ NDOW

- ☐ UDWR
- ☐ USFWS
- ☐ Other (*specify*):

Exhibit 2. Site-Specific Analysis Data Sheet

Site-Specific Raptor Analysis Data Sheet

Cross-Tie 500-kV Transmission Project

Observer(s) _____ **Date** _____

1. **Conduct a site visit to the area of the proposed action and complete the site-specific analysis data sheet according to BLM data standards.**
2. Area of Interest Documentation (**Bold** items require completion, other information is optional)

State Office _____ **Management Unit** _____

Project ID# _____

Location (Description)

Legal T, R, Sec., 1/4, 1/4, or UTM Coordinates _____

Latitude _____ Longitude _____

Photos Taken ☐ Yes ☐ No

Description of photos:

Raptor Species _____ ☐ Confirmed ☐ Unconfirmed

Distance from Proposed Disturbance to: Nest _____

Perch _____ Roost _____

Line of Sight Evaluation From: Nest _____

Perch _____ Roost _____

Extent of Disturbance: ☐ Permanent ☐ Temporary

Distance from Nest/Roost _____ Acreage _____

Length of Time (e.g., timing, variations, disturbance, frequency): _____

Other Disturbance Factors: ☐ Yes (If yes, explain what and include distances from nest to disturbances) ☐ No

Approximate Age of Nest: ☐ New **Historical**: (Number of Years) _____

Evidence of Use (Describe):

Habitat Values Impacted:

Proportion of Habitat Impacted (Relate in terms of habitat available below):

Estimated Noise Levels of Project (db):

Available Alternative(s) (e.g., location, season, technology):

Associated Activities:

Cumulative Effects of Proposal and Other Actions in Habitat Not Associated with the Proposal:

Potential for Site Rehabilitation: ☐ **High** ☐ **Low**
(add notes/comments below)

Summary of Proposed Modifications:

Possible modifications to the spatial and seasonal buffers within POD Appendix B1 Attachment E include the following:

Rationale:

Summary of Alternatives Considered:

Possible alternatives to the proposal include the following:

Rationale:

Recommendation to Field Office Manager Based on Above Findings:

Field Office Wildlife Biologist

Date

Exhibit 3. Wildlife Variance Approval Criteria

Wildlife Variance Approval Criteria

Wildlife Resource/Habitat Restriction	Resource Status	Wildlife Variance Approval Criteria BLM Fillmore Field Office Jurisdiction	Wildlife Variance Approval Criteria BLM Bristlecone Field Office Jurisdiction	Wildlife Variance Approval Criteria Forest Service Jurisdiction
Greater sage-grouse active lek seasonal restriction	BLM sensitive State sensitive	—	—	—
Non-raptorial migratory bird nests seasonal restriction	Protected by the Migratory Bird Treaty Act (MBTA)	**Exception**: Upon review and monitoring, the Authorized Officer may grant exceptions because of climatic and/or habitat conditions if activities would not cause undue stress to migratory bird populations. **Modification**: Season may be adjusted depending on climatic and range conditions. Distance may be adjusted if natural features provide adequate visual screening. **Waiver**: None	—	—
Year-round raptor nest NSO	Protected by the MBTA	—	—	—
Breeding raptors seasonal and spatial restrictions	Protected by the MBTA and/or Bald and Golden Eagle Protection Act	—	—	—

Wildlife Resource/Habitat Restriction	Resource Status	Wildlife Variance Approval Criteria BLM Fillmore Field Office Jurisdiction	Wildlife Variance Approval Criteria BLM Bristlecone Field Office Jurisdiction	Wildlife Variance Approval Criteria Forest Service Jurisdiction
Other sensitive species (i.e., kit fox, pygmy rabbits)	BLM sensitive	—	—	—
Mule deer crucial summer range	Managed by NDOW	—	—	—
Mule deer year-long winter range	Managed by NDOW	—	—	—
Mule deer crucial winter range	Managed by NDOW	—	—	—
Mule deer substantial winter range	Managed by UDWR	—	—	—
Pronghorn crucial winter range	Managed by NDOW	—	—	—
Pronghorn crucial year-long range	Managed by UDWR	—	—	—
Rocky Mountain elk crucial summer range	Managed by NDOW	—	—	—
Rocky Mountain elk summer range	Managed by NDOW	—	—	—
Rocky Mountain elk winter range	Managed by NDOW	—	—	—
Rocky Mountain elk substantial year-long range	Managed by UDWR	—	—	—

Attachment D: Nest and Perch Management and Monitoring Plan

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C1: Biological Resources Conservation Plan

Attachment D: Nest and Perch Management and Monitoring Plan

Prepared by:

TransCanyon. LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

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Abbreviations

APP	Avian Protection Plan
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
GHMA	General Habitat Management Areas
MBTA	Migratory Bird Treaty Act
NDOW	Nevada Department of Wildlife
PHMA	Priority Habitat Management Areas
Plan	Nest and Perch Management and Monitoring Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	right-of-way
UDWR	Utah Division of Wildlife Resources
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

The purpose of this Nest and Perch Management and Monitoring Plan (Plan) is to prevent a potential increase in raptor and corvid predation on sensitive (Bureau of Land Management [BLM] and U.S. Department of Agriculture Forest Service [Forest Service]) and state-listed wildlife species in Utah and Nevada as a result of the Cross-Tie 500-kV Transmission Project (Project). This plan is specific to highly susceptible species and follows the recommendations of previous projects in the region. This Plan addresses nest and perch management and monitoring requirements for the construction and operation of the Project where the following sensitive biological resources are known to occur: greater sage-grouse (*Centrocercus urophasianus*) Priority Habitat Management Areas (PHMA) and General Habitat Management Areas (GHMA) and in pygmy rabbit habitat. These areas are hereafter referred to as "key species habitat areas."

This Plan is intended to communicate the nest and perch management and monitoring requirements among TransCanyon, LLC, (Company); the BLM; Forest Service; the U.S. Fish and Wildlife Service (USFWS); the Utah Division of Wildlife Resources (UDWR); the Nevada Department of Wildlife (NDOW), the Compliance Inspection Contractor (CIC); and the Construction Contractor(s).

1.1 Plan Duration

This Plan is applicable to the Project for the life of the right-of-way (ROW) grant. Throughout the duration of the Project, the Company will be responsible to maintain all nest and perch deterrent equipment in proper working condition to ensure they are functioning and not causing other potential problems or concerns.

2 ROLES AND RESPONSIBILITIES

The following section summarizes the responsibilities of entities specifically responsible for nest and perch management and monitoring during construction, operation, and maintenance phases of the Project that are not included in the Plan of Development (POD) Appendix C1: Biological Resources Conservation Plan, Section 3. Additional details of the roles and responsibilities of parties involved in the Project are described in POD Appendix B6: Environmental Compliance Inspection Plan.

2.1 Company

During construction, the Company will be responsible for ensuring that the Construction Contractor(s) construct the Project in accordance with this Plan. During the operation and maintenance phase, the Company will be responsible for conducting visual and detailed inspections, repairing or replacing damaged or missing nest and perch deterrent devices, and conducting effectiveness monitoring. The Company will be responsible for contracting or retaining appropriately trained and qualified biologists to carry out the effectiveness monitoring detailed in this Plan. The Company will be responsible for submitting all effectiveness monitoring survey reports to the BLM, Forest Service, USFWS, UDWR, and NDOW. If the effectiveness monitoring criteria are not met, the Company will be responsible for engaging in adaptive management with the BLM or Forest Service (as appropriate based on land jurisdiction) and other regulatory agencies, as applicable, to achieve the effectiveness monitoring criteria.

2.2 Bureau of Land Management/U.S. Forest Service

The BLM or Forest Service (as appropriate based on land jurisdiction) will be responsible for reviewing all effectiveness monitoring survey reports prepared and submitted by the Company. The BLM and Forest Service will also coordinate with the USFWS, UDWR, and NDOW, if necessary, to evaluate the effectiveness of the nest and perch deterrent methods and coordinate with the Company to determine effective adaptive management to achieve the effectiveness monitoring criteria.

2.3 U.S. Fish and Wildlife Service

The USFWS will be responsible for reviewing all effectiveness monitoring survey reports prepared and submitted by the Company. The USFWS will determine whether implementation of the Plan is in compliance with the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). If necessary, the USFWS will engage in adaptive management with the BLM or Forest Service (as appropriate based on land jurisdiction) and the Company to achieve the effectiveness monitoring criteria.

2.4 Utah Department of Wildlife Resources/Nevada Department of Wildlife

UDWR and NDOW will be responsible for reviewing all effectiveness monitoring survey reports prepared and submitted by the Company. UDWR and NDOW will act as cooperating agencies to the BLM and/or Forest Service, if necessary, to evaluate the effectiveness of the nest and perch deterrent methods. If necessary, UDWR and NDOW will engage in adaptive management with the BLM and/or Forest Service (as appropriate based on land jurisdiction) and the Company to achieve the effectiveness monitoring criteria.

2.5 Compliance Inspection Contractor

The CIC is an on-the-ground agent of the BLM, Forest Service, and other cooperating agencies during construction of the Project. The CIC will be responsible for ensuring that the Construction Contractor(s) construct the Project in accordance with this Plan.

2.6 Construction Contractor(s)

The Construction Contractor(s) will be responsible for constructing the Project and reclaiming construction areas, installing nest and perch management devices on Project structures and managing raptor and corvid nests in accordance with this Plan, while maintaining compliance with the MBTA and BGEPA.

3 SPECIES AND HABITATS

Sensitive wildlife species and their habitats have been documented along the Project, including but not limited to greater sage-grouse PHMA, GHMA, and active or pending active leks, and areas of highly-suitable pygmy rabbit habitat in sagebrush shrublands. POD Appendix C1: Biological Resources Conservation Plan discusses these species in detail, and POD Appendix A: Detailed Route Alignment Figures depicts specific locations where these key species habitat areas have been documented along the Project. Nest and perch management would take place in all key species habitat areas.

In addition to the nest and perch management efforts identified in this Plan, the Project's Sagebrush Ecosystem Technical Team (aka SETT) credit/debit analysis in Nevada and the habitat assessment framework in Utah (POD Appendix D1: Greater Sage-Grouse Mitigation Plan) addresses direct and indirect effects to greater sage-grouse associated with avian predation along the Project alignment as well as the mitigation required to account for such impacts. The Greater Sage-grouse Mitigation Plan addresses nest and perch minimization techniques that will be used in greater-sage-grouse habitat and is incorporated by reference into this Plan.

4 TOWER DESIGN

The primary method of deterring raptors and corvids from nesting and perching relies heavily on tower design. It is recognized that it would be nearly impossible to prevent all raptor and corvid perching, primarily since corvids are notorious for their ability to perch on towers even with nest and perch deterrent devices installed (Dwyer and Doloughan 2014; Prather and Messmer 2010; Slater and Smith 2010); however, the intent is to minimize perching and nesting to the greatest extent possible.

The Company will use both guyed V and self-supporting steel lattice structures that have been specifically designed with added tower members to minimize perching and nesting opportunities and facilitate installation of nest and perch deterrents. Through agency coordination, the number of structure types and perch deterrents planned within or near each key habitat type (e.g., PHMA/GHMA, pygmy rabbit habitat, etc.) will be identified (Exhibit 1). In the new tower designs, the number of horizontal members and structural box spaces greater than 2 feet by 2 feet by 2 feet in size will be minimized. All areas on the tower where engineering design requires there to be a horizontal element or structural boxes with a space equal or greater than 2 feet by 2 feet by 2 feet will require the application of a fixed perch deterrent. In those portions of the tower structure where limiting the perching space is not possible, perch deterrents will be built directly into the structure during tower fabrication (i.e., bolted to the structural member) (Exhibit 1: Perch Deterrents Structure List). Tower structures will also be designed to break up any remaining 2 feet by 2 feet by 2 feet spaces in a way that is more compatible with the Company's maintenance needs and improves the safety of maintenance workers.

Self-supporting steel lattice structures will also be used, depending on the terrain, and augmented as needed and/or as applicable as described below to minimize raptor and corvid nesting and perching. Through agencies discussions the number of structure types planned in each key habitat type (PHMA, GHMA, pygmy rabbit) will be identified.

4.1 Nest and Perch Deterrent

The Project will utilize a ⅝-inch-wide by 18-inch-long metal rod threaded on one end and blunted on the other as a nest and perch deterrent. A preliminary schematic is shown below (Figure 1). The deterrents will be located every 8 inches along horizontally oriented members (as described below) wherein the overhead clear area is equal to or greater than 2 by 2 feet.

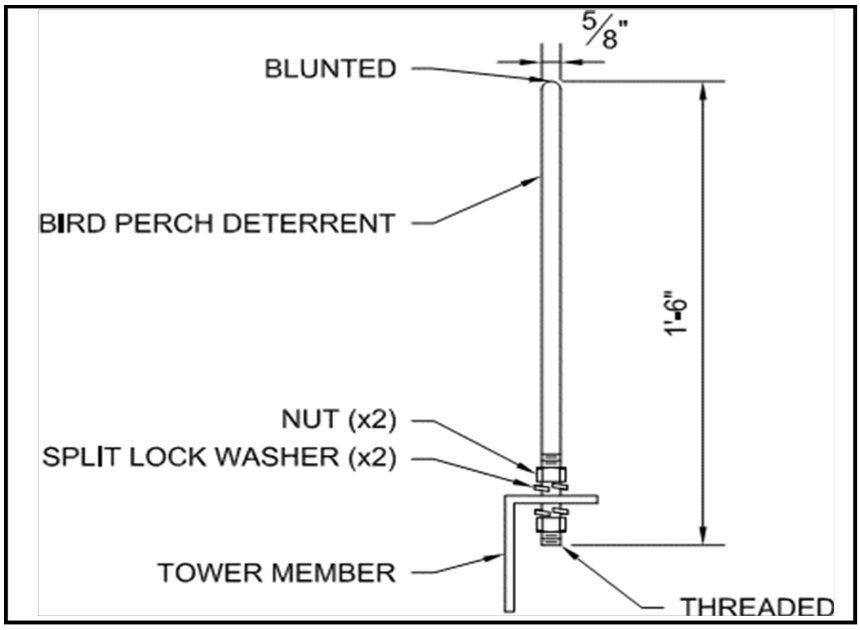


Figure 1. Perch Deterrent Detail

The Company is taking an integrated approach by incorporating the perch deterrents into the design of the towers at the design phase and fabricating the towers with the mounting holes already in the horizontal members and ready for installation of the perch deterrents. This integrated approach will extend the perch deterrent service life thereby reducing the frequency of related maintenance activities and will significantly improve the quality of installation to ensure all deterrents are functioning effectively and as intended when compared to the installation of aftermarket perch deterrents. This nest and perch deterring device is more compatible with the Company's operation and maintenance philosophy when compared to the polyvinyl chloride post-installed solution currently on the market.

The intent of the tower design is to preserve purposefully positioned perch opportunities for use in sections of the transmission line outside of key species habitat areas. Completely eliminating perching locations on the tower outside of the key species habitat areas was a concern because a raptor or corvid could adapt to the lack of suitable surfaces and begin perching on areas of the tower previously perceived as unfavorable. For this reason, horizontal members ideal for perching are present but limited and placed in minimal locations on top of the bridge. Inside key species habitat areas, these locations will have a purpose-built nest and perch deterrent device installed.

4.2 Guyed V Structures

The guyed V tower design would reduce avian predator perching and nesting opportunities and benefit sensitive wildlife species by:

- minimizing horizontal surfaces;
- minimizing structural boxes (nesting/perching areas) greater than 2 square feet;
- incorporating perch deterrent applications directly into the tower construction and assembly;

- generally requiring a smaller footprint than a self-supporting tower resulting in less permanent loss of habitat;
- providing fewer horizontal spaces of sufficient size for corvids/raptors to perch; and
- providing a tower design to further the overall knowledge of reducing avian perching/nesting on transmission towers.

This tower design and deterrent methods are industry standards. Substantial effort was put into the design of the supplemental guyed V towers which deters raptor and corvid perching. The strategy during design was twofold:

1. Arrange tower members to eliminate as many horizontal surfaces wherein the clear space above the member is equal to or greater than 2-foot-wide by 2-foot-tall, as possible. This is intended to provide fewer perching and nesting opportunities on the tower and minimize locations on the tower where a nest and perch deterrent will be required. Raptors and corvids have difficulty perching and nesting in spaces smaller than 2 by 2 feet.
2. Preserve purposefully positioned perch opportunities for use in sections of the line outside of key species habitat areas. Completely eliminating perching locations on the towers outside of the key species habitat areas was a concern because a raptor or corvid could adapt to the lack of suitable surfaces and begin perching on areas of the tower previously perceived as unfavorable. For this reason, horizontal members ideal for perching are present but limited and placed in minimal locations on top of the bridge. Inside key species habitat areas, these locations will have a purpose-built perch discouraging device installed.

To implement the two-fold strategy, the Company will incorporate the following into the engineering and design of the guyed V and lattice towers:

- Sloped bridge members
- Sloped arm members
- Perch deterrents for horizontal bracing on the bridge and arm members
- Limited horizontal mast bracing
- Reduced overhead space
- Reduced horizontal surface area

Perch and nest deterring design components of guyed V structures are described in more detail below. Details on guyed V wire flight diverters are described in Table 2 of the POD Appendix C1: Biological Resources Conservation Plan.

4.2.1 Sloped Bridge Members

The tower bridge could be considered the most likely section of the tower where a raptor or corvid will perch. For this reason, the middle of the bridge was designed to slope upward (Figure 2) which creates an inclined surface that deters perching. It is far more common to develop a structure for extra high-voltage

transmission line application that includes a flat bridge. A flat bridge would require the placement of perch deterrents across its entire length. The use of sloped bridge members necessitates fewer perch deterrents, which means less maintenance will be necessary in the future.

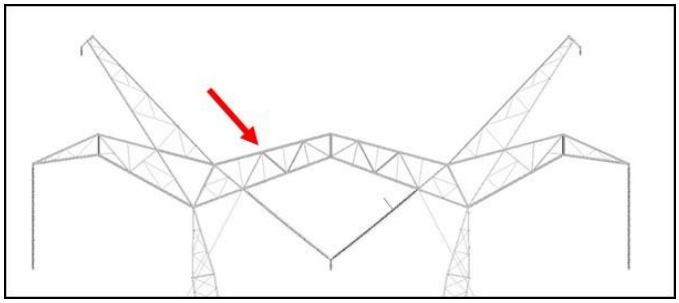


Figure 2. Sloped Bridge Members

4.2.2 Sloped Arm Members

Similar to the bridge, the arm could be considered a section of the tower where raptors and corvids are likely to perch. The design strategy includes sloping the main members of the arm while maintaining several horizontal braces (Figure 3).

Adding slope to the arm members complicates the tower design with respect to connections and member sizing, which results in greater cost when compared to traditional horizontally oriented members. Some, but not all, of the added cost is offset by the elimination of perch deterrent devices and the associated maintenance.

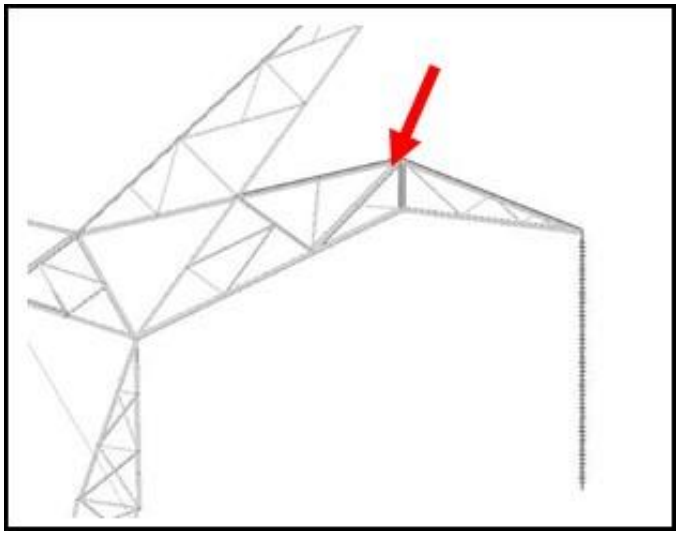


Figure 3. Sloped Arm Members

4.2.3 Limited Horizontal Mast Bracing

Horizontal braces were kept to a minimum on the mast and are only located between mast sections. Any space above horizontal members is prevented from being a 2-foot by 2-foot square in an effort to deter perching (Figure 4).

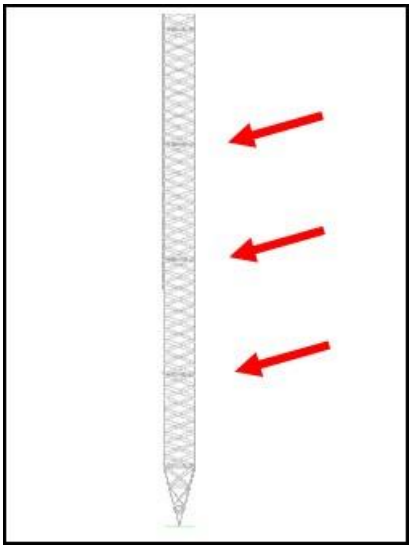


Figure 4. Limited Horizontal Mast Bracing

Figure 5 portrays how horizontal members are inherently protected by the tower design from a 2-foot by 2- foot avian threshold. Specifically, smaller non-loadbearing members are added to reduce overhead space below the 2-foot by 2-foot by 2-foot box threshold in these locations.

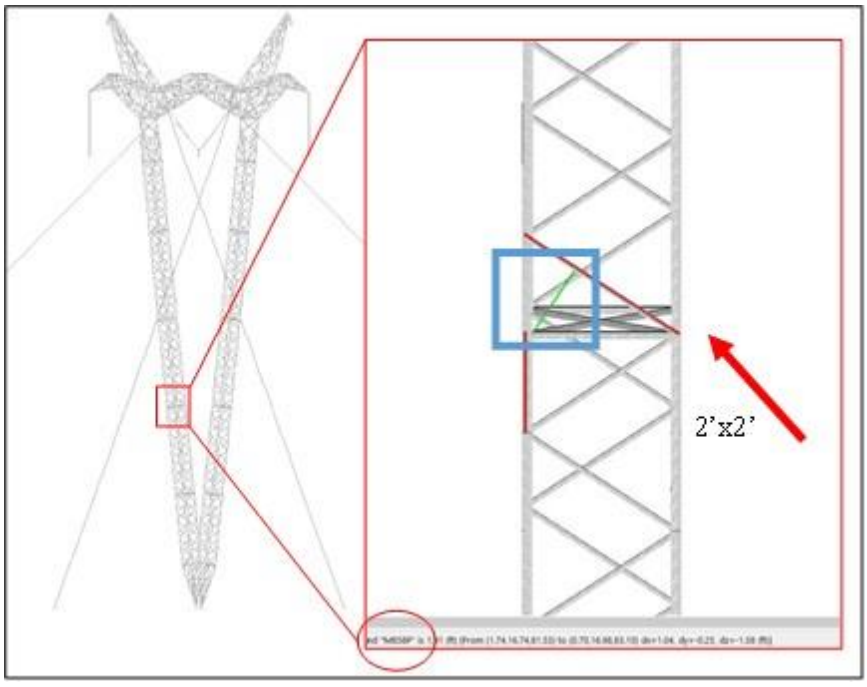


Figure 5. 2-foot by 2-foot Box Shown on Horizontal Surfaces

4.2.4 Reduced Horizontal Surface Area

In comparison with a self-supported flat configuration lattice tower (as depicted in Figure 6 on the right), guyed V structures have two smaller masts instead of four legs, eliminating many potential nesting and perching surfaces (see Figure 6 left). It is challenging and costly to eliminate perching on a self-supported tower since there are required horizontal diaphragms for structural integrity.

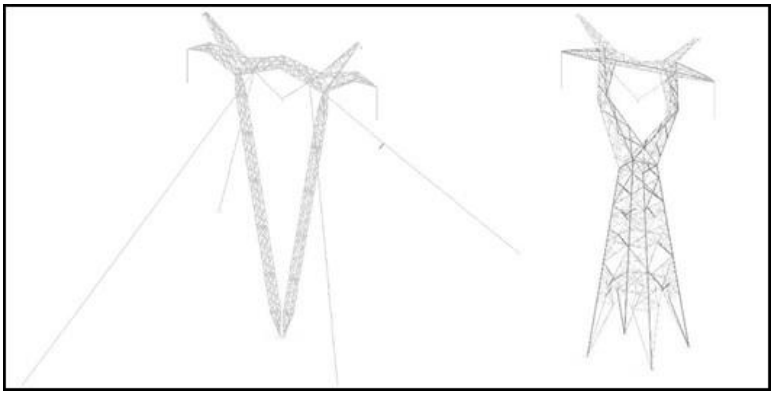


Figure 6. Reduced Horizontal Surface Area

4.3 Self-supporting Steel Lattice Structures

The Company's existing 500-kilovolt lattice tower family will be modified to incorporate the holes necessary to accommodate the nest and perch deterrents (described in Section 4.1) in the locations identified below (Figures 7, 8 and 9).

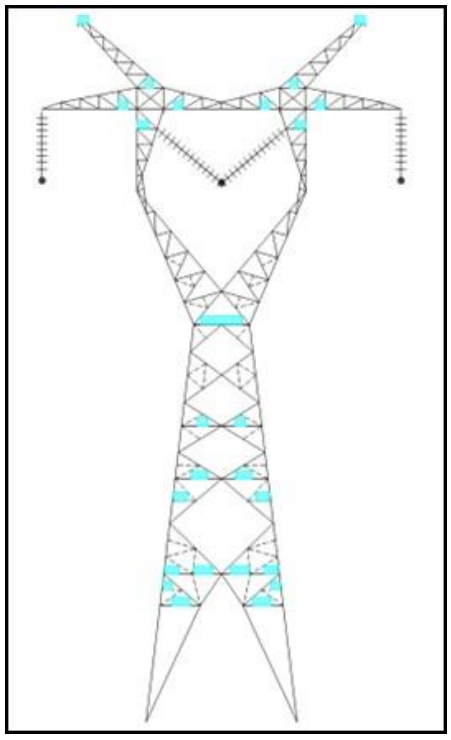


Figure 7. 5T Perch Deterrent Placement

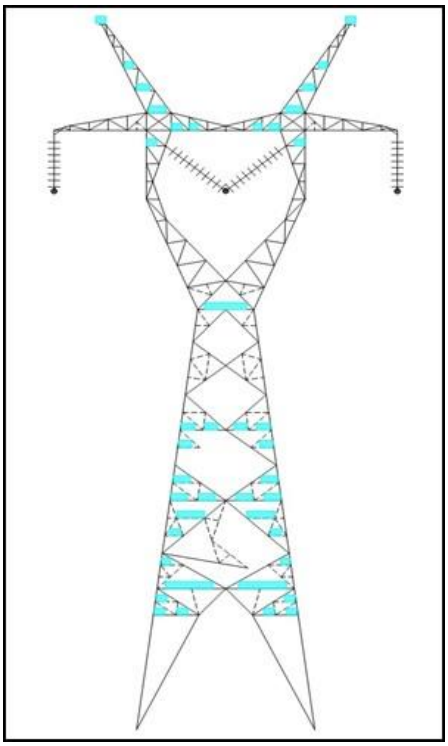


Figure 8. 5R6 Perch Deterrent Placement

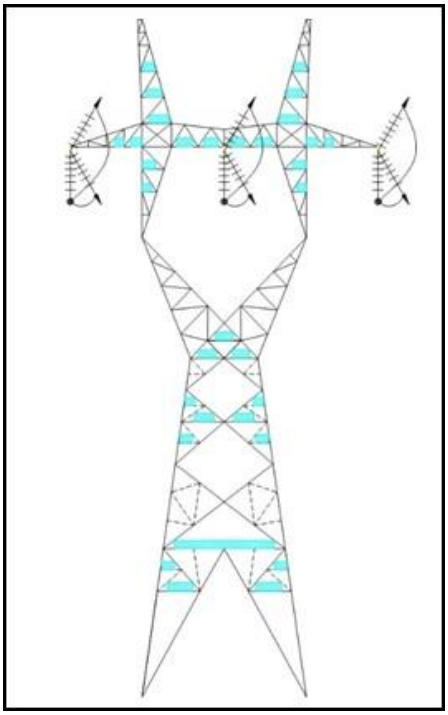


Figure 9. 5D30 Perch Deterrent Placement

5 INSPECTION AND MAINTENANCE

Visual inspections will be conducted along the Project transmission line on an annual basis. During these inspections, the Company will identify specific locations where nest and perch deterrent devices require repair or replacement, and where raptor or corvid nests require removal. Damaged or missing deterrents will be replaced by the Company as necessary and as soon as practicably possible to minimize impacts to sensitive wildlife species and maintain compliance with this Plan. Refer to POD Appendix B7: Operation and Maintenance Plan for additional details regarding the Company's inspection and maintenance of its transmission system.

6 NEST MANAGEMENT

The tower design elements and nest and perch deterrents described above are intended to be the primary methods to deter nests from being constructed on the structures in the key species habitat areas. When nests are constructed despite deterrent efforts, the Company and/or Construction Contractor(s) will be authorized to remove nests in accordance with Section 6.1 below. The nest management concepts covered in the Avian Protection Plan (APP) (see Exhibit 2) will apply to the entire Project.

6.1 Nest Removal

During construction of the Project, the Construction Contractor(s) will conduct routine inspections on Project infrastructure to inspect for nest building activities. Sticks and other debris thought to have been placed on Project infrastructure by raptors or corvids preparing to nest will be actively removed by the Construction Contractor(s). However, no nest deterrent or removal methods may be employed to an occupied nest (defined as those nests which are repaired or tended in the current year [see POD Appendix C1: Biological Resources Conservation Plan]), of any MBTA or BGEPA species unless a proper permit or authorization is held. Unless authorized by permit, eagle nests should not be disturbed or removed without prior consultation and approval (generally through a permit) by the appropriate agencies, which will include, at a minimum, the USFWS.

7 EFFECTIVENESS MONITORING

At least once every 2 years, for the first 5 years of Project operation (Year 1, Year 3, and Year 5 of operation), the Company will be responsible for monitoring the effectiveness of this Plan during routine detailed inspections POD Appendix B7: Operation and Maintenance Plan. Effectiveness monitoring will be conducted by trained and qualified biologists equipped with global positioning system units showing key species habitat areas and structure locations and will be conducted during the appropriate nesting seasons as detailed in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources, which is based on Romin and Muck (2002). Biologists will inspect the ground and structures for evidence of raptor and corvid presence and use, as well as sensitive wildlife presence (dead and alive). The biologists will search an area encompassing 15 feet (4.5 meters) on each side of the outside conductor of the transmission line and a 25-foot (7.6-meter) radius around the outermost legs (lattice tower) and/or guy wires (guyed V) of each tower for carcasses, prey remains, pellets, molted feathers, and whitewash.

At each structure, data will be recorded on the habitat type, structure configuration, avian mortalities, live corvid and raptor species observed, evidence of raptor or corvid use, and presence of raptor and/or corvid nests. Structure configuration data will include configuration type, number of energized phases, number of transformers, presence of exposed equipment, material of crossarm and brace, location of ground wire, and presence and condition of bird protection devices (i.e., nest and perch deterrents, perches, insulator

covers, bushing caps, arrester caps, cutout covers, hose, covered conductor, line markers). For observations of live raptors and corvids, the species, number of individuals, behavior(s), and the presence of pellets, whitewash, molted feathers, or prey remains will be recorded. If a nest is observed, the species (if known) and status of nest (occupied/unoccupied) will be recorded. For observations of sensitive wildlife prey populations, the species type, number of individuals, and behavior(s) will be documented. While monitoring would provide information on the increase or absence of raptors and corvids as an indicator of predator and prey population changes, the lack of carcass remains will not be used a lack of predation as remains may be quickly removed by scavengers.

7.1 Effectiveness Criteria and Thresholds

Monitoring the effectiveness of the nest and perch deterrent methods identified in this Plan will take place every other year for the first five years of operation starting on year 1 (Years 1, 3, and 5 of operation). Effectiveness will be evaluated based on the criteria below. If these criteria are exceeded, adaptive management consultations, as described in Section 9 of this Plan, will begin.

- No more than 5 percent of towers in key species habitat areas will have raptor or corvid nests over a 5-year period
- Raptor and/or corvid nests that have been removed are not re-built in the same location of the same tower within the 5-year monitoring period
- No more than 25 percent of the nest deterrents fail (i.e., nests continue to be constructed on towers with deterrents) over a 5-year period
- Evidence of repeated perching (i.e., whitewash accumulations) is observed on no more than 10 percent of towers over a 5-year period

Data from the effectiveness monitoring field surveys will be analyzed to evaluate the effectiveness of the nest and perch deterrent methods. Information obtained from these surveys will also be used to enhance future surveys and deterrent methods.

8 REPORTING

Following completion of each effectiveness monitoring survey effort, the Company will be responsible for preparing a report summarizing the effectiveness of the perch deterrent and nest deterrent methods outlined in this Plan. The report will be submitted to the BLM, Forest Service, USFWS, UDWR, and NDOW within 60 days following the completion of each survey effort. The same report may be submitted to the BLM and Forest Service. At a minimum, the report will include the following:

- The survey year (Year, 1, 3, or 5) and survey date(s)
- The names and qualifications of the surveyors
- Ambient condition data, including an evaluation of environmental conditions that may influence the results of the surveys conducted
- A tabular summary of the survey results at each tower location within key species habitat areas, including:

- tower configuration data
    - presence and condition of nest and perch deterrents, including those that have been replaced or repaired
    - raptor and corvid nests, including occupancy status and species, if known
    - nests that have been removed during operation and maintenance, including species if known
    - raptor or corvid nests that have been rebuilt in the same location of the same tower where a nest was previously removed
    - evidence of raptor and corvid presence, including species and behavioral observations
    - habitat type
    - evidence of sensitive wildlife species, including species and behavioral observations
- A summary of the percentage of towers in key species habitat areas with evidence of raptor or corvid nesting and perching, and the percentage of failed nest deterrents (i.e., nests continue to be constructed on towers with deterrents)
- A summary of adaptive management coordination with the BLM, Forest Service (as appropriate based on land jurisdiction); USFWS; UDWR; and NDOW, if any
- Representative photographs
- Spatial data and mapping depicting raptor and corvid use along the Project within key species habitat areas

Bird mortalities and nest management activities documented during operation and maintenance activities throughout the life of the Project will also be reported in accordance with the Company's APP (see Exhibit 2).

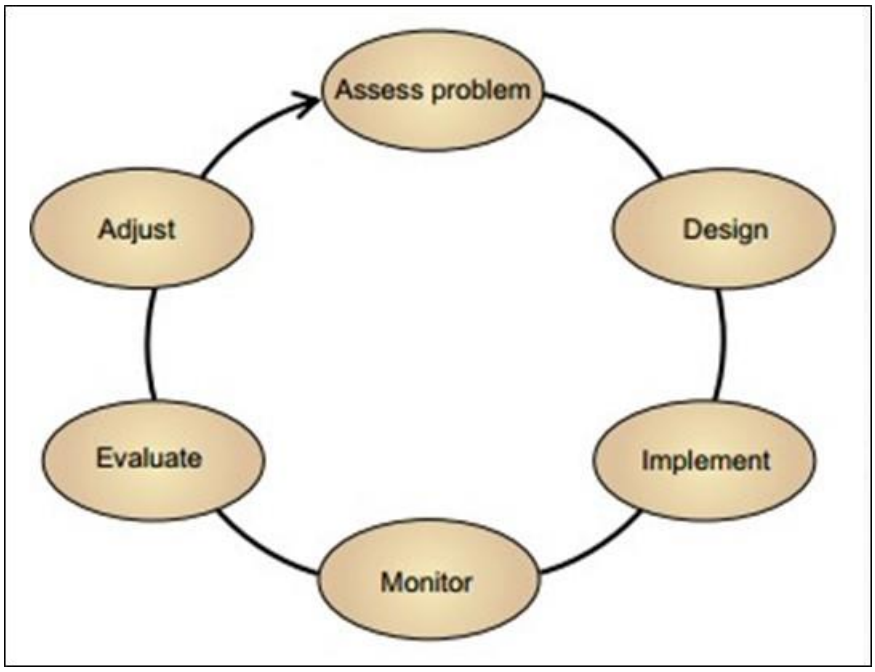
9 ADAPTIVE MANAGEMENT

Adaptive management is a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity.

The BLM Mitigation Manual MS-1794 (BLM 2016a) and Handbook H-1794-1 (BLM 2016b) define "adaptive management" as a system of management practices based on clearly identified outcomes and monitoring to determine whether management actions are meeting required outcomes. If required outcomes are not met, management changes are facilitated to best ensure outcomes are met or are re-evaluated. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain.

With regard to adaptive management, the BLM Handbook H-1794-1 (BLM 2016b) directs that the BLM should use the best available science, implemented mitigation measures, and associated effectiveness monitoring to implement, or to require the responsible party to implement, consistent with applicable law, adaptive management of mitigation measures to reduce uncertainty and achieve the required mitigation outcomes. It also states that lessons learned should be used to guide and improve the development and implementation of future mitigation measures.

Adaptive management is a cyclical process that follows the steps displayed in Figure 10, below. Adaptive management for nest deterrent and perch deterrent implementation relies primarily on tower design, which will not be managed adaptively. A description of adaptive management steps for tower design effectiveness is presented below (Section 9.1).



Source: Williams et al. 2009

Figure 10. The Adaptive Management Process

9.1 Tower Design Effectiveness Adaptive Management Process

This section defines the adaptive management process for the effectiveness of the tower design. This process is described using the terms and process presented in Figure 10.

Assess problem: The effects of predation on sensitive species from the presence of raptor or corvid nests or evidence of repeated perching on and/or predation from towers within the key species habitat areas (i.e., effectiveness) have been identified as a problem and will be assessed every 2 years during detailed inspections. As discussed in Section 7.0, detailed inspections will take place for the first 5 years of Project operation (i.e., Year 1, Year 3, and Year 5 of operation).

Design: The specific location of the nest or repeated perch location on the tower will be evaluated to determine whether and where to add nest and perch deterrents.

Implement: The Company will be responsible for adding the nest and perch deterrents to the structure(s) as soon as feasible.

Monitor: Tower design and nest and perch deterrent effectiveness will be monitored every two years during detailed inspections. If corrective action takes place within a sensitive resource area, monitoring will occur during the nesting season immediately following the action and then at the previously determined intervals.

Evaluate: Data from the detailed inspections will be evaluated to determine how raptors and corvid behavior is responding to the tower design and nest and perch deterrent additions.

Adjust: Coordination with the BLM and/or Forest Service, (as appropriate based on land jurisdiction) and other applicable agencies, as needed, will be initiated if the success criteria are not met and additional mitigation actions will be developed, approved by the appropriate federal land management agency, and implemented by the Company.

10 LITERATURE CITED

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Exhibit 1. Perch Deterrents Structure List
(*as needed*)

Exhibit 2. *Draft* Avian Protection Plan
(has not been reviewed by Agencies yet)

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C1: Biological Resources Conservation Plan

Exhibit 2: Avian Protection Plan – *DRAFT*

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Attachments

Figures

Acronyms and Abbreviations

APLIC	Avian Power Line Interaction Committee
APP	Avian Protection Plan
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
BO	Biological Opinion
CFR	Code of Federal Regulations
Company	TransCanyon, LLC
EO	Executive Order
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
Forest Service	U.S. Department of Agriculture Forest Service
GPS	global positioning system
IMR	Injury and Mortality Monitoring
kV	kilovolt
LRMP	Land and Resource Management Plan
MBTA	Migratory Bird Treaty Act
MOU	memoranda of understanding
NTP	notice to proceed
O&M	operation and maintenance
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-Way
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
SPUT Permit	Special Purpose Utility Permit
SUP	special use permit
USC	United States Code
U.S.	United States
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1,500-megawatt, 500-kilovolt (kV) high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada (Figure 1).

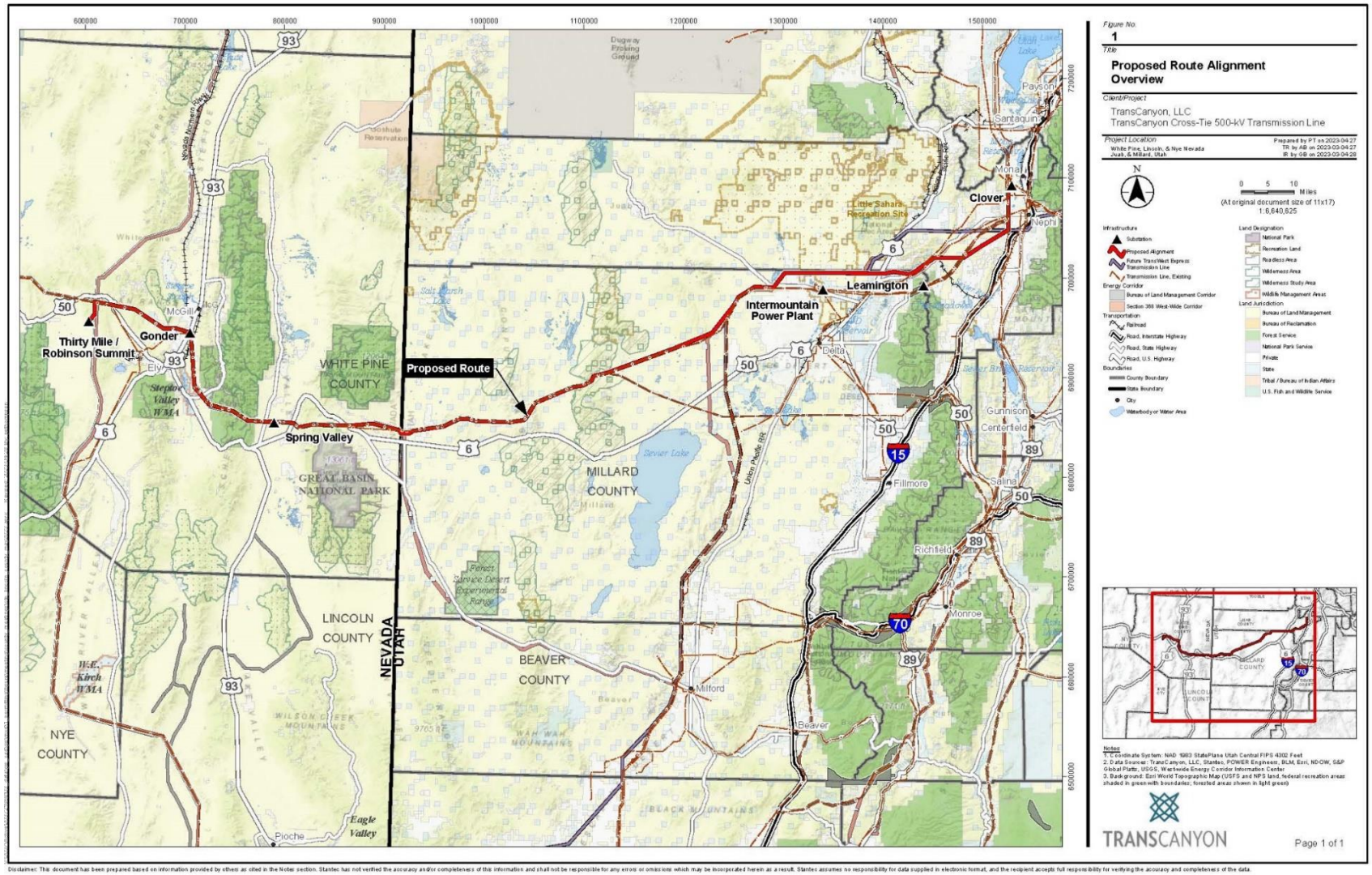
The information contained in this Avian Protection Plan (APP) was developed in collaboration with agency resource specialists using information that will be contained in the Final Environmental Impact Statement, along with applicable information from Bureau of Land Management (BLM) Resource Management Plans (RMPs), United States (U.S.) Department of Agriculture Forest Service (Forest Service) land and resource management plan, the *Record of Decision and Approved Utah Greater Sage-Grouse Resource Management Plan Amendment* (BLM 2015), and from biological resources surveys that have been or will be conducted by the Company prior to issuance of the notice to proceed (NTP).

This APP was prepared as part of the Plan of Development (POD). It will be updated as necessary to meet any stipulations of the BLM and the Forest Service records of decision (RODs) and the BLM right-of-way (ROW) grant and Forest Service special use permit (SUP) before issuance of any NTP and commencement of construction.

This APP was developed to be specific to the Project and is built upon the approved Rocky Mountain Power Utah Avian Protection Plan (Rocky Mountain Power 2011), which is not specific to any single Project. The approved Rocky Mountain Power APP was utilized for this Project-specific APP as PacifiCorp has partnered with the Company for this Project and is the parent company of Rocky Mountain Power.

This APP should be used in conjunction with other POD Appendix Plans that describe requirements that may also protect avian species. Plans that address avian species and their habitats are listed below.

- POD Appendix A – Detailed Route Alignment Figures
- POD Appendix B6 – Environmental Compliance Inspection Plan
- POD Appendix B7 – Operation and Maintenance Plan
- POD Appendix C1 – Biological Resources Conservation Plan
- POD Appendix C2 – Weed Management Plan
- POD Appendix C3 – Water Resources Protection Plan
- POD Appendix C4 – Vegetation Management Plan
- POD Appendix C7 – Erosion, Dust Control, and Air Quality Plan
- POD Appendix C9 – Reclamation, Revegetation and Monitoring Plan
- POD Appendix D1 – Greater Sage-Grouse Mitigation Plan (dependent on *Agency Preferred Alternative*)



Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Figure 1. Project Overview

In addition, a list of Project Applicant Committed Environmental Protection Measures can be found in Section 9 of the POD.

2 BACKGROUND

The Company is committed to conserve protected avian species and their habitats. This APP has been developed to avoid and minimize effects to resident, migrant, and nesting birds that may interact with the Project to the greatest extent possible while still completing the Project and implementing the Project's operation and maintenance (O&M) activities. The Company is committed to maintaining the reliability of the Project in a cost-effective manner while meeting the regulatory requirements to conserve avian species. The responsibility of effectively addressing avian safety and minimizing avian risk lies with both the Company management and its employees.

To this end, the Company will:

- Implement this APP;
- Ensure that its actions comply with the most recent applicable laws, regulations, and permits;
- Design the Project to comply with Avian Power Line Interaction Committee (APLIC) guidelines to reduce electrocutions (APLIC 2006)
- Incorporate APLIC guidelines to reduce collisions and manage nests as described in this APP (APLIC 2012);
- Incorporate APLIC guidelines to reduce impacts in sage-grouse habitats (APLIC 2015);
- Document bird mortalities and injuries; problem structures or locations; and problem nests;
- Provide information, resources, and training to improve its employees' knowledge and awareness of avian protection and the implementation of the Company avian protection program;
- Identify key Company personnel responsible for ensuring accountability and compliance with this APP;
- Identify key U.S. Fish and Wildlife Service (USFWS) personnel responsible for reporting and permitting in Region 6 and 8;
- Maintain a list of federally licensed avian and wildlife rehabilitation facilities; and
- Maintain the integrity of the transmission line and repair or retrofit structures as necessary if impacts to avian species are detected.

The purpose of this APP is to establish a program, consistent with APLIC's principles of avian protection (APLIC and USFWS 2005), to manage avian safety on the Project to support the Company's commitment to reduce impacts to avian resources. Attachment 1, APLIC Recommendation Summary, describes the Company's implementation of the applicable recommendations from APLIC (2006, 2012, and 2015). In addition to the program established in this APP, the Company will incorporate federal agency ROD requirements, including federal agency stipulations, conditions of approval, environmental requirements,

and best management practices (BMPs) into POD Appendix C1: Biological Resources Conservation Plan. This APP should be used in conjunction with POD Appendix C1: Biological Resources Conservation Plan, and other POD Appendix Plans that describe requirements that may also affect avian species. Not all measures identified in POD Appendix C1: Biological Resources Conservation Plan, are directly addressed in this APP. Rather, this APP incorporates those measures by reference. Collectively, this APP and the measures in POD Appendix C1: Biological Resources Conservation Plan, are reflective of the Company's commitment to avoid and minimize impacts to avian species.

This APP supports compliance with the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S. Code [USC] 703–712), the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 USC 668–668d), and the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531–1544), and appropriate state requirements. Plans, methods, and direction are outlined to avoid and minimize impacts to birds associated with the Project, provide a framework for documenting the success of the Company's good-faith efforts to conserve avian species and their habitats, and comply with the laws and regulations discussed in Section 3.1, Regulations.

The key Company staff member responsible for ensuring accountability and compliance with this APP is the APP Program Coordinator. The APP Program Coordinator may be contacted at (*to be identified and inserted*).

The key USFWS personnel are located out of the Office of Law Enforcement and Migratory Bird Permit Office (Regions 6 and 8). The Region 6 Migratory Bird Permit Office may be contacted at 303-236-8171. The Region 8 Migratory Bird Permit Office may be contacted at 916-414-6464. As part of ongoing APP administration, the Company will continue to update contact information for USFWS Migratory Bird Permit Offices and Office of Law Enforcement staff as needed.

2.1 Scope and Limitations

This APP presents a program of specific actions to be implemented comprehensively to avoid and minimize impacts to birds on the Project. It is not to be considered a delineation of legal requirements. Instead, it provides guidance for achieving and maintaining legal compliance under the regulations related to avian conservation, minimizing avian-related interruptions in service, and documenting efforts to improve avian safety.

The Company has set the overall goal of advancing progress toward an avian safe transmission system. Through a policy of avian conservation, the Company will improve its service to customers, ensure regulatory compliance, reduce costs, and document good-faith efforts to avoid and minimize risks to avian species. As such, this APP is considered a "living document" and is intended to be revised and updated as goals are achieved, innovative solutions are developed to mitigate impacts, agency guidance is adjusted, and conditions of the Project warrant.

3 AVIAN PROTECTION PLAN PURPOSE AND NEED

Power lines generally impact avian species and their habitats. However, empirical data is highly limited and usually site-specific, which allows for broad estimates of risk based on a series of assumptions. Known impacts and effects from power lines are associated with birds directly contacting facilities and being killed either by electrocution or collision; however, large-scale transmission line projects such as the Project are considered to be low risk. Regulatory agencies and utilities recognize that avian interactions can be ecologically significant events and have worked collaboratively (through

organizations such as APLIC) for several decades to reduce both system and avian impacts. Other effects to birds from power lines include temporary and long-term habitat loss and degradation, habitat fragmentation, displacement of species, species avoidance, and disturbance from new roads and increased human access. The level of effect varies by species.

One mechanism for utilities to cooperatively engage agencies on operational BMPs to achieve avian conservation is the APP. This APP exclusively addresses the Company's avian protection program for construction as well as O&M and initiates an avian safety framework for the life of the Project.

The Project area spans approximately 214 miles across Utah and Nevada. It passes through landscapes considered ecologically diverse because of their species' richness and endemicity.

As a responsible corporation, the Company strives to conserve ecosystems and avoid and minimize impacts to wildlife. There are four factors underlying the development of the program which are briefly presented in this section:

- Federal, state, and local laws and regulations
- Conditions of approval and requirements identified in the RODs, ROW grants, and other authorizations for the Project
- Reliability
- Customer relations

3.1 Regulations

All birds, except non-native or invasive species, are protected under one or more state or federal regulations. Below is a summary of laws and other regulations governing avian protection applicable to the Project. In addition, the BLM, Forest Service, and other federal or state agencies have identified special-status avian species that require additional management consideration during permitting and decision-making processes. Special-status avian species are listed in Attachment 2, Special-Status Avian Species, and further addressed in POD Appendix C1: Biological Resources Conservation Plan.

3.1.1 Federal

Executive Order (EO) 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, directs federal agencies to take actions to conserve migratory birds, including the development of memoranda of understanding (MOUs) with the USFWS. The BLM and Forest Service have signed MOUs with the USFWS in accordance with EO 13186. The MOUs outline a collaborative approach to promote the conservation of migratory bird populations and prioritize conservation of species listed as Birds of Conservation Concern (USFWS 2021).

Migratory Bird Treaty Act

The MBTA is the cornerstone of migratory bird conservation and protection in the U.S. The MBTA implements four treaties that provide for international protection of migratory birds. The MBTA states, "Unless and except as permitted by regulations…it shall be unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill…possess, offer for sale, sell…purchase…ship, export, import…transport or cause to be transported…any migratory bird, any part, nest, or eggs of any such bird….[The Act] prohibits the taking, killing, possession, transportation, import and export of migratory

birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior," (16 USC 703).

The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect," (50 Code of Federal Regulations [CFR] 10.12).

USFWS maintains a list of species protected by the MBTA, last updated in 2020 (USFWS 2020a). This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines. The MBTA does not protect introduced species such as the house (English) sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), rock dove (pigeon; *Columba livia*), Eurasian collared-dove (*Streptopelia decaocto*), and non-migratory upland game birds. USFWS maintains a list of introduced species not protected by the MBTA (see USFWS 2020b).

The MBTA provides criminal penalties for persons who commit any of the acts prohibited by the statute in Section 703 on any of the species protected by the statute (see 16 USC 707).

Endangered Species Act

In addition to the MBTA, some at risk bird species in the United States receive further protection under the ESA of 1973 (16 USC 1531–1544, as amended). The ESA protects federally listed threatened or endangered species and their habitats from unlawful take, where "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." It also prohibits the illegal import, export, carrying, transport, or shipment of listed species without authorization from the Secretary of the Interior. With a submitted conservation plan, the Secretary of the Interior may permit exceptions for scientific purposes, the propagation or survival of the affected species, or for instances where "taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." Violations of the ESA can result in civil penalties or, criminal violations.

Bald and Golden Eagle Protection Act

Under the authority of the BGEPA (16 USC 668–668d), bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are afforded additional legal protection. BGEPA prohibits the "take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof," (see 16 USC 668). BGEPA also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb," (16 USC 668c) and includes criminal and civil penalties for violating the statute (16 USC 668). USFWS has further defined the term "disturb" to mean to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle; 2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior (50 CFR 22.3).

The BGEPA authorizes the USFWS to permit the take of eagles where the take is compatible with the preservation of the bald eagle and the golden eagle; is necessary to protect an interest in a particular locality; is associated with, but not the purpose of, the activity; and cannot be practicably avoided.

Greater Sage-Grouse Policy

Science-based regulatory mechanisms have been established in various western state plans and policies to protect greater sage-grouse (*Centrocercus urophasianus*) populations. Because of the level of effort and complexity regarding protection and management of the species, the Company will develop POD Appendix D1: Greater Sage-Grouse Mitigation Plan (*dependent on selection and location of the Agency Preferred Alternative*). Applicable RMP Amendments, EOs and other regulatory planning tools used to protect and manage greater sage-grouse will be provided in POD Appendix D1: Greater Sage-Grouse Mitigation Plan, if prepared (*dependent on selection and location of the Agency Preferred Alternative*). No further detailed information regarding the conservation or management of the species is provided in this APP.

Bureau of Land Management

Each BLM Field Office RMP contains management goals, objectives, and actions that direct the management of resources on BLM-administered lands and minerals. RMPs are developed in in consultation with Cooperating Agencies and in accordance with the National Environmental Policy Act of 1969, as amended, the Federal Land Policy and Management Act of 1976, as amended, and BLM's Land Use Planning Handbook (H-1601-1), among other applicable law and policy. RMP measures related to avian protection are provided in POD Appendix C1: Biological Resources Conservation Plan.

U.S. Forest Service

The Forest Service Land and Resource Management Plans (LRMPs) are used to guide management of National Forest System Land. Each National Forest has a LRMP that provides management guidelines in response to a variety of resource-specific issues, including avian protection and management. LRMP management guidelines related to avian protection that apply to the Project are provided in POD Appendix C1: Biological Resources Conservation Plan.

3.1.2 State

Each state has laws to protect native wildlife species, including avian species addressed in this APP. State-statutes provided herein define terms associated with avian species and describe the powers and duties of state commissions and the actions they do and do not authorize concerning the protection of birds and their nest or eggs.

State of Utah

Laws, regulations, and policies that directly influence management decisions concerning avian species for the state of Utah are administered by the Utah Governor's Office and the Utah Division of Wildlife Resources. Applicable laws, regulations, directives, and agreements include:

- Utah Code Annotated 23-28-1 to 23-28-3, creates, and protects migratory bird production areas.

State of Nevada

Laws, regulations, and policies that directly influence avian species management decisions in the state of Nevada are administered by the Nevada Governor's Office and the Nevada Department of Wildlife. Applicable laws, regulations, directives, and agreements are listed below.

- Nevada Revised Statutes 501.055 defines migratory game birds.

- 503.135 requires federal migratory bird hunting stamp to hunt any migratory waterfowl.
- 503.582 requires a permit to hunt, trap, possess, or sell birds of prey or parts thereof.
- 503.584 requires the conservation, protection, restoration, and propagation of selected species of native fish and other vertebrate wildlife, including migratory birds.
- 503.585 protects animals threatened with extinction and requires a special permit for capture, removal, or destruction of listed species.
- 503.586 allows removal of destructive species.
- 503.610 prohibits take of bald and golden eagles.
- 503.620 protects birds included in the MBTA.

3.2 Conditions of Approval and Requirements

The Company is responsible for acquiring applicable federal, state, and local permits, licenses, and agreements for the Project.

BLM and the Forest Service are preparing the *Cross-Tie 500-kV Transmission Project Environmental Impact Statement* in compliance with the requirements and guidelines of the National Environmental Policy Act and the Federal Land Policy and Management Act of 1976. The federal agencies' RODs for the Project will be signed when the final environmental impact statement (FEIS) is completed. The POD will be updated to reflect the decisions reached in the federal agencies' RODs and will incorporate the requirements contained within the RODs and their associated appendices, including the USFWS BO (if required) and additional Project-specific mitigation measures. Other federal, state, and local permit applications also rely on the POD and associated appendices for descriptions of Project siting, design, and practices.

As described in 2.0, Background, POD Appendix C1: Biological Resources Conservation Plan, contains the ROD requirements that describe additional avoidance, minimization, and protection measures for specific avian species or avian species in specific locations. Those measures are incorporated by reference and taken collectively with this APP, represent the conditions of approval and requirements related to avian species for the Project.

3.3 Reliability

Avian interactions with transmission systems have the potential to cause outages, result in equipment failures, shorten the lifespan of equipment, increase maintenance costs, and create safety issues. Nests on power poles and towers have the potential to cause fires. An avian-safe system increases reliability, results in fewer outages, reduces the exposure to risks for company personnel that respond to outages, and leads to less replacement of expensive equipment.

3.4 Customer Relations

The public places a high value on reliable electric service as well as avian species. The Company, through implementation of this APP, seeks to minimize potential service disruptions and outages caused by avian interactions with Project facilities while also conserving avian species.

Developing and implementing an APP that is administered in a cost-conscious manner improves customer relations and makes good business sense.

3.5 Avian Protection Plan Purpose

This APP has been developed following APLIC recommendations and considering Project-specific information and risks to avian species. The roots of APLIC avian protection planning lie in the development of system-wide avian safety programs to direct new-builds, implement remedial actions and track success, expenditures, and incidents. The Project is a new Project constructed to current APLIC design recommendations (APLIC 2006, 2012), sited and designed to reduce avian risk within the constraints of feasibility and the Project purpose and need. In the following sections, information is provided where appropriate on how each component is relevant to the Project and how it will be implemented. As a "living document," as circumstances change, new sections may be added to future revisions of this APP.

4 AVIAN ELECTROCUTIONS AND COLLISIONS

Though power lines and associated facilities provide some benefit to avian species through increased perching, roosting, and nesting opportunities, the addition of power line structures with electrical elements also presents the risk of direct mortality through electrocutions and collisions. Risk of direct mortality to individual birds and local populations varies with project characteristics and natural factors as described in the *Avian Protection Plan (APP) Guidelines* (APLIC and USFWS 2005). The Project traverses a diverse landscape ranging from open shrublands, grasslands, and barren areas to higher elevation pinyon-juniper areas. In the resulting mosaic of habitats, a rich avian fauna is present with an assortment of resident and seasonally transient species. The powerline system elements, avian behavior, and environmental factors can interact in complex ways resulting in varying levels of risk to birds throughout the Project area. As a new project, the Company considered risks to avian species and sought to enhance their safety through routing, siting, and design decisions. Through this APP, the Company and agencies can continue to work collaboratively to actively minimize risk and adaptively manage the Project to proactively respond to specific issues that may arise.

4.1 Avian Electrocutions

Avian electrocution on power lines occur because of a combination of biological and electrical design factors (Janss and Ferrer 2001). Biological factors such as habitat, prey, and species, influence avian use of structures. Raptors often use structures for perch-hunting, an energy-saving foraging behavior utilized by many species (APLIC 2006). Raptors and other species will also use transmission/power structures for nesting and roosting, especially in open areas or areas where there are few natural nesting locations (Bevanger 1994, APLIC 2006).

Power lines electrocute birds when they simultaneously contact two conductors, or an energized conductor and a ground wire or grounded hardware (Bevanger 1998). Wet feathers raise the risk of electrocution for a bird by increasing conductivity. Wet feathers can conduct dangerous amperages beginning at around 5 kV, whereas dry feathers require currents greater than 70 kV before they will begin conducting current (APLIC 2006).

Body size (wingspan and perching height) and behavior, such as perching and roosting on structures or wires, are the keys to understanding why and how birds become electrocuted. Some species are more prone to mortality from electrocution than from collision, primarily birds of prey and ravens (Bevanger

1998). Because of the greater vertical and horizontal spacing required on higher voltage lines, most raptor electrocutions occur on lines that are energized at voltage levels of 69 kV and below. The risk of electrocution from lines energized above 69 kV is highly unlikely on properly designed and maintained facilities (APLIC 2006). An APLIC avian-safe line has horizontal spacing that has considered the "wrist-to-wrist" wingspan distance for the largest bird species likely to be at risk in the area (APLIC 2006).

The Project transmission line is a high voltage transmission line and therefore presents a low avian electrocution risk. Even for the largest avian species that may be present in the Project area, the proposed vertical and horizontal separation distances between energized components and between energized components and grounded elements exceed APLIC recommendations for phase separation. However, the standard APLIC standard of 60 inches of horizontal separation has been noted as not eliminating electrocution risk for large eagles and condors when feathers are wet (APLIC 2006).

Based on the above discussion, avian electrocutions on the Project are not likely a significant risk and will not be addressed further in this APP.

4.2 Avian Collisions

Avian collisions with transmission lines are a known cause of avian injury and mortality. Factors that influence collision risk can be divided into three categories: those related to the biology of the avian species, those related to the environmental conditions, and those related to the configuration and location of transmission lines (APLIC 2006; APLIC 2012; Bernardino et al. 2018; Bevanger 1999; Janss and Ferrer 1998; Savereno et al. 1996).

4.2.1 Biological Factors Related to Bird Collisions

Biological factors include body size, flight behavior, age, sex, habitat use, and flocking behavior (Bernardino et al. 2018). These factors relate to a bird's risk for collision with a power line. Birds that spend an abundance of time in the air may face a greater risk of collision than those that are predominantly ground-based (Bevanger 1994). A bird's flight behavior has been shown to be one of the most important factors for determining risk for collision with a transmission line, perhaps more important than the sheer frequency of birds flying near the lines (Janss 2000). Juvenile birds, which are not as familiar with their surroundings and are less experienced in both flight and landing can be expected to have a greater likelihood of colliding with transmission lines (Bevanger 1994; Bevanger 1998; Dorin et al. 2005). In general, birds are quick-moving, visual-orienting animals that are very adept at identifying and avoiding obstacles in their flight paths; however, large-bodied birds with low maneuverability and birds that are distracted by specific behaviors (e.g., foraging, flocking, territorial displays, competition, courtship, soaring) tend to be more likely to collide with power lines. In addition, birds that are unfamiliar with an area and its power lines (such as migrants) may be at elevated risk.

4.2.2 Environmental Conditions Related to Bird Collisions

Environmental factors influencing collision risk include the effects of weather and time of day; transmission line visibility; surrounding land use practices that may attract birds; and human activities that may flush birds toward transmission lines. Overcast weather and thick fog tends to cause birds to lower their flying altitudes. Likewise, headwinds generally cause birds to fly lower, whereas tailwinds may cause birds to fly higher (Bevanger 1994; Perdeck and Speek 1984). High winds may cause some species, especially waterfowl, to fly at lower elevations (Hunting 2002). If winds are blowing perpendicular to conductors, this can also increase collision possibility (Hunting 2002). Weather conditions may also make transmission lines more difficult to see, thus increasing the likelihood of a

collision (Mathiasson 1992). Visibility can also be affected by the time of day. Additionally, lines become increasingly difficult to see at times with poor lighting, such as night, dawn, or dusk. Hunting (2002) observed increased transmission line strikes occurring at night or during poor weather.
Further studies by Stout and Cornwell (1976) also emphasize the risk of power line collision that poor visibility poses to waterfowl.

Wetlands, lakes, and streams have potential for avian risk if they are located near power lines. Because water is often used by birds for foraging, nesting and roosting activities, adjacent power lines can pose collision risks to birds that utilize these areas (APLIC 2012). Stout and Cornwell (1976) found that in a review of reported non-hunting mortality of wild waterfowl from 1930 to 1964, 65% of collision mortalities were due to telephone and power lines. Disturbance of birds perched near power lines can pose a risk. If birds are startled into leaving a water body or feeding area adjacent to power lines, the likelihood of a bird flying into the lines increases.

Wetlands tend to have a high concentration of birds nesting, feeding, roosting, and shuttling back and forth among use areas, thus adding to the collision risk with nearby transmission lines (Bevanger 1994).

Anthropogenic land use may attract birds into areas that contain transmission lines. For instance, a section of highway may be an attractant to vultures or similar scavenging species because of the presence of road-killed animals. Agriculture activities may attract birds and raptors to certain areas for foraging opportunities. Birds avoiding urban areas may be funneled into transmission corridors and be exposed to the risk of collision.

4.2.3 Transmission Line Configuration and Location Related to Bird Collisions

Power line factors that may relate to avian collisions include the type of structures supporting the transmission line and their placement in the landscape. Equipment placed on the structure and the manner that conductors are arranged also influences risk. While it is believed that flat-line configurations are less of an avian risk than vertical configurations (Bevanger 1994), power line structure design has not been sufficiently analyzed to determine a specific correlation with bird collisions (Janss 2000). However, there seems to be a positive correlation between the presence of a static wire, wire height, wire diameter, and the number of bird collisions (APLIC 2012; Bernardino et al. 2018; Bevanger 1994; Savereno et al. 1996). It is thought that when a bird sees the larger conductor wires, it increases its altitude to avoid them, and subsequently collides with the thinner, less-visible static wire. This has been supported by studies that have demonstrated an average mortality decline of 50 to 60% when markers are placed on static wires in relation to wires left unmarked (Savereno et al. 1996).

Transmission Line Location

Transmission line location may also influence the risk of collision for birds. Generally, there is more of a risk in placing a transmission line corridor in an open area than against an existing obstruction; however, the visual contrast of the conductors against the background is a consideration (Bevanger 1994). The risks to birds flying across a single corridor in an open space become dependent not only on the line's visibility, but on the altitude of the bird and its ability to first see the transmission line wires, and then change its flight pattern to avoid them. The perpendicular placement of transmission line corridors relative to avian flyways can increase the risk posed by the lines. There is also a greater risk of collision when lines are in between areas used by birds, such as between foraging and roosting areas (APLIC 2012). The problem is compounded when the areas are close enough that only a short, low-level flight is required (Bevanger 1994).

Lines placed near a ridgeline also can create a hazard. When horizontal winds get deflected upward by ridgelines, the resulting updrafts attract raptors that seek to gain elevation for gliding and soaring purposes (Pope et al. 2006). Passes or valleys may act as funnels for migrating birds crossing mountain ranges. River courses are also followed by migrants. Power lines spanning passes, valleys and rivers create a risk of collision.

It is difficult to predict the frequency of collision-caused bird mortality without long term information on bird species activity and both daily and seasonal movements in the Project area. These data are not available for the Project; however, it is generally expected that collision mortality would be greatest where the movements of susceptible species are the greatest (e.g., near open bodies of water, wetlands, nesting habitats, ridgelines). The Project area is generally not near open bodies of water and wetlands are limited. In addition, the Project will parallel adjacent existing transmission lines throughout the majority of the Project area.

Bird Collisions and Guy Wires

Collision risks have been documented for guyed communication towers (e.g., Gehring et al. 2009; Gehring et al. 2011; Longcore et al. 2012; Shire et al. 2000). Guyed transmission structures will be used across the majority of the Project alignment and will generally use guy wires that are larger, and closer to the ground surface than those used for many communication towers. Literature related to collision risks associated with power line guy wires is generally lacking (Bernardino et al. 2018). Review of the available literature suggests that collision rates near transmission structures are lower than those observed between structures indicating lower collision risk near structures where guy wires would be located (Neves et al. 2005; Pandey et al. 2008; Ward and Anderson 1992 as cited in Bernardino et al. 2018). The Company recognizes that the use of guy wires to anchor transmission structures increases the vertical distribution of wires associated with the Project and may increase collision risk in some instances.

In a multi-year greater sage-grouse study, begun by Power Company of Wyoming in 2009 and continuing, there have been no observations of greater sage-grouse colliding with power pole structures or guy wires within a 750 square mile study area (J. Kehmeier, pers. comm.). The study involves monitoring of greater sage-grouse with platform terminal transmitters equipped with global positioning system (GPS) capabilities. To date, over 400 greater sage-grouse have been tagged and over 700,000 data points obtained. Throughout the study area, there are numerous power distribution lines and transmission lines (some of which have guyed structures), guyed communication towers, radio and television towers, and guyed meteorological towers. No collisions with structures have been observed and there is no evidence in the recorded platform terminal transmitter data of a collision. By contrast, multiple greater sage-grouse collisions with fences have been observed (J. Kehmeier, unpublished data). Greater sage-grouse collisions with low-lying distribution lines have been observed in northwestern Colorado (Brian Holmes, Colorado Parks and Wildlife, personal communication). These observations provide evidence that risk for collision with electrical infrastructure is possible although the Project is substantially larger that the distribution system where collisions were observed. While collisions of sage-grouse with guy wires have not been observed, the Company recognizes that use of guy wires to anchor transmission structures may increase collision risk for the species.

Based on exposure alone, the relative short lengths of the guy wires and the low heights on power lines pose less risk to birds than do the longer, multiple guy wires on communication towers whose height can exceed 300 m (>1,000 feet) (Gehring et al. 2011). In addition, some types of lighting on communication towers can attract birds into the collision zone in low visibility weather. Because the majority of the Project transmission structures will be unlit, they are not expected to have the same risk (APLIC 2012).

Tower heights proposed by the Company are under 200 feet and the Federal Aviation Administration does not require lighting on structures that are 200 feet or less above ground level. However, the Company is working with the Utah Test and Training Range to determine lighting requirements for towers within the Department of Defense's Utah Test and Training Range Sevier B low-altitude military operating area and will request consideration of impacts to avian species when finalizing lighting requirements and design.

5 PROJECT RISK ASSESSMENT

The Project followed and developed a multi-tiered siting and routing process and is currently undergoing a thorough analysis process. In developing their initial transmission line route, the Company carefully sited roads, transmission structures, and other infrastructure to avoid sensitive resources that were known at the time, including migratory bird habitats, ESA-listed species habitats, raptor and eagle nest locations, and greater sage grouse lek locations.

The BLM has developed route alignment alternatives that will be analyzed as part of the Project's NEPA process. Impacts to migratory birds and their habitats will be specifically analyzed in the draft environmental impact statement and FEIS. The evaluation will likely include the following:

- Collisions with vehicles
- Nest destruction
- Nest abandonment
- Increased predation
- Creation of predator travel corridors
- Habitat loss, alteration, degradation, and fragmentation,
- Electrocution
- Collisions with power lines and guy wires
- Species displacement
- Nest parasitism
- Invasive plants and noxious weed species
- Wildland fire
- Trash and human waste
- Traffic impacts
- Helicopter traffic

- Vegetation removal and vegetation management
- Increased human presence

(Once final analysis in the FEIS is complete, it will be added here.)

5.1 Greater Sage-grouse Habitats

Greater sage-grouse habitats within the Project area include:

- Priority Habitat Management Areas (Nevada)
- General Habitat Management Areas (Nevada)
- Other Habitat Management Areas (Nevada)

5.2 Threatened and Endangered Avian Species Habitats

The only threatened and endangered avian species that has a potential to be located in proximity to the Project is the yellow-billed cuckoo (*Coccyzus americanus)*. During site-specific habitat surveys for the Project in 2022, no suitable nesting habitat was documented. However, suitable foraging and stopover habitat was documented along portions of the Sevier River and a route-wide habitat assessment will be completed once a final alternative is selected.

5.3 Migratory Bird Primary Habitats

Important Bird Areas and Bird Habitat Conservation Areas are identified in POD Appendix A: Detailed Route Alignment Figures (*to be added/updated upon selection of an Agency Preferred Alignment*).

To define additional primary habitats for Birds of Conservation Concern, the Company will use the priority habitats as indicators of the primary habitats that might be used by Birds of Conservation Concern.

Within these priority habitats, the Company will assess habitat quality and collision risk based on the presence of existing disturbances that have already altered the habitats such that their value for and use by Birds of Conservation Concern has likely been reduced. The Company has co-located the Project with these existing disturbances to the extent possible (e.g., major roads, railroads, transmission lines, utility corridors, etc.). The Company's co-location efforts were completed specifically to avoid and minimize impacts to numerous resources, including migratory birds.

6 CONSTRUCTION DESIGN STANDARDS

Section 5.0 of the POD details the design of the transmission lines, including structure designs and foundations, conductors, insulators and associated hardware, overhead shield (ground) wires, grounding rods, minor hardware, and system interconnection lines. The Project was designed to meet APLIC construction recommendations (APLIC 2006, 2012) by ensuring that vertical and horizontal separation distances between energized components and between energized components and grounded elements meet or exceed APLIC recommendations for the largest bird that is likely to occur within the local vicinity of the Project (golden eagles). Project design standards relevant to this APP are included in

Attachment 3, Design Standards and Structure Design Drawings, and are discussed further in the following sections.

6.1 Flight Diverters

In areas the Company identifies as posing a high-risk for avian collisions or in areas identified as having high collision mortality based on post-construction reporting, the Company will install flight diverters or line markers, as appropriate (see POD Appendix A: Detailed Route Alignment Figures - *to be added/updated upon selection of an Agency Preferred Alignment*). Example flight diverters and markers are shown in Attachment 3, Design Standards and Structure Design Drawings.

6.2 Guy Wire Markers

The Company will complete a Project-specific risk assessment to identify locations where guy wire markers will be installed consistent with BLM, Forest Service, and USFWS recommendations, policy, and regulation. Structure locations with guy wire markers are shown on maps in POD Appendix A: Detailed Route Alignment Figures (*to be added/updated upon selection of an Agency Preferred Alignment*) and in POD Appendix C1: Biological Resources Conservation Plan. While the Company's risk assessment will identify guyed structures where guy markers will be installed during construction, it is recognized that there is potential for collisions to occur with unmarked guy wires that were not identified during the risk assessment. The Company will also install flight diverters on guyed structures at tower locations identified by post construction monitoring as having high collision risk, as recommended by the APLIC.

Guy wire marker types will be sourced at the time of construction with expected marker types to be spiral style markers, flapper style markers, or similar. Example guy wire markers are shown in Attachment 3: Design Standards and Structure Design Drawings.

6.3 Perch Deterrents

Perch deterrents will be used in select areas where the Project crosses through sensitive wildlife areas to discourage perching and predation (see POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan). In select habitats for greater sage-grouse and pygmy rabbit *(Brachylagus idahoensis*), use of self-supported steel monopoles, guyed-V structures, or other structure types will be used to deter perching in lieu of adding perch deterrents. Self-supported steel monopoles, guyed-V structures, other perch deterring structure types, and structures where perch deterrents will be installed are identified in POD Appendix A: Detailed Route Alignment Figures (*to be added/updated upon selection of an Agency Preferred Alignment*).

6.4 Guyed V Structures

The guyed V tower design would reduce avian predator perching and nesting opportunities and benefit sensitive wildlife species by:

- minimizing horizontal surfaces;
- minimizing structural boxes (nesting/perching areas) greater than 2 square feet;
- incorporating perch deterrent applications directly into the tower construction and assembly;

- generally requiring a smaller footprint than a self-supporting tower resulting in less permanent loss of habitat;
- providing fewer horizontal spaces of sufficient size for corvids/raptors to perch; and
- providing a tower design to further the overall knowledge of reducing avian perching/nesting on transmission towers.

This tower design and deterrent methods are industry standards. Substantial effort was put into the design of the supplemental guyed V towers which deters raptor and corvid perching. The strategy during design was twofold:

1. Arrange tower members to eliminate as many horizontal surfaces wherein the clear space above the member is equal to or greater than 2-foot-wide by 2-foot-tall, as possible. This is intended to provide fewer perching and nesting opportunities on the tower and minimize locations on the tower where a nest and perch deterrent will be required. Raptors and corvids have difficulty perching and nesting in spaces smaller than 2 by 2 feet.
2. Preserve purposefully positioned perch opportunities for use in sections of the line outside of key species habitat areas. Completely eliminating perching locations on the towers outside of the key species habitat areas was a concern because a raptor or corvid could adapt to the lack of suitable surfaces and begin perching on areas of the tower previously perceived as unfavorable. For this reason, horizontal members ideal for perching are present but limited and placed in minimal locations on top of the bridge. Inside key species habitat areas, these locations will have a purpose-built perch discouraging device installed.

To implement the two-fold strategy, the Company will incorporate the following into the engineering and design of the guyed V and lattice towers:

- Sloped bridge members
- Sloped arm members
- Perch deterrents for horizontal bracing on the bridge and arm members
- Limited horizontal mast bracing
- Reduced overhead space
- Reduced horizontal surface area

Details on guyed V wire flight diverters are described in in Section 6.1. Perch and nest deterring design components of guyed V structures are described in more detail above in Sections 6.3. Drawings of the towers are located in Attachment 3: Design Standards and Structure Design Drawings.

6.4.1 Sloped Bridge Members

The tower bridge could be considered the most likely section of the tower where a raptor or corvid will perch. For this reason, the middle of the bridge was designed to slope upward (Figure 2) which creates an inclined surface that deters perching. It is far more common to develop a structure for extra high-voltage transmission line application that includes a flat bridge. A flat bridge would require the placement of

perch deterrents across its entire length. The use of sloped bridge members necessitates fewer perch deterrents, which means less maintenance will be necessary in the future.

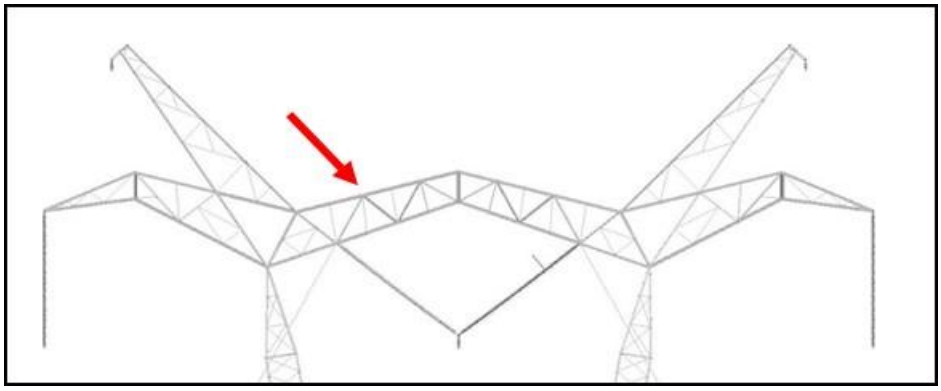


Figure 2. Sloped bridge members.

6.4.2 Sloped Arm Members

Similar to the bridge, the arm could be considered a section of the tower where raptors and corvids are likely to perch. The design strategy includes sloping the main members of the arm while maintaining several horizontal braces (Figure 3).

Adding slope to the arm members complicates the tower design with respect to connections and member sizing, which results in greater cost when compared to traditional horizontally oriented members. Some, but not all, of the added cost is offset by the elimination of perch deterrent devices and the associated maintenance.

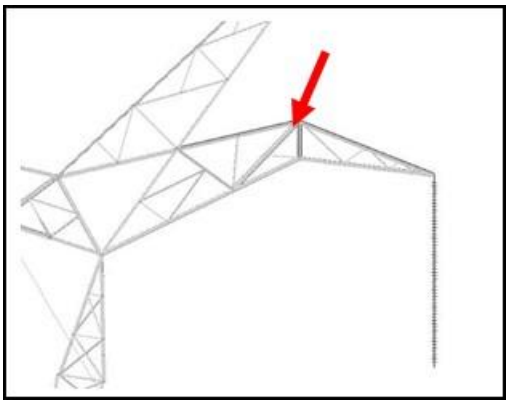


Figure 3. Sloped arm members.

6.4.3 Limited Horizontal Mast Bracing

Horizontal braces were kept to a minimum on the mast and are only located between mast sections. Any space above horizontal members is prevented from being a 2-foot by 2-foot square in an effort to deter perching (Figure 4).

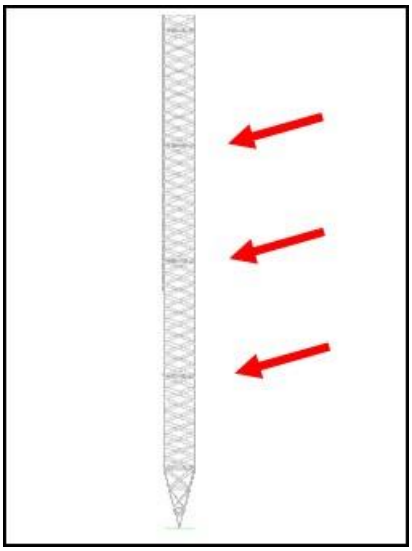


Figure 4. Limited horizontal mast bracing.

Figure 5 portrays how horizontal members are inherently protected by the tower design from a 2-foot by 2-foot avian threshold. Specifically, smaller non-loadbearing members are added to reduce overhead space below the 2-foot by 2-foot by 2-foot box threshold in these locations.

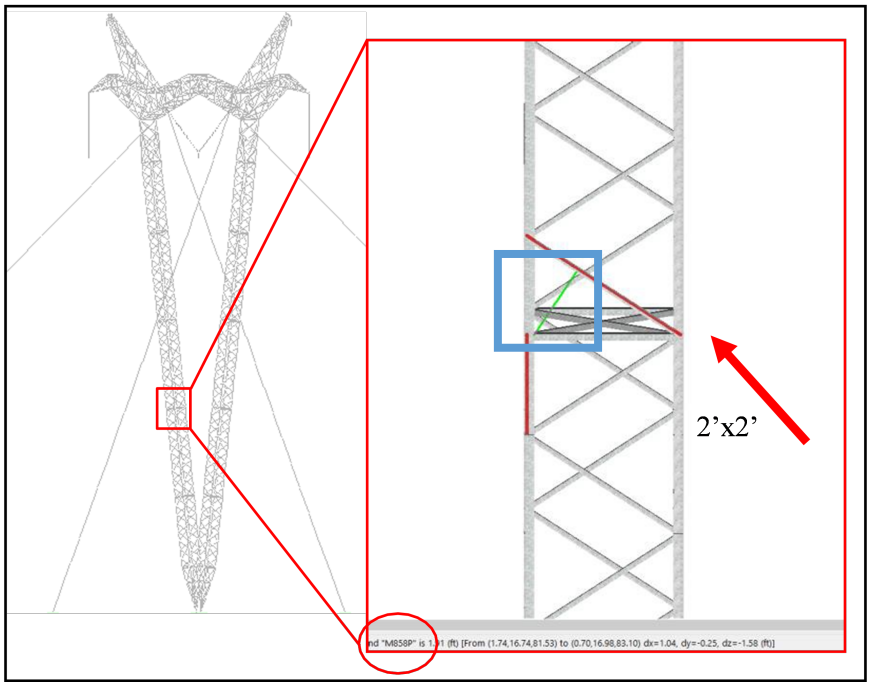


Figure 5. 2-foot by 2-foot box shown on horizontal surfaces.

6.4.4 Reduced Horizontal Surface Area

In comparison with a self-supported flat configuration lattice tower (as depicted in Figure 6 on the right), guyed V structures have two smaller masts instead of four legs, eliminating many potential nesting and perching surfaces (see Figure 6 left). It is challenging and costly to eliminate perching on a self-supported tower since there are required horizontal diaphragms for structural integrity.

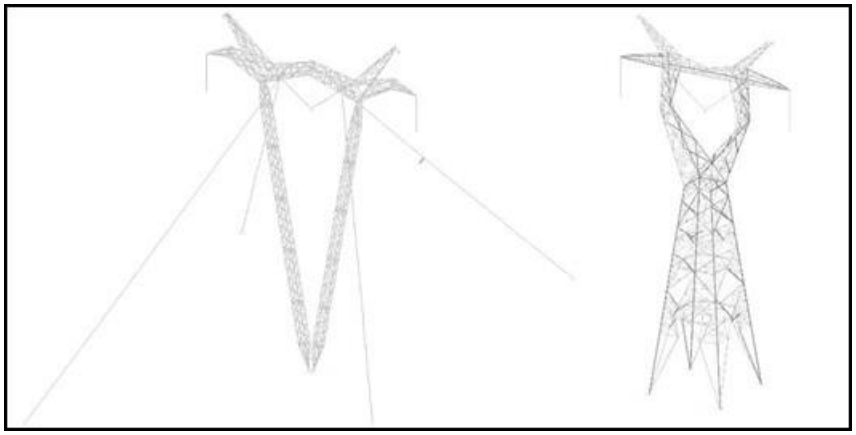


Figure 6. Reduced horizontal surface area.

6.5 Self-supporting Steel Lattice Structures

The Company's existing 500-kV lattice tower family will be modified to incorporate the holes necessary to accommodate the nest and perch deterrents (described in Section 6.3) in the locations identified below (Figures 7 through 9).

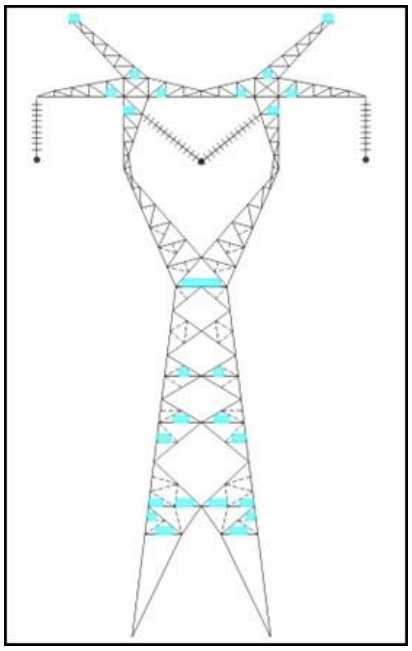


Figure 7. 5T perch deterrent placement.

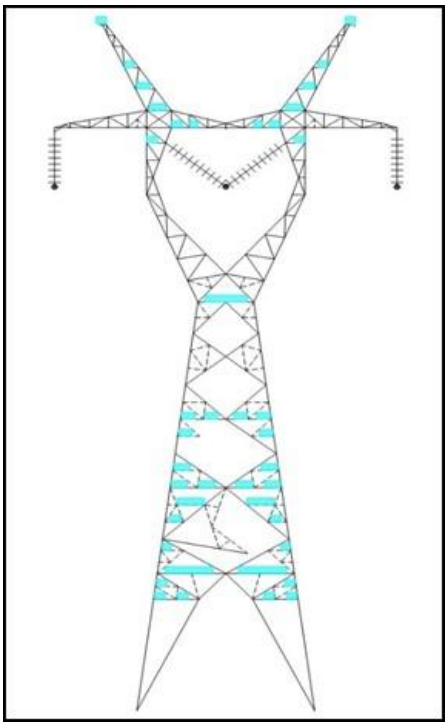


Figure 8. 5R6 perch deterrent placement.

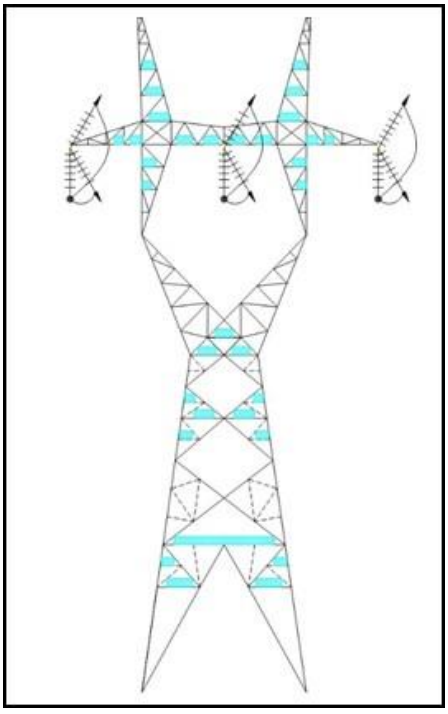


Figure 9. 5D30 perch deterrent placement.

7 TRAINING/MONITORING AND DEVELOPMENT OF TRAINING MATERIALS

The Compliance Monitoring Team (see POD Appendix B6: Environmental Compliance Inspection Plan), Construction Contractor(s) personnel, and other personnel involved with construction and/or surface disturbing activities associated with the Project will undergo environmental training, including avian protection, prior to working on the Project site. Ensuring that Project personnel are knowledgeable and aware of the protocols and methods outlined in this APP will decrease the likelihood of avian interactions with the transmission line and increase the likelihood of quick and efficient responses to incidents.

The environmental training program will include information developed by the APP Program Coordinator that places emphasis on the Company's avian protection policy. Also addressed will be agency requirements and measures to conservation of special-status avian species and where these would be most likely to occur. Workers will be instructed in how to identify these species; their natural histories where relevant to areas of probable occurrence; and what steps to take should an avian injury or mortality occur. Training will also include a discussion of the law and the consequences for non-compliance with this APP and/or with applicable permits or regulations.

New field personnel will be required to undergo environmental training prior to conducting construction or O&M work on Project. O&M personnel will receive special training regarding identification of problem nests, identification of injured avian species, and permit requirements for managing problem nests, injured birds, or mortality events. As part of the training, workers will be instructed on the proper protocol for contacting the APP Program Coordinator for assistance in circumstances of uncertainty. For a discussion of how newly discovered nests or avian incidents will be reported, see Section 9.0, Nest Management, and Section 10.0, Monitoring and Adaptive Management.

8 AREAS OF RESPONSIBILITY AND PERMIT COMPLIANCE

The APP will be administered by designated Company staff members under the direction of the APP Program Coordinator. A list of additional responsible persons, chain of responsibility, and contact information will be established by the Compliance Monitoring Team immediately prior to Project construction and appended to this APP. This list will be kept updated through the life of the Project.

Company management requires line crews, field engineers, operators, foremen, and design personnel to fully understand this APP and comply with its direction.

Following issuance of the NTP from BLM, the Company will coordinate with USFWS to seek a Special Purpose Utility Permit (SPUT Permit) (if necessary) to enable the removal of problem migratory bird nests in cases where nest removal cannot be delayed for safety, reliability, or other necessary purpose, and for handling and removal of any non-eagle or non-ESA-listed bird species discovered during monitoring.

Other than the SPUT Permit described above, there is not currently a need for the Company to obtain federal or state permits pertaining to migratory birds, eagles, or federal ESA-listed avian species. No known nests need to be removed. There is not a need for an incidental take permit for disturbance take based on the Company's ability to apply timing and/or spatial stipulations. However, if conditions change in the future, any permits necessary for the listed or future methods will be obtained prior to initiation of the action.

If an injured bird is discovered, the BLM and the appropriate state wildlife management agency would be contacted to coordinate capture and transport to a rehabilitation facility. If an eagle or ESA-listed species is discovered, USFWS Office of Law Enforcement would be notified. Any migratory bird carcasses discovered will be left in place or handled as approved in the SPUT Permit. POD Appendix C1: Biological Resources Conservation Plan, Attachment B: Biological Resources Monitoring Plan details monitoring for bird carcasses.

Based on monitoring results, the Company will work cooperatively with the appropriate agencies to determine whether any additional future permits should be applied for and incorporated into the APP. The following permits are described to inform the APP Program Coordinator in making decisions regarding future permits. Additional state or general permits may be required in the future and will be coordinated with the appropriate wildlife management agency. This section does not imply that the Company possesses these permits or may conduct the covered actions described below.

- **Incidental Take Permits**—Incidental take permits are issued to allow the unintentional take of specified individuals per the conditions within each permit.

- **ESA Section 7 Incidental Take Statement**—To be updated if necessary after Section 7 consultation.

  - **Bald and Golden Eagle Act Permit—**Based on known occurrences and activities in the vicinity of the Project area, both species could occur in various locations along the Project route. Should eagle electrocution or collision incidents occur during construction or operation or should an eagle nest be discovered that will be impacted by construction or operation, Company personnel will carry out measures described in Section 9.0, Nest Management, and Section 10.0, Monitoring and Adaptive Management, and immediately notify the APP Program Coordinator.

- **Collection/Salvage Permits**—These permits are required to collect, salvage, or handle birds.

  - **State Scientific Collecting Permit**—These permits are issued by state wildlife resource agencies and allow the collection, salvage, or capture and release of special-status species as allowed by the individual permit conditions. The Company will seek this permit from the appropriate state agencies if these actions are required during Project construction.

  - **Federal Migratory Bird Permit**—These permits are issued by the USFWS under the MBTA and may be required if it is necessary to salvage and/or rehabilitate birds protected by the MBTA during construction.

- **Nest Removal and Relocation Permits**—Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt those actions on a migratory bird nest (USFWS 2022). Although it is lawful to remove inactive nests for some birds, there are exceptions for protected species such as eagles. When it is necessary to remove a protected nest, then as dictated by the MBTA, the Company will seek permits from the USFWS prior to taking further actions other than those described under Section 9.0, Nest Management.

9 NEST MANAGEMENT

Nest management addresses both nests that may be constructed on facilities and nests near facilities that may be affected by construction or O&M activities. Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt those actions on a migratory bird nest (USFWS 2022). In order to comply with these regulations, the various Applicant Committed Environmental Protection Measures and protocols that will be utilized by Project staff to avoid and minimize impacts to nesting avian species on structures or in the Project ROW are discussed below. In addition, on federal lands, spatial and timing stipulations provided in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources, regarding nesting birds will be followed as set forth in the authorizations for the Project unless a waiver, modification or exception is granted. Further, the Company will apply the spatial and timing stipulations in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources, for migratory birds and eagles on private lands where feasible during construction. If an exception to the timing or spatial stipulation is necessary, the Company will consult with a qualified biologist to determine an appropriate minimum buffer and will monitor the nest for signs of disturbance.

9.1 Active Nests

Migratory bird nests are protected by the MBTA. An active nest is one that contains viable eggs and/or chicks; a nest becomes active when the first egg is laid and remains active until fledged young are no longer dependent on the nest (USFWS 2018). For the Project, a nest will be considered active when a newly constructed nest has been completed and contains viable eggs or chicks or when adults commence breeding behaviors at a previously constructed existing nest. A nest will remain active if adults, viable eggs being tended by adults, or living young are present at the nest. A nest may be abandoned, fail, or fledge young and become inactive during the breeding season.

Many species will utilize existing nests built in prior years. These include owls (Strigiformes) and diurnal raptors such as falcons, hawks, vultures, and eagles (Falconiformes). Because known nesting sites are likely to be utilized in the current year, each existing nest suitable for use by owls and diurnal raptors will be considered active when the designated seasonal avoidance period begins (see POD Appendix C1: Biological Resources Conservation Plan). Its formal status will remain active until such time as a qualified biologist determines the nest is inactive. The Company will submit an exception request to the BLM if avoidance within the spatial and timing buffer of an identified raptor nest is not practicable.

The Company recognizes that it may be difficult at times to determine whether a nest is active or inactive, and that even checking on the status of a nest may result in disturbance. If in doubt, O&M personnel will contact the APP Program Coordinator who will have the nest checked by a biologist approved by or meeting qualification requirements of the appropriate agency/agencies (hereafter “qualified biologist”).

9.2 Inactive Nests

Inactive nests may be removed and/or destroyed in compliance with the MBTA, unless they are nests of ESA-listed species, or bald or golden eagles as discussed above. Nests that are empty, contain non-viable eggs, or are being built but do not yet have an egg in them are considered inactive (USFWS 2018). The MBTA does not contain any prohibition that applies to the destruction of an inactive bird nest (with the exception of eagle and ESA-listed species nests), provided that no possession occurs during the

destruction (USFWS 2018, 2022). The MBTA standards for nest removal will be used unless a state's nest removal standards are more stringent, in which case the state standard will be used.

Inactive nests known to be used by ESA-listed species or bald or golden eagles will not be removed without the necessary USFWS permits to remove them. Additionally, any special-status or sensitive species nest on federal land that has RMP- or LRMP-approved timing or spatial stipulations defined in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources, (hereafter special-status species nests) would not be removed without prior coordination with the land management agency. Active special-status species nests on federal land will be protected through establishment of the buffers set forth in the ROW Grant and SUP for the Project; these buffers are defined in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources.

9.3 Nest Removal Requirements

While most inactive nests are not protected from destruction by the MBTA, nests of ESA-listed species or of bald and golden eagles are protected even if inactive. Nests of these protected species cannot be altered, moved, or destroyed without specific authorization from the USFWS.

Eagle nests may be removed when there is a safety concern to people or eagles, when it is a public health and safety concern, when the nest prevents use of a human-engineered structure, or when the activity or its mitigation will have a net benefit to eagles; only inactive nests can be taken except in safety emergencies (50 CFR 22.27). However, permits are still required for nest removal and ground crews must notify the APP Program Coordinator if a problem nest is discovered. Therefore, determining the species and the active or inactive status of a nest in the vicinity of planned work is paramount to protecting the birds that may be occupying it and protecting the Project by ensuring avian-safe construction.

The Company will comply with all applicable federal and state laws regarding nest management or removal. Removal of an inactive, non-protected nest outside the breeding season may be conducted for safety or maintenance issues without a take permit. During construction, the Company does not intend to remove any active migratory bird nests. However, if removal of an active migratory bird nest is required, activities would be conducted in accordance with the requirements contained in the SPUT Permit for the Project. When in doubt about the status of a nest (or type of nest) field personnel will consult with the APP Program Coordinator to determine the appropriate action. Active problem nests will be addressed on a case-by-case basis and in coordination with the USFWS and appropriate state agencies.

If there is question as to whether an observed nest is active or inactive, the APP Program Coordinator will be consulted for assistance, who may in turn consult with the applicable land management or regulatory agency. Under no circumstances is an active nest to be disturbed until the APP Program Coordinator has been notified and applicable permits and/or regulatory agencies have been consulted for further action. The avian nest reporting form (Attachment 4) must be completed for all active nests. Construction may only proceed within an active nest buffer after the nest has been determined to be inactive or after approval has been given by the APP Program Coordinator or the applicable regulatory agency.

9.4 Operation and Maintenance Procedures

To properly assess and document potential issues with nests, O&M activities occurring during the avian breeding season will be subdivided into activities that strictly involve work on overhead structures and activities on the ground that involve ROW vegetation management or new surface disturbance.

For O&M activities strictly occurring on towers and other overhead structures that do not require any surface disturbance or do not impact vegetation, linemen and O&M personnel will conduct visual inspections of the maintenance area prior to beginning work to identify any potential nests that may be present in their work area. If a potentially active nest is identified on the ground during the inspection and the O&M activity can proceed without directly impacting the nest, eggs, young, or adults, work will proceed as planned. If the nest is located on a structure or if the activity cannot proceed without potentially directly impacting the nest, eggs, young, or adults, the APP Program Coordinator will be contacted. The APP Program Coordinator will develop a treatment plan that will protect the active nest and, if nest protection is not possible, coordinate with the appropriate land management agency and follow the requirements in the SPUT Permit for nest removal. The avian nest reporting form (see Attachment 4) must be completed for all active nests regardless of whether the nest interferes with the activity. O&M activities shall follow all procedures set forth in Section 9.3, Nest Removal Requirements, and the SPUT Permit if removal of a nest is required.

During O&M, vegetation in the ROW will be managed (e.g., mowed) to maintain stable, low-growth plant communities while controlling noxious or invasive plants (see POD Appendix C4: Vegetation Management Plan,). For activities involving ROW vegetation management during the avian breeding season, a qualified biologist will conduct a nesting bird survey not more than 7 days prior to the O&M activities to determine if active nests are present within the work area. Active nests that are encountered are to be documented using the avian nest reporting form (see Attachment 4). O&M work requiring ROW vegetation management or other surface disturbance will proceed if the activity is situated outside of the spatial nest buffer for the species that are specified in POD Appendix C1: Biological Resources Conservation Plan, Attachment E: Seasonal and Spatial Restrictions for Biological Resources. If the O&M work area is located within the nest buffer, the APP Program Coordinator will be contacted. The APP Program Coordinator will develop a treatment plan to protect the active nest and, if nest protection is not possible, coordinate with the appropriate land management agency and follow the requirements in the SPUT Permit for nest removal.

9.5 Problem Nests

Many birds build nests on transmission/power structures. Nests that do not pose safety, reliability, outage, or bird electrocution risks will be left undisturbed. Nests that may present safety, reliability, outage, or bird electrocution risks are referred to as “problem nests”. Managing problem nests involves several components:

- Discouraging birds from nesting in problem areas and
- Providing an alternative nest site in coordination with the appropriate land management agency and USFWS.

Problem nests may be removed in accordance with the procedures set forth in Section 9.3, Nest Removal Requirements, (or relocated in accordance with agency guidance) if inactive unless it is an ESA-listed species or a bald or golden eagle nest. If a nest of an ESA-listed species, a bald or golden eagle, or a special-status species is determined to be a problem nest, the APP Program Coordinator must be contacted before further action is taken. If a problem with a specific nest is anticipated in the future, permit requirements may be minimized by taking appropriate action during the non-breeding season before the nest is active. If removal of an active nest is required, the APP Program Coordinator will coordinate with the appropriate land management agency and follow the requirements in the SPUT Permit for nest removal.

10 MONITORING AND ADAPTIVE MANAGEMENT

As stated previously, this APP will be a living document that will be revised and updated as goals are achieved, innovative solutions are developed to mitigate impacts, agency guidance is adjusted, and conditions of the Project warrant. The APP will be reviewed annually and updated as needed based on field data and monitoring of system changes to improve avian safety. The Company will utilize an adaptive management approach to address issues with the Project as they arise. Through this process, the Company will better be able to identify potential risk and avoid and minimize impacts to avian species. Set out below are examples of some areas where adaptive management will serve to benefit avian species as well as the Project.

10.1 Monitoring

Regular monitoring will be conducted to evaluate the establishment of nests on transmission infrastructure, identify possible avian injuries or mortalities caused by transmission infrastructure, and inform adaptive management. Monitoring will be conducted by trained line and O&M crews and supported by the APP Program Coordinator and qualified biologists. Regular monitoring efforts will consist of the following:

- Nest monitoring will be conducted at minimum twice per year during semi-annual inspections. Management of all nests identified will follow the processes described above in Section 8.0. Nest locations on federal land will be reported to the land-managing agency annually by January 31 for the preceding year.

- At least once every 2 years, for the first 5 years of Project operation (Year 1, Year 3, and Year 5 of operation), the Company will be responsible for monitoring the effectiveness of this APP during routine detailed inspections, POD Appendix B7: Operation and Maintenance Plan. Effectiveness monitoring will be conducted by trained and qualified biologists equipped with GPS units showing key species habitat areas and structure locations. Biologists will inspect the ground and structures for evidence of raptor and corvid presence and use, as well as sensitive wildlife presence (dead and alive). The biologists will search an area encompassing 15 feet (4.5 meters) on each side of the outside conductor of the transmission line and a 25-foot (7.6-meter) radius around the outermost legs (lattice tower) and/or guy wires (guyed V) of each tower for carcasses, prey remains, pellets, molted feathers, and whitewash.

- After the first five years, injury and fatality monitoring will be conducted by trained line and O&M crews incidentally. Prior to conducting maintenance or inspections, crews will scan the work area and immediate surroundings to identify any evidence of avian collisions. Any evidence of avian injury or fatality will be reported immediately to the APP Program Coordinator. In all cases of injury or fatality, the bird or carcass will be left as it was discovered. Communication of injuries or fatalities will occur as follows:

  – Incidents of injured birds will be reported to the appropriate state wildlife management agency and, if on federal land, the land-managing agency, as soon as possible and no later than 24 hours after discovery.

- Incidents of injured eagle or eagle fatalities will be reported to the USFWS as soon as possible and no later than 24 hours after discovery.

- All injuries and fatalities will be logged into the online USFWS Injury and Mortality Monitoring (IMR) system at IMR: Injury and Mortality Reporting (fws.gov).

10.2 Incident Tracking

Avian incidents and mortalities will be documented during all phases of the Project by field personnel. Personnel will undergo avian protection awareness training prior to beginning work on the Project that will include recognition and effective documentation of observed avian issues and mortalities. Avian injuries or mortalities that are a result of collision or electrocution with the transmission line or other Project components are to be documented and reported, including photographs, as appropriate, to the APP Program Coordinator. Following initial notification, the employee or contractor will fill out the avian incident reporting form (Attachment 5). The Company will use the online USFWS IMR system at IMR: Injury and Mortality Reporting (fws.gov) for voluntary reporting of avian injuries and mortalities. Data reported by the Company to the IMR system can only be viewed and accessed by the Company and USFWS.

10.3 Annual Adaptive Management Review and Report

The Company will maintain an internal database of avian mortalities, including dates, locations, and the species involved, as well as a list of remedial measures implemented (e.g., retrofitting, avian safety devices installed, etc.), a shape file or map of the annual avian incident data, and an itemized breakdown of the annual cost of implementing this APP. The Company management and the APP Program Coordinator will review the annual list of avian mortalities to ensure that adequate measures are being taken to avoid and minimize risks to birds.

If the APP Program Coordinator identifies areas with higher-than-expected avian impacts or impacts to special status avian species, the APP Program Coordinator will either: (1) recommend mortality surveys to identify the scope of the problem and to identify the necessary corrective actions; or (2) if the scope and cause is known, recommend retrofits or remedial actions. If mortality surveys are recommended, they would be conducted in target areas using APLIC (2012) recommended survey and data collection methods.

Following the annual review, the APP Program Coordinator will develop an annual report on the APP implementation that provides information on monitoring results and recommends appropriate actions including additional monitoring, retrofits, or remedial actions. The report will also include information on any retrofits or remedial measures taken during previous years to help ascertain patterns or developing conditions. The annual implementation report will include program information; however, the Company will not include detailed, confidential mortality data in the report to allow for distribution of the report beyond USFWS. In the first annual report after construction is complete, the Company will create a table that summarizes where avian mitigation measures have been installed relative to high avian risk areas. This table will be updated annually to document the location of any retrofits or remedial measures that are applied as part of the adaptive management process.

Information to be included in the annual report includes:

- The names and qualifications of the surveyors
- Ambient condition data, including an evaluation of environmental conditions that may influence the results of the surveys conducted
- A tabular summary of the survey results at each tower location within key species habitat areas, including:
  - tower configuration data
  - presence and condition of nest and perch deterrents, including those that have been replaced or repaired
  - raptor and corvid nests, including occupancy status and species, if known
  - nests that have been removed during operation and maintenance, including species, if known
  - raptor or corvid nests that have been rebuilt in the same location of the same tower where a nest was previously removed
  - evidence of raptor and corvid presence, including species and behavioral observations
  - habitat type
  - evidence of sensitive wildlife species, including species and behavioral observations
- A summary of the percentage of towers in key species habitat areas with evidence of raptor or corvid nesting and perching, and the percentage of failed nest deterrents (i.e., nests continue to be constructed on towers with deterrents)
- A summary of adaptive management coordination with the BLM, Forest Service (as appropriate based on land jurisdiction); USFWS; UDWR; and NDOW, if any
- Representative photographs
- Spatial data and mapping depicting raptor and corvid use along the Project within key species habitat areas

10.4 Retrofit/Remedial Protective Measures

The Project is a new build transmission line that is not expected to need extensive retrofit devices or remedial protection. However, if an area is identified through the annual review and reporting where avian species are being unduly impacted by the transmission line during operation, the issue will be investigated and corrected using retrofit devices or other accepted protective measures. General types of equipment that may be used for these situations include covers for hardware and conductors; perch dissuaders; line marking devices; and other similar types of equipment. The Company has preemptively considered and proposed the use of a few readily available products; specifications for these products are in Attachment 3, Design Standards and Structure Design Drawings. Records will be kept of the nature of problems requiring avian protection equipment, bird species involved, site conditions, materials,

performance characteristics of equipment and lifespan. This information will be included in the annual report described above.

11 EXPENDITURE TRACKING

The Company will track its expenses related to work completed under this APP. As a new project, no data exist to meaningfully prepare a scope and budget for mortality reduction measures. Within 1 year of commencement of Project operation, the Company will establish an annual budget and cost tracking mechanism for remedial actions (purchase and installation of avian protection equipment), training, and other activities such as attendance of avian protection workshops.

Examples of potential work that will be tracked in the APP expenditure tracking system may include the following:

1. Modification of structures or installation of protective measures on structures associated with an avian mortality;

2. Installation of bird flight diverters/markers to prevent bird collisions;

3. Installation of nesting platforms; and,

4. Installation of fecal shields and/or panels to address bird pollution.

12 QUALITY CONTROL

The Company will implement quality control measures to ensure that this APP is accurate, up-to-date, and used effectively during the long-term operation of the Project. These measures will include the following:

- Company line crews, field engineers, operators, foremen, design personnel, and contractors associated with the Project are tasked with understanding and complying with this APP.

- As part of regular line patrol activities, the Company will implement a monitoring program to review avian protection measures installed on the Project to ensure they are in place and in working order. Deteriorated or damaged measures will be replaced as necessary. Line crews will report all issues and necessary repairs or replacements to the APP Program Coordinator.

- Quality control will be overseen by the APP Program Coordinator who will provide quarterly reports to the Company's General Management.

- The APP Program Coordinator will review submitted nest reporting forms and avian incident reporting forms and ensure that they are properly and adequately completed. Any missing information will be obtained from the worker who completed the form. The APP Program Coordinator will ensure that the incident database and USFWS IMR system is kept up to date.

- As part of regular line patrol activities, transmission towers or sections of conductor that are retrofitted with avian safety measures as described previously, will be monitored for effectiveness by checking for injured birds, carcasses, or signs of potentially risky nest- building. Observed incidents of additional nesting, injury, or mortality will be investigated for further remedial actions, which will then be determined and implemented.

- The Company will keep an internal database which tracks detected avian injuries or mortalities, a list of retrofitting operations over the last year, a shape file or map of the prior year's avian incident data, and an itemized list of the operating costs associated with implementing the protective measures in this APP. Company management and the APP Program Coordinator will discuss and implement necessary changes to this APP or avian protection methods based on this data.

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Attachment 1: Avian Power Line Interaction Committee Recommendation Summary

TABLE 1-1 RECOMMENDATIONS FROM SUGGESTED PRACTICES FOR AVIAN PROTECTION ON POWER LINES: THE STATE- OF-THE-ART 2006

Activity Type	BMP Description	Project Implementation
Design	Phase conductors separated by a minimum of the wrist-to-wrist or head-to-foot (flesh-to- flesh) distance of golden eagles (*Aquila chrysaetos*).	The main structure types identified in the POD and illustrated in Attachment 4, Design Standards and Structure Design Drawings, are designed in accordance with guidelines established by the APLIC (1994, 2006, 2012, 2015) and outlined in this APP. The separation distances between conductors for the Project and the use of sloped members will prevent perching or nest construction.
Design	Distance between grounded hardware (e.g., grounded wires, metal braces) and any energized conductor is more than the wrist-to-wrist or head-to-foot (flesh-to-flesh) distance of golden eagles.	The main structure types identified in the POD and illustrated in Attachment 4, Design Standards and Structure Design Drawings, are designed in accordance with guidelines established by the APLIC (1994, 2006, 2012, 2015) and outlined in the APP. The separation distances between conductors for the Project and the use of sloped members will prevent perching or nest construction.
Design	Maintain a minimum of 60-inch horizontal separation and 40-inch vertical separation based on the wrist-to-wrist or head-to-foot (flesh-to-flesh) distance of golden eagles.	The main structure types identified in the POD and illustrated in Attachment 4, Design Standards and Structure Design Drawings, are designed in accordance with guidelines established by the APLIC (1994, 2006, 2012, 2015) and outlined in the APP. The separation distances between conductors for the Project and the use of sloped members will prevent perching or nest construction.
Design	To prevent bird-induced arcing, conductor separation should be increased from 60 inches by 0.2 inches for every kV over 60 kV.	On the 500 kV AC system, a minimum separation distance of 148 inches would be required. The separation distances between conductors for the Project and the use of sloped members will prevent perching or nest construction.
Design	Insulate and isolate substation components. A combination of framing and covering can prevent contacts by birds and other animals.	As described in the POD Main Body, the Project has been designed in accordance with guidelines established by the APLIC (1994, 2006, 2012, 2015). This includes appropriate separation distances, insulators, framing, fencing, and covering at all AC substations, series compensation stations, regeneration stations, ground electrodes, and terminals.

Activity Type	BMP Description	Project Implementation
Design	Design structure to prevent nesting or keep nesting locations and materials away from conductors.	The structures in Attachment 3, Design Standards and Structure Design Drawings, provide separation distances and the use of sloped members that will prevent nest construction sufficient to keep all nests away from conductors. Separation distances between possible nest locations above the conductors are sufficient to minimize the likelihood that nest materials or streamers would be of sufficient length to contact the energized conductor. A proactive nest management program as described in this APP will be implemented to remove potential problem nests that are above or have the potential to contact energized conductors before they become a problem.
Design, O&M	To prevent outages, discourage perching in locations on structures where prey of streamers could fall on energized conductors or equipment.	As illustrated in Attachment 3, Design Standards and Structure Design Drawings, distance between perch location and conductor are sufficient to minimize the likelihood of streamers or prey becoming issues.

Source: APLIC 2006

TABLE 1-2 RECOMMENDATIONS FROM REDUCING AVIAN COLLISIONS WITH POWER LINES: THE STATE-OF-THE-ART IN 2012

Activity Type	BMP Description	Project Implementation
Design	Construct all new or rebuilt lines in high avian-use areas to avian-safe standards.	As described in the POD, the Project has been designed in accordance with guidelines established by the APLIC (1994, 2006, 2012, 2015). This APP describes the efforts completed by the Company, BLM, and Cooperating Agencies to site, design, construct, and operate the line in a manner that minimizes Project risks to avian species, especially in high use areas including Important Bird Areas, Bird Habitat Conservation Areas, intact habitat for Birds of Conservation Concern, greater sage-grouse (*Centrocercus urophasianus*) habitats, and ESA-listed species habitats.
Siting	Spatial analysis that considers habitat variables, species, behavior, and other factors to help choose the optimal route.	This APP describes the efforts completed by the Company, BLM, and Cooperating Agencies to site, design, construct, and operate the line in a manner that minimized Project risks to avian species, especially in high use areas including Important Bird Areas, Bird Habitat Conservation Areas, intact habitat for Birds of Conservation Concern, greater sage-grouse habitats, and ESA-listed species habitats. This included spatial analyses to evaluate possible Project route alternatives and design options. The Company's design and the BLM's Selected Alternative will take into account the following APLIC recommended items: • Line placement that takes migratory patterns and high bird-use areas into account. • Line orientation that considers biological and environmental factors such as bird flight paths, prevailing winds, and topographical features. • Line configuration that reduces vertical spread of lines, clusters multiple lines in the same ROW, increases the visibility of lines, and/or decreases the span length if such options are feasible. • Marking to increase the visibility of the line and guy wires.

Activity Type	BMP Description	Project Implementation
Siting	Field assessment to identify species, abundance, and high bird-use areas.	In addition to the spatial analyses and National Environmental Policy Act impact assessment described above, the Company conducted a full field inventory of habitats for sensitive wildlife resources, including avian species. The results of these inventories are reflected on the map sets in POD Appendix A: Detailed Route Alignment Figures (*to be added/updated upon selection of an Agency Preferred Alignment*) and are documented in detail in the site-specific biological resource reports, this APP, and POD Appendix C1: Biological Resources Conservation Plan. Surveys were used to identify potential high use areas along the Project ROW (i.e., intact habitats for Birds of Conservation Concern, raptor, and migratory nest locations, etc.).
Siting	Avian risk assessment to evaluate collision risk along potential routes.	Section 5.0, Project Risk Assessment, describes the multi-level risk assessment that was completed during initial Project planning, BLM and Cooperating Agency analysis, identification of the Agency Preferred Alignment, and ongoing efforts being completed by the Company prior to construction.
Construction, O&M	Where necessary, line marking should be considered to reduce potential collisions.	Section 6.0 describes the analyses and the Company's commitments to mark guy wires to reduce the potential for collisions. Location of guy wire and line markers are illustrated in the map sets in POD Appendix A: Detailed Route Alignment Figures (*to be added/updated upon selection of an Agency Preferred Alignment*).

TABLE 1-3 RECOMMENDATIONS FROM BEST MANAGEMENT PRACTICES FOR ELECTRIC UTILITIES IN SAGE-GROUSE HABITAT

APLIC BMP No.	Abbreviated BMP Description	Project Implementation
C-15	Limit motorized travel to designated construction areas, roads, and trails. Comply with seasonal road/primitive road/trail access and use restrictions.	All construction and O&M activities will be confined to the Project ROW, designated construction areas, access routes unless otherwise approved by the landowner or land management agency. Construction monitors will inspect for compliance with these requirements.
C-16	Establish speed limits on utility access roads crossing "designated" sage-grouse habitats.	Posted speed limits will be followed. In greater sage-grouse habitat where speed limits are not posted, the Company will implement the speed limits established in the POD (generally 15 miles per hour).
C-17	Contain, collect, and remove trash and construction debris regularly at construction sites and during maintenance activities to avoid attracting predators.	POD Appendix C1: Biological Resources Conservation Plan, describes the waste management plan for the Project. This includes removal of all trash and construction debris and proper disposal of all waste materials as described in the Plan.
C-18	Properly manage, dispose, and remove slash piles associated with construction or maintenance activities.	POD Appendix C4: Vegetation Management Plan, describes vegetation management for the Project including disposal or management of any slash.
C-19	Avoid activities that could result in new noise levels at the perimeter of a lek above 10 A-weighted decibels dBA above baseline ambient from 6:00 p.m. to 9:00 a.m. during the breeding season.	POD Appendix C1: Biological Resources Conservation Plan contains the avoidance and minimization measures that will be implemented during construction and O&M. These include spatial and timing restrictions for Project activities that will reduce noise levels. POD Appendix D1, Greater Sage-Grouse Mitigation Plan (dependent on Agency Preferred Alternative) will describe the avoidance, minimization, and mitigation measures that will be implemented for unavoidable impacts to greater sage-grouse habitat.
C-20	Establish and implement a fire prevention and suppression plan and adhere to seasonal fire restrictions and stipulations.	POD Appendix C8: Fire Precaution and Response Plan, contains fire prevention and protection practices that will be implemented for the Project.

APLIC BMP No.	Abbreviated BMP Description	Project Implementation
C-21	Reclaim ground/vegetation disturbances resulting from Project- related construction activities and use local native seed mixes for restoration or re-vegetation efforts when they will meet restoration measures approved by the landowner or land manager.	POD Appendix C9: Reclamation Revegetation and Monitoring Plan, describes the soil handling and reclamation practices that will be implemented; these include requirements for use of local native seed mixes, unless otherwise requested or approved by the private landowner or land management agency.
C-22	In areas where corvid nesting and associated predation on sage-grouse nests and broods is a concern, consider methods to discourage nesting.	POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan will be implemented for the Project.
C-23	Avoid impacts to sage-grouse and their associated priority habitats related to construction activities by using existing data.	The Company has used all existing data to avoid and minimize impacts to greater sage-grouse. Where impacts remain, as will be described in POD Appendix D1, Greater Sage-Grouse Mitigation Plan (dependent on the Agency Preferred Alternative), the Company is using a science-based, data driven assessment tool to scale compensatory mitigation to offset impacts to achieve a net conservation gain.
O&M BMPs		
O&M-10	Reclaim ground/vegetation disturbances from Project related O&M and use local native seed mixes for restoration or revegetation efforts when they will meet restoration measures approved by the landowner or land management agency.	POD Appendix C9: Reclamation Revegetation and Monitoring Plan, describes the soil handling and reclamation practices that will be implemented. These include requirements for use of local native seed mixes unless otherwise requested or approved by the private landowner or land management agency.
O&M-11	Where off-road travel use is required and permitted, implement “drive and crush” methods for overland travel instead of vegetation removal for maintenance of access roads.	All construction and O&M activities will be confined to the Project ROW and designated construction areas and access routes unless otherwise approved by the landowner or land management agency. If off-road travel is required and permitted, “drive and crush” methods will be implemented if Project activities can be done efficiently and safely.

APLIC BMP No.	Abbreviated BMP Description	Project Implementation
O&M-12	Inspect and wash vehicles and equipment to remove invasive or noxious weeds/plant materials or seeds.	POD Appendix C2: Weed Management Plan, contains details related to weed management for the life of the Project, including weed washing requirements. POD Appendix B6: Environmental Compliance Inspection Plan, describes the environmental compliance program that will be implemented as part of the Project.
O&M-13	Establish speed limits on utility access roads crossing "designated" sage-grouse habitats.	Posted speed limits will be followed. In greater sage-grouse habitat, where speed limits are not posted, the Company will implement the speed limits established in the POD (generally 15 miles per hour).
O&M-14	Close exposed tower foundation holes at the end of the workday to prevent sage-grouse or other wildlife from falling in and becoming trapped.	The Company does not anticipate leaving foundation holes or other construction areas that may trap wildlife or sage-grouse open and/or uncovered overnight. Within designated sage-grouse habitat, if holes are left open, they will be covered as soon as practicable.
O&M-15	Limit the number of vehicles onsite to those necessary to perform, monitor, and inspect work. Keep maintenance vehicles within the ROW.	POD Appendix B3: Traffic and Transportation Plan, describes traffic and transportation management. Traffic patterns and level of use will be consistent with those described in the plans. All Project activities will occur within the authorized ROW unless otherwise approved by the landowner or land management agency.
O&M-16	Limit motorized travel to designated work areas, roads and trails. Comply with seasonal road/primitive road/trail restrictions.	All construction and O&M activities will be confined to the Project ROW and designated construction areas and access routes unless otherwise approved by the landowner or land management agency.
O&M-17	In areas where corvid nesting and associated predation on sage-grouse nests and broods is a concern, consider methods to discourage nesting.	POD Appendix C1: Biological Resources Conservation Plan, Attachment D: Nest and Perch Management and Monitoring Plan will be implemented for the Project.

APLIC BMP No.	Abbreviated BMP Description	Project Implementation
O&M-18	Remove pinyon pine (*Pinus* spp.) and juniper (*Juniperus* spp.) trees in the ROW to minimize fire risks and hinder conifer encroachment.	POD Appendix C4: Vegetation Management Plan, describes vegetation management for the Project. Pinyon pine and juniper forests will be managed in accordance with the procedures described in POD Appendix C4: Vegetation Management Plan.
Restoration		
R-1	Remove abandoned utility access roads, in accordance with landowner's permission, and reclaim to pre-disturbance or adjacent habitat conditions.	As described in this APP and the POD, roads will be reclaimed to the minimum standard necessary to support O&M. This includes reclamation practices that would return most long-term O&M roads to a two-track to reduce vegetation and habitat impacts. Following decommissioning of the Project, roads and all disturbance would be reclaimed to a condition approximating pre-disturbance or adjacent habitat conditions as described in POD Appendix C9: Reclamation Revegetation and Monitoring Plan.
R-2	Remove abandoned utility infrastructure and reclaim to pre-disturbance or adjacent habitat conditions.	Following decommissioning of the Project, all disturbance would be reclaimed to a condition approximating pre-disturbance or adjacent habitat conditions, as described in POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

Source: APLIC 2015

Attachment 2: Special-Status Avian Species

TABLE 2-1 POTENTIAL SPECIAL-STATUS AVIAN SPECIES IN PROJECT AREA

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Bald eagle	*Haliaeetus leucocephalus*	BLM-S (U,N), FS-HT-S, USC	Typical nesting habitat includes tall trees near large water bodies, forested areas, and with abundant food sources. Bald eagles will use a variety of habitats throughout the year in search of prey, including open waters, wetlands, and pastures (where carrion is present). Sagebrush, agricultural areas, and ranches are also important.	• Open waters and other permanent waters • North American Arid West Emergent Marsh • Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland
Bendire's thrasher	*Toxostoma bendirei*	BLM-S (N)	Typically inhabits desert habitats with open shrub layers, cacti, open ground, or open woodlands at lower elevations and will avoid uninterrupted brushy cover or large contiguous grasslands.	• Great Basin Xeric Mixed Sagebrush Shrubland • Inter-Mountain Basins Mixed Salt Desert Scrub • Inter-Mountain Basins Semi-Desert Shrub-Steppe
Brewer's sparrow	*Spizella breweri*	BLM-S (N)	This species is strongly associated with healthy sagebrush communities and to a lesser extent mountain mahogany, rabbitbrush, and openings in pinyon-juniper habitat.	• Inter-Mountain Basins Big Sagebrush Steppe • Inter-Mountain Basins Big Sagebrush Shrubland • Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland • Colorado Plateau Pinyon-Juniper Woodland • Great Basin Pinyon-Juniper Woodland

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Black rosy-finch	*Leucosticte atrata*	BLM-S (N)	High mountain areas in alpine tundra with exposed or barren rocky and grassy areas. During migration agricultural lands and developed areas may be important.	• Agriculture • Developed, Open Space - Low Intensity • Inter-Mountain Basins Cliff and Canyon • Inter-Mountain Basins Aspen-Mixed Conifer Forest and • Woodland • Southern Rocky Mountain Montane-Subalpine Grassland
Burrowing owl	*Athene cunicularia*	BLM-S (U,N), USC	Prefers short vegetation of open grasslands, sagebrush communities, and steppe habitats and occasionally open, vacant lots in less developed areas.	• Developed, Open Space - Low Intensity • Inter-Mountain Basins Big Sagebrush Steppe • Inter-Mountain Basins Big Sagebrush Shrubland • Inter-Mountain Basins Semi-Desert Grassland
Ferruginous hawk	*Buteo regalis*	BLM-S (U,N), USC	Inhabits open areas in grassland, sagebrush, saltbush-greasewood communities, and near the edges of pinyon-juniper.	• Inter-Mountain Basins Greasewood Flat • Inter-Mountain Basins Big Sagebrush Steppe • Inter-Mountain Basins Big Sagebrush Shrubland • Inter-Mountain Basins Semi-Desert Grassland • Colorado Plateau Pinyon-Juniper Woodland • Great Basin Pinyon-Juniper Woodland
Flammulated Owl	*Psiloscops flammeolus*	BLM-S (N), FS-HT-S	Inhabits montane woodlands and forests, typically dominated by pine; often nesting in snag trees.	• Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland Complex • Colorado Plateau Pinyon-Juniper Woodland • Great Basin Pinyon-Juniper Woodland

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Golden Eagle	*Aquila chrysaetos*	BLM-S (U,N)	Inhabits prairies and other open country areas with supporting prey densities but may use a variety of habitats including arctic tundra, desert, grasslands, coniferous forests, farmland, and areas along rivers and streams. Nesting occurs most often on cliff faces and edges and occasionally in large trees.	• Agriculture • Developed, Open Space - Low Intensity • Inter-Mountain Basins Cliff and Canyon • Inter-Mountain Basins Aspen-Mixed Conifer Forest and • Woodland • Most open areas with mammal prey are suitable foraging habitat.
Gray-crowned Rosy-Finch	*Leucosticte tephrocots*	BLM-S (N)	Inhabits high altitude cliffs, rocky or barren areas, and grasslands but will use fields, agricultural areas, and low-density developed areas in the winter.	• Agriculture • Developed, Open Space - Low Intensity • Inter-Mountain Basins Cliff and Canyon • Southern Rocky Mountain Montane-Subalpine Grassland
Great Basin willow flycatcher	*Empidonax traillii adastus*	BLM-S (N)	Inhabits montane and lowlands riparian habitats and to a lesser degree wet meadows and aspen stands.	• North American Arid West Emergent Marsh • Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland • Rocky Mountain Bigtooth Maple Ravine Woodland
Greater sage-grouse	*Centrocercus urophasianus*[1]	BLM-S (U,N), FS-HT-S, USC	Inhabits sagebrush steppe communities with bunchgrass and abundant forbs. In the breeding season, individuals congregate at historic lek sites. Nesting habitat is typically near lek sites and is characterized by denser brushy canopies. Brood-rearing and summer habitat is generally around sagebrush / meadow interfaces.	• Inter-Mountain Basins Big Sagebrush Steppe • Inter-Mountain Basins Montane Sagebrush Steppe • Inter-Mountain Basins Semi-Desert Shrub Steppe • Great Basin Xeric Mixed Sagebrush Shrubland • Inter-Mountain Basins Semi-Desert Grassland

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Lewis' woodpecker	*Melanerpes lewis*	BLM-S (U,N), USC	Prefers open woodlands and ponderosa pine forests, Douglas-fir, pinyon-juniper, riparian, and oak woodlands.	• Rocky Mountain Gambel Oak-Mixed Montane Shrubland • Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland • Great Basin Pinyon-Juniper Woodland • Colorado Plateau Pinyon-Juniper Woodland
Le Conte's thrasher	*Taxostoma lecontei*	BLM-S (N)	Inhabits desert scrub communities, especially creosote bush dominated areas as well as saltbush flats and dry washes.	• Inter-Mountain Basins Mixed Salt Desert Scrub
Loggerhead shrike	*Lanius ludovicianus*	BLM-S (N)	Inhabits open areas of pasture, prairie, grasslands, desert scrub, savanna, and open woodlands. Often perches on poles and fence posts.	• Agriculture • Invasive Grasslands • Inter-Mountain Basins Semi-Desert Grassland • Southern Rocky Mountain Montane-Subalpine Grassland • Inter-Mountain Basins Mixed Salt Desert Scrub
Long-billed curlew	*Numenius americanus*	BLM-S (U,N), USC	Inhabits grasslands, meadows, and agricultural areas, especially near water sources.	• Inter-Mountain Basins Semi-Desert Grassland • Southern Rocky Mountain Montane-Subalpine Grassland • Agriculture
Northern goshawk	*Accipiter gentilis*	FS-HT-S, NS, USC	Prefers aspens stands and adjacent sagebrush communities and nests in dense large tracts of mature old-growth woodlands in large trees.	• Inter-Mountain West Aspen-Mixed Conifer Forest and Woodland Complex • Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland • Inter-Mountain Basins Montane Sagebrush Steppe

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Peregrine falcon	*Falco peregrinus*	BLM-S (N), FS-HT-S	Inhabits a variety of open county including desert scrub and developed areas (including cities), and water resources like lakes, rivers, and marshes. Nesting habitat includes cliffs or high-rise buildings and other structures.	• Inter-Mountain Basins Mixed Salt Desert Scrub • North American Arid West Emergent Marsh • Open Waters and Rivers • Inter-Mountain Basins Cliff and Canyon • Developed Spaces and a variety of foraging areas
Phainopepla	*Phainopepla nitens*	BLM-S (N), NSP	Inhabits low riparian areas and desert scrubland; often associated with juniper, mesquite, or catclaw acacia. Known to occur in southern portions of Utah and Nevada.	• Inter-Mountain Basins Mixed Salt Desert Scrub • Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland
Pinyon jay	*Gymnorhinus cyanocephalus*	BLM-S (N)	Inhabits pinyon-juniper woodlands and to a lesser degree, pine woodlands, scrub oak, and sagebrush communities.	• Colorado Plateau Pinyon-Juniper Woodland • Great Basin Pinyon-Juniper Woodland • Rocky Mountain Gambel Oak-Mixed Montane Shrubland
Ridgeway's rail (Yuma clapper rail)	*Rallus obsoletus yumanensis*	BLM-S (N)	Inhabits alkali and freshwater marshes with emergent vegetation mixed with open water and upland benches.	• North American Arid West Emergent Marsh
Sage thrasher	*Oreoscoptes montanus*	BLM-S (N), NSP	Highly dependent on quality sagebrush communities but may be found in greasewood or bitterbrush dominated areas.	• Great Basin Xeric Mixed Sagebrush Shrubland • Inter-Mountain Basins Big Sagebrush Shrubland • Inter-Mountain Basins Big Sagebrush Steppe • Inter-Mountain Basins Montane Sagebrush Steppe • Inter-Mountain Basins Greasewood Flat

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Sandhill crane (greater and lesser)	*Antigone canadensis*	BLM-S (N)	Inhabits grasslands, marshes, riverbanks, open waters, and agricultural areas.	• North American Arid West Emergent Marsh • Agriculture • Inter-Mountain Basins Semi-Desert Grassland • Invasive Annual Grassland • Invasive Perennial Grassland • Open waters and Rivers
Short-eared owl	*Asio flammeus*	BLM-S (U,N), USC	Inhabits grasslands and old fields, marshes, and open woodlands. Broad expanses of open land are preferred for nesting.	• Inter-Mountain Basins Semi-Desert Grassland • Southern Rocky Mountain Montane-Subalpine Grassland • North American Arid West Emergent Marsh
Swainson's hawk	*Buteo swainsoni*	BLM-S (N)	Inhabits agricultural areas, grasslands, and shrublands.	• Agriculture • Inter-Mountain Basins Semi-Desert Grassland • Southern Rocky Mountain Montane-Subalpine Grassland • Great Basin Pinyon-Juniper Woodland
California spotted owl	*Strix occidentalis occidentalis*	FS-HT-S	Inhabits dense conifer forests with large trees and open areas with canopy cover; most often on low north-facing slopes in canyons near water.	• Rocky Mountain Bigtooth Maple Ravine Woodland • Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland • Inter-Mountain West Aspen-Mixed Conifer Forest and Woodland Complex
Great gray owl	*Strix nebulosa*	FS-HT-S	Inhabits coniferous and hardwood forest with pine, spruce, paper birch, and poplar. May also occur in wet meadows.	• Inter-Mountain West Aspen-Mixed Conifer Forest and Woodland Complex • Southern Rocky Mountain Montane-Subalpine Grassland

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Mountain quail	*Oreortyx pictus*	FS-HT-S	Inhabits brushy mountainsides and coniferous forests. Occasionally in meadows and chaparral.	• Inter-Mountain West Aspen-Mixed Conifer Forest and Woodland Complex • Southern Rocky Mountain Montane-Subalpine Grassland • Rocky Mountain Gambel Oak-Mixed Montane Shrubland
Grasshopper sparrow	*Ammodramus savannarum*	USC	Inhabits open grasslands, old fields, and savanna.	• Inter-Mountain Basins Semi-Desert Grassland • Agriculture
American white pelican	*picoides dorsalis*	USC	Inhabits large waterbodies such as lakes, rivers, and marshes.	• Open Waters and Rivers • North American Arid West Emergent Marsh
Yellow-billed cuckoo	*Coccyzus americanus*	FT, BLM-S (N), FS-HT-T	Considered a riparian obligate species inhabiting low riparian areas with large tracts of dense willow and cottonwood buffers. Occasionally visits agricultural areas.	• Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland • Agriculture
California condor	*Gymnogypus californicus*	FE	Inhabits mountainous country at low and moderate elevations where rocky and brushy areas near cliffs are prevalent.	• Rocky Mountain Gambel Oak-Mixed Montane Shrubland • Inter-Mountain Basins Cliff and Canyon
American three-toed woodpecker	*Picoides tridactylus*	BLM-S (U), FS-HT-S	Inhabits coniferous forests of spruce, sub-alpine fir, Douglas-fir, aspen, and ponderosa and lodgepole pine.	• Inter-Mountain West Aspen-Mixed Conifer Forest and Woodland Complex
Bobolink	*Dolichonyx oryzivorus*	BLM-S (U)	Inhabits grasslands, wet meadows, and agricultural areas such as hayfields.	• Agriculture • North American Arid West Emergent Marsh • Inter-Mountain Basins Semi-Desert Grassland • Invasive Annual Grassland • Invasive Perennial Grassland

Common Name	Scientific Name	Status[1]	Preferred Habitat and Conditions	Suitable SWReGAP Habitat Categories
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE, FS-HT-E, NE, BLM-S (N)	Considered a riparian habitat obligate in Mojave river systems and tributaries and other locales in southern Nevada and Utah.	• Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland • Rivers and streams
Western snowy plover	*Charadrius alexandrinus nivosus*	BLM-S (U,N)	Inhabits alkali playas near or with standing pools of water and with wells and springs during drought.	• North American Arid West Emergent Marsh • Open Waters and Playa Lakes

Notes: F = Federal, E = Endangered, T = Threatened, BLM-S = BLM Sensitive (State), FS-HT = Forest Service Humboldt-Toiyabe, USC = Utah Species of Concern, NE = Nevada Endangered, NS = Nevada Sensitive, NSP = Nevada State Protected

Attachment 3: Design Standards and Structure Design Drawings

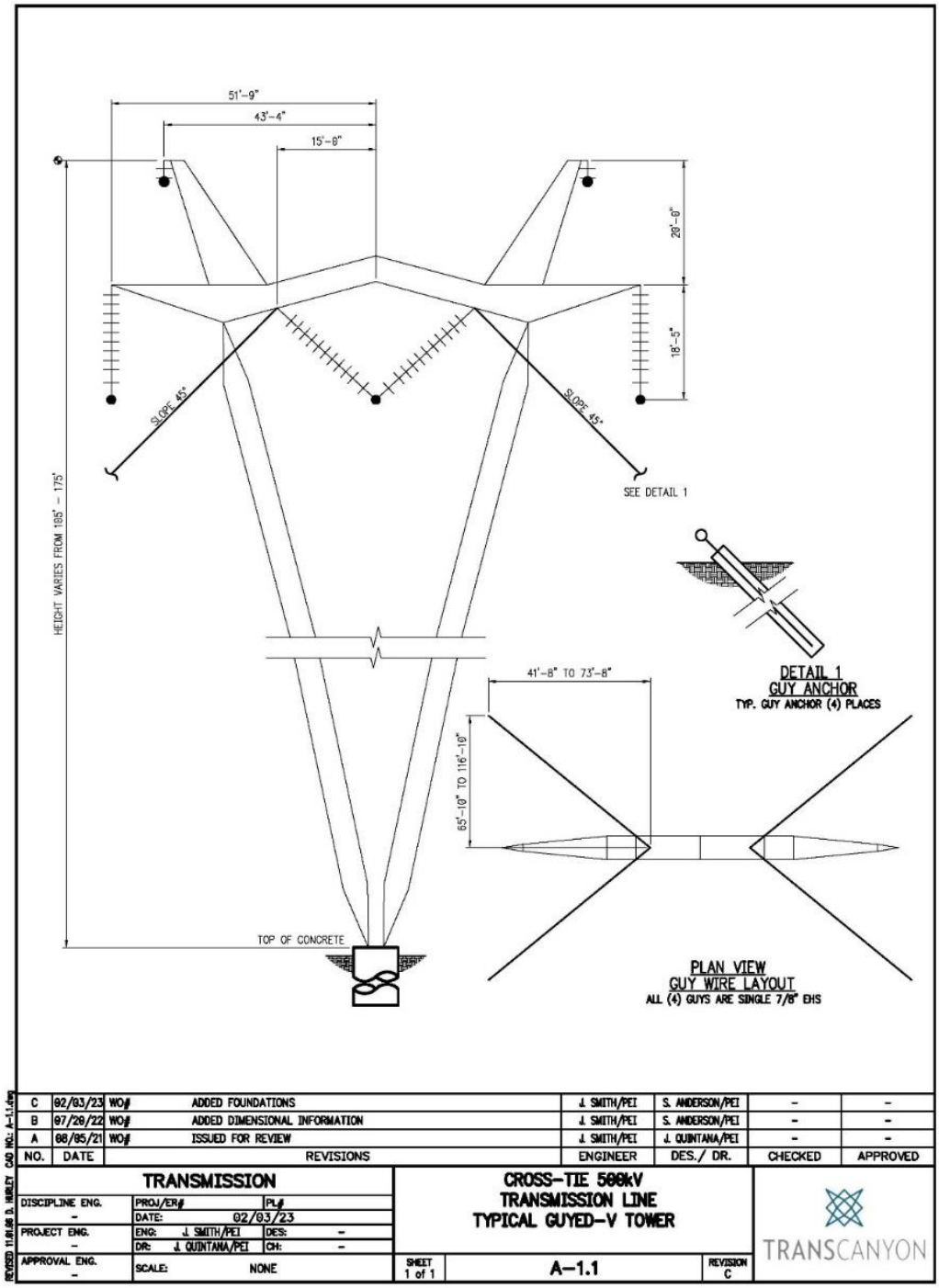

Figure 2-3-1 Typical Guyed-V Tower

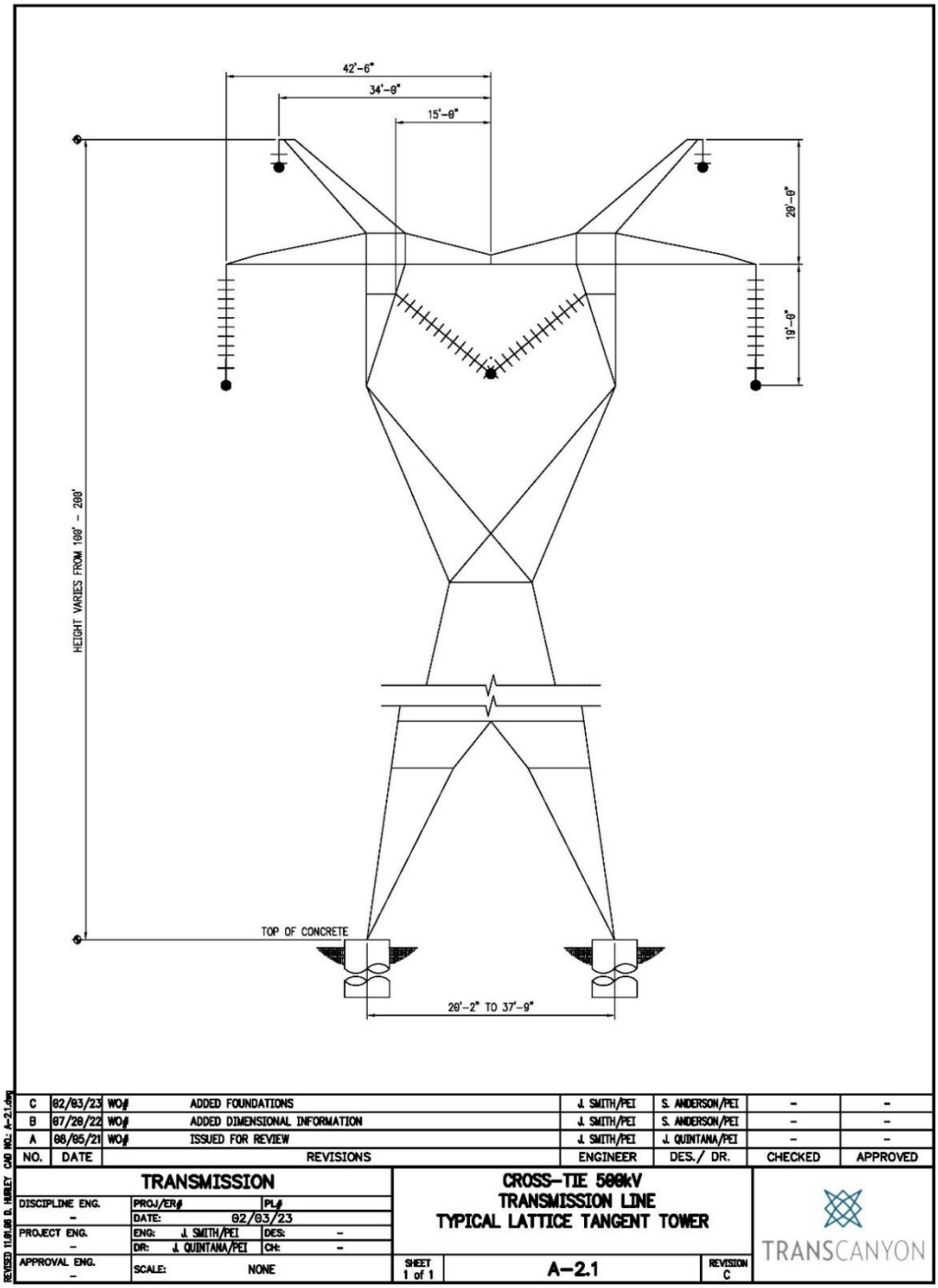

Figure 2-3-2 Typical Lattice Tangent Tower

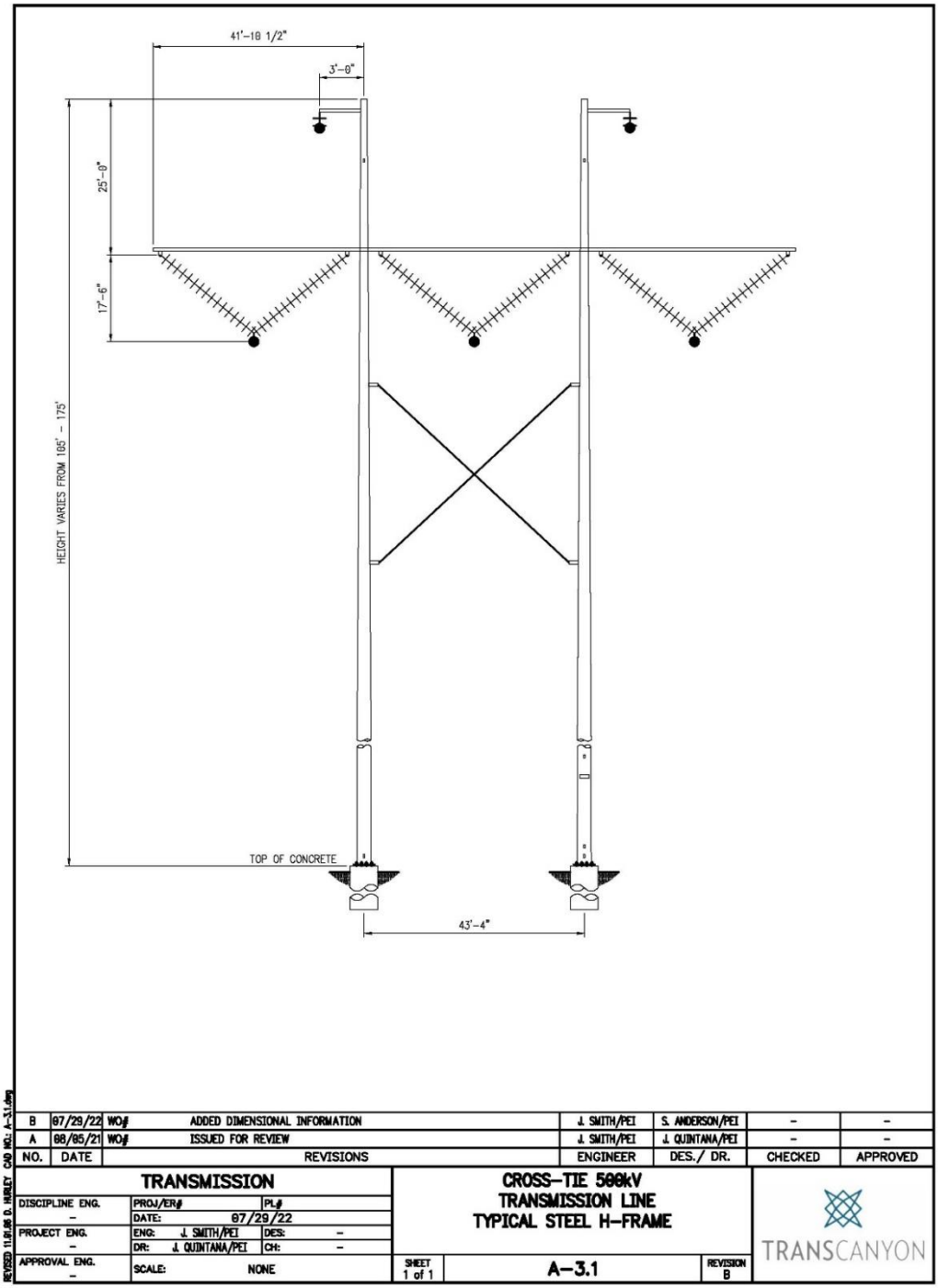

Figure 2-3-3 Typical Steel H-Frame

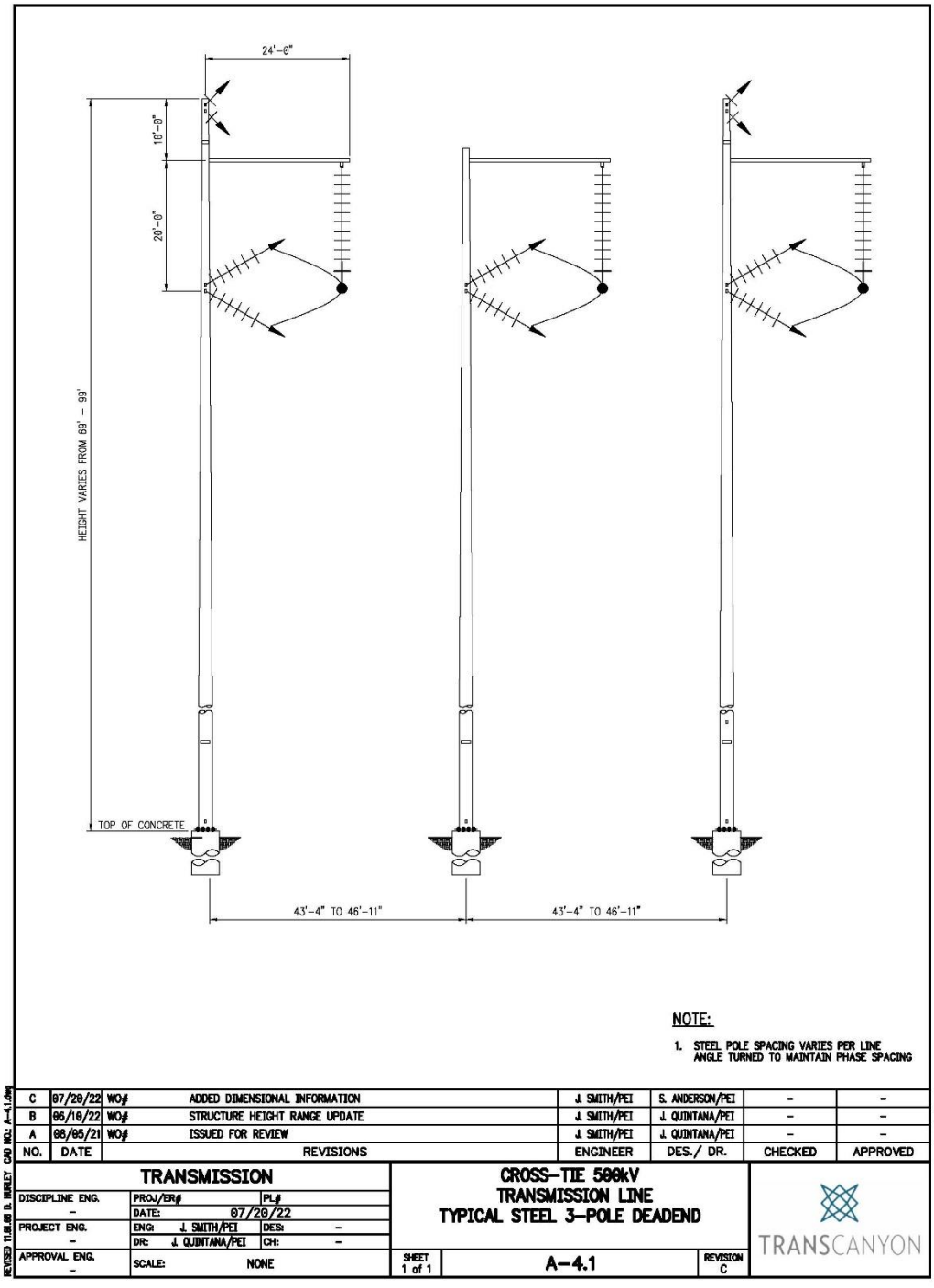

Figure 2-3-4 Typical Steel 3-Pole Deadend

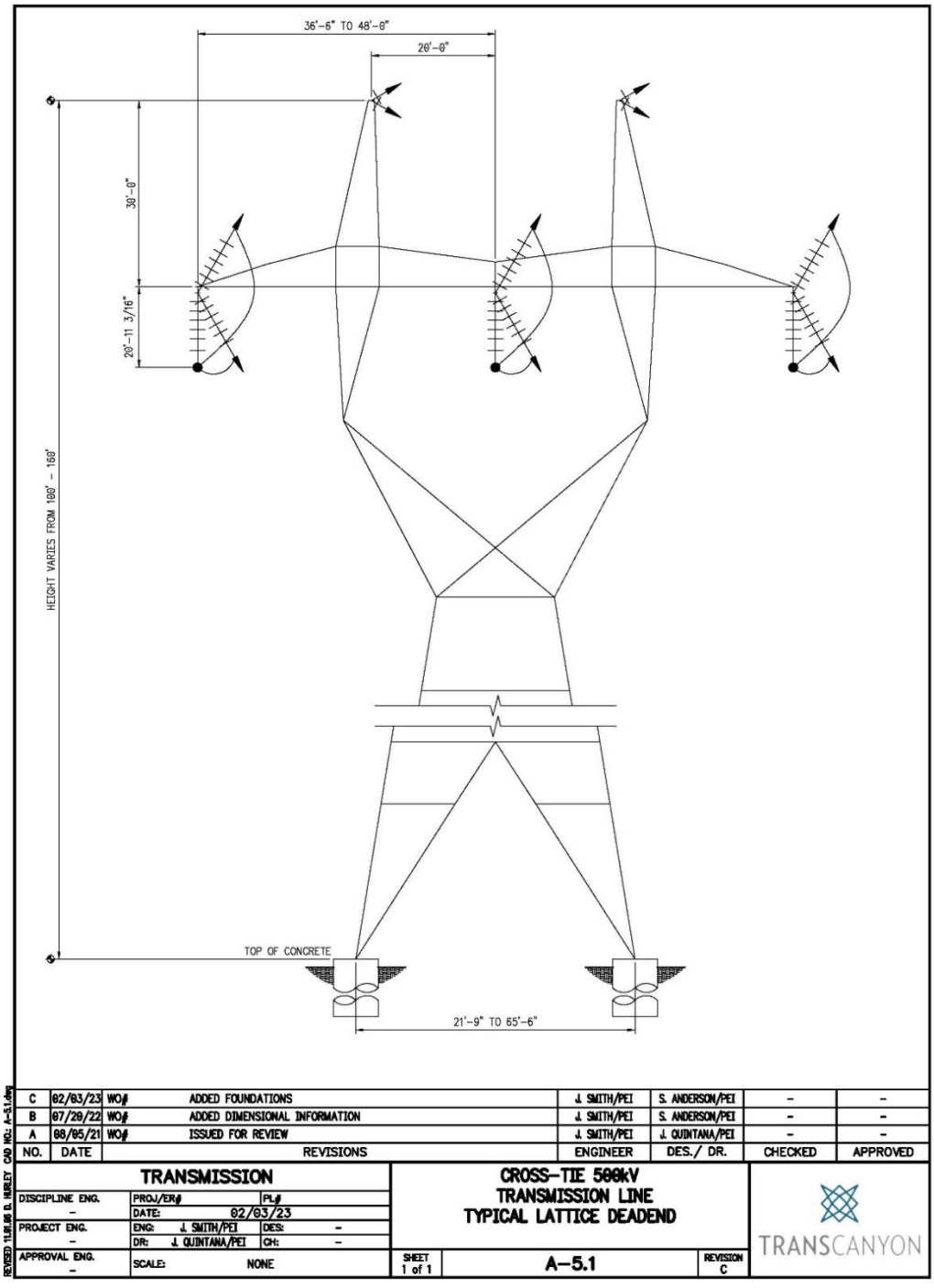

Figure 2-3-5 Typical Lattice Deadend

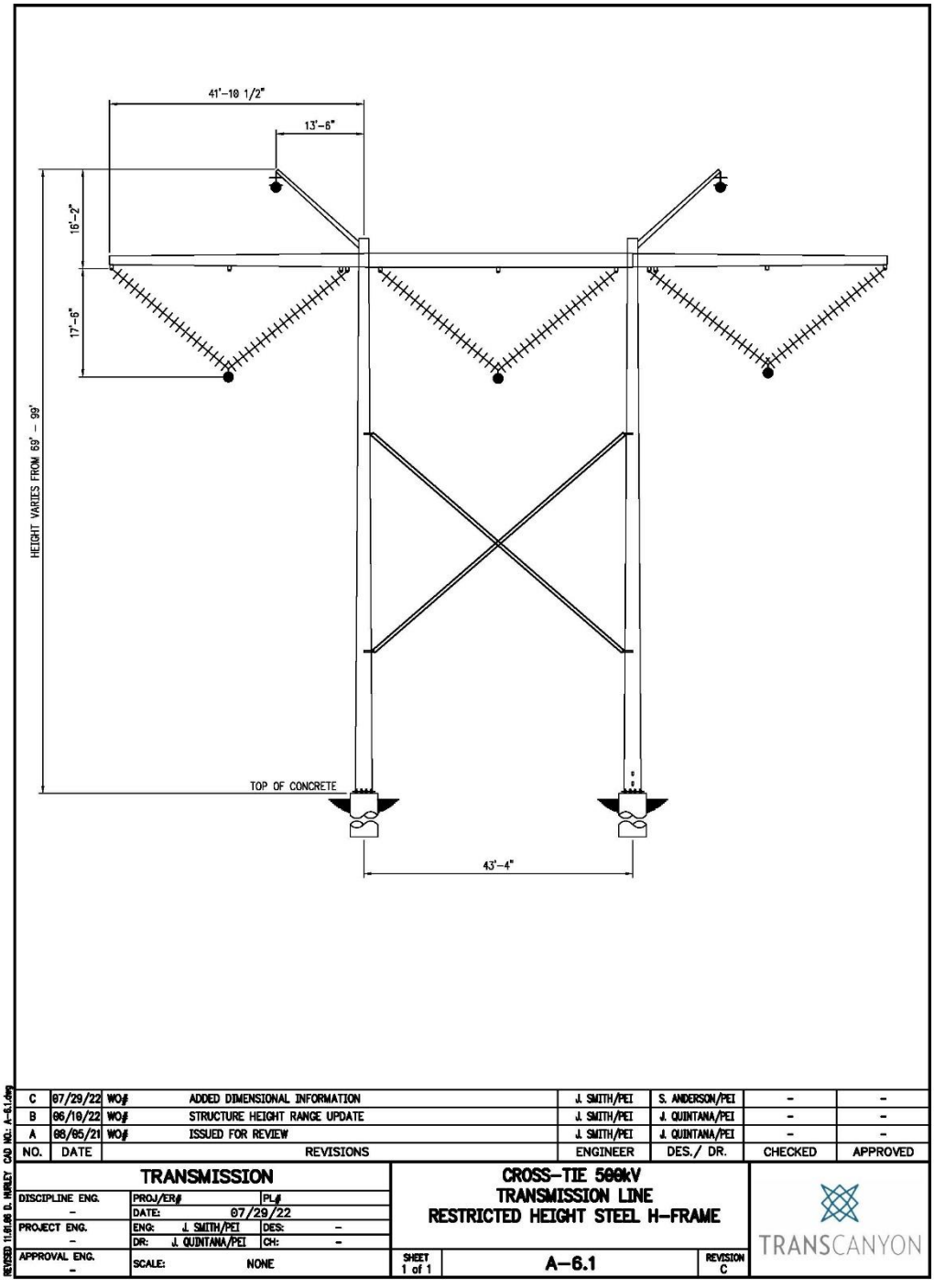

Figure 2-3-6 Restricted Height Steel H-Frame

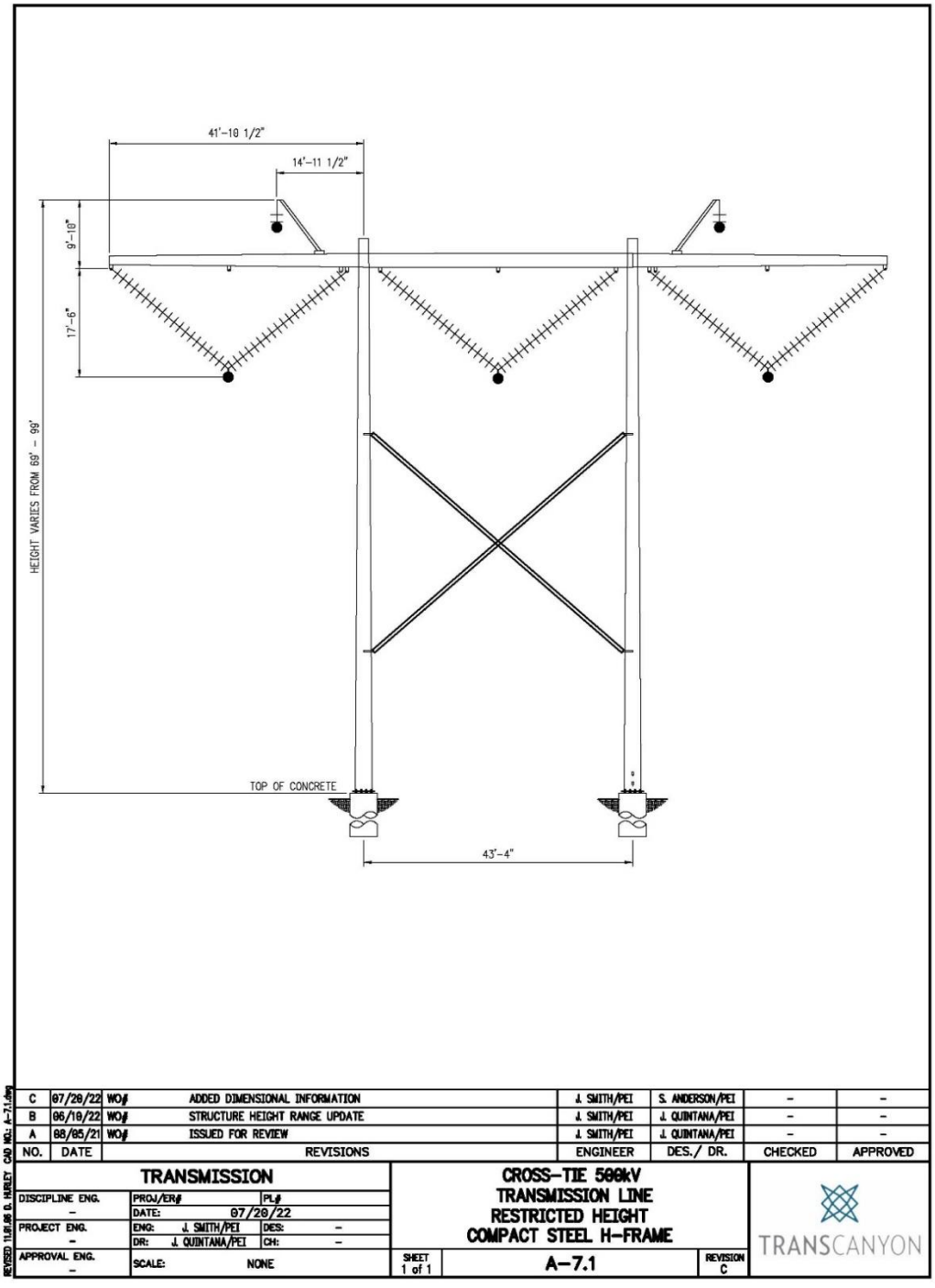

Figure 2-3-7 Restricted Height Compact Steel H-Frame

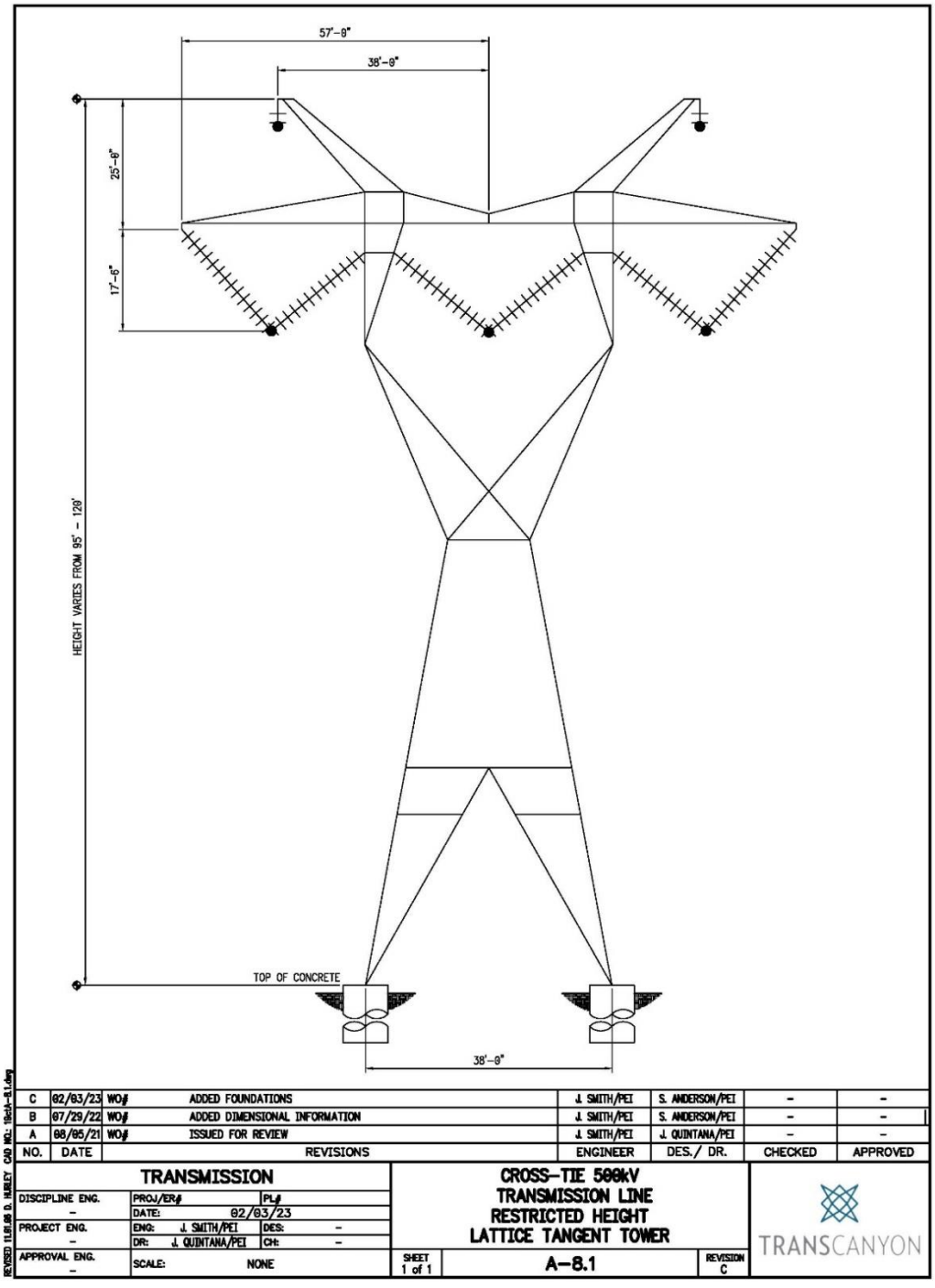

Figure 2-3-8 Restricted Height Lattice Tangent Tower

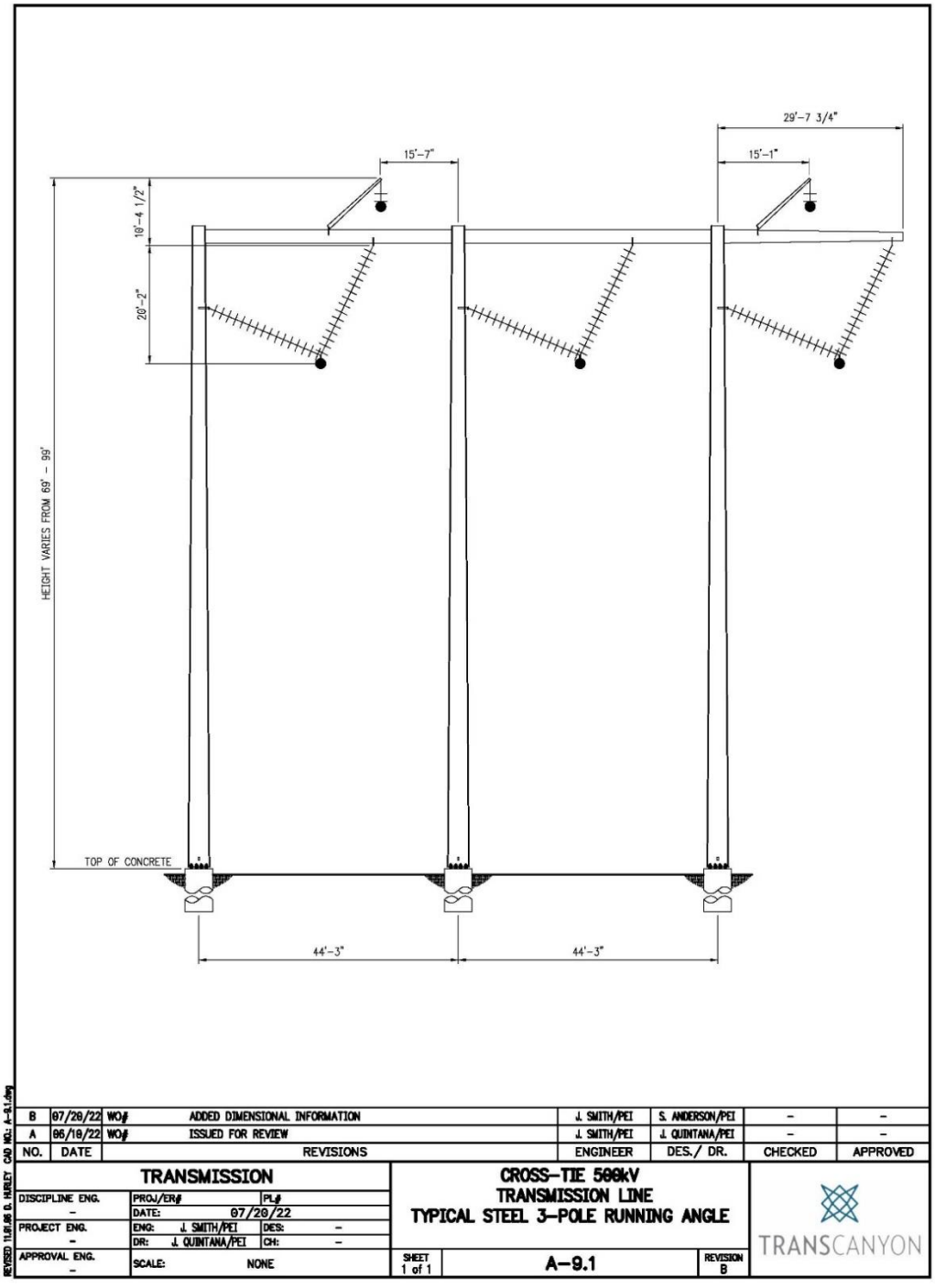

Figure 2-3-9 Typical Steel 3-Pole Running Angle

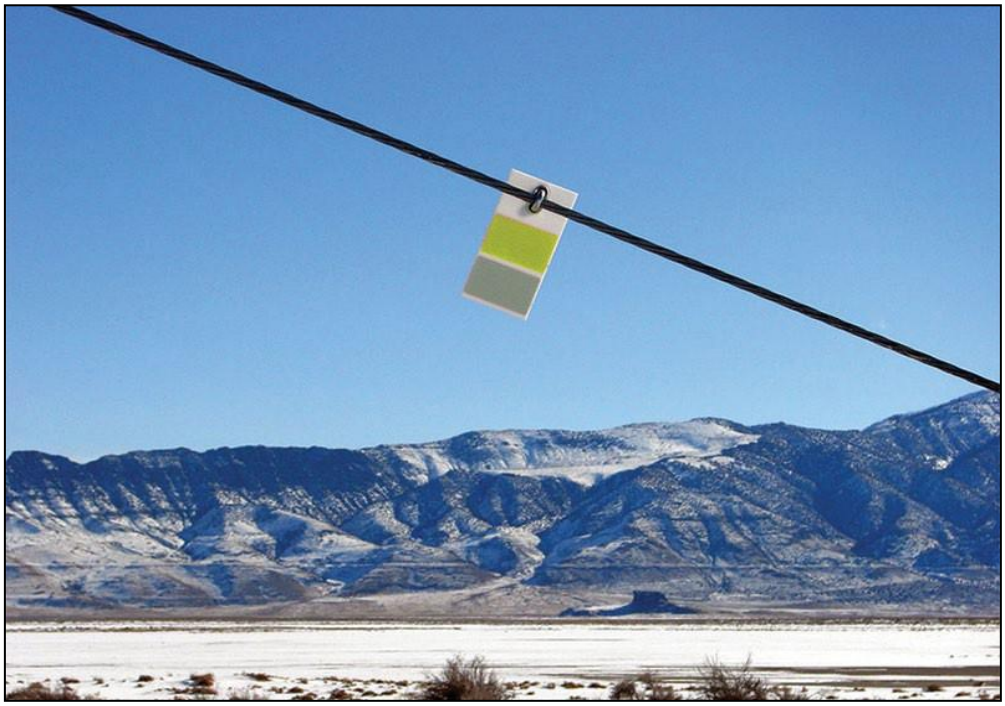

Figure 2-3-10 BIRD_FLIGHT™ spiral type marker

Figure 2-3-11 PR Tech FireFly® FF flapper/flag type marker

Figure 2-3-12 V-shaped type marker

Attachment 4: Avian Nest Reporting Form

Avian Nest Reporting Form

Discoverer's Name:						
Discoverer's Phone Number:						
Date of Nest Discovery:						
Nest Location (circle one):	Tower/Pole	Tree	Shrub	Ground		
Line Name, Voltage, & Closest Tower/Pole ID:						
Other Specific Location Information:						
Surrounding Habitat (circle all that apply):	Agricultural	Chaparral / Shrubs	Desert Scrub			
	Disturbed / Developed	Grassland	Riparian			
Nest Condition:	Active	Inactive, Intact	Inactive, Partial Disturbance	Inactive, Heavy Deterioration		
Describe any Bird Signs Around the Nest (feathers, scat, prey remains):						
Are Birds Present? (circle one)	Yes	No				
Number of Birds Visible:						
Age of Bird(s) (circle all that apply):	Adult	Juvenile	Nestling	Eggs	Unknown	
Bird Species (if known):						
Type of Bird (circle one):	Raptor (hawk, falcon) Eagle	Owl	Crow / Raven	Passerine (small bird)	Waterfowl/ Aquatic/ Wading Bird	Unknown
Risk to Birds/Construction (circle one):	No Risk	Potential Risk—Imminent	Potential Risk—Not Imminent			
Additional Comments:						

Attachment 5: Avian Incident Reporting Form

Avian Incident Reporting Form

Discoverer's Name:							
Discoverer's Phone Number:							
Date of Nest Discovery:							
Date of Incident Discovery:							
Time of Incident Discovery:							
Line Name, Voltage, & Closest Tower/Pole ID:							
GPS Coordinates of Incident (if available):							
Species (if known):							
Type of Bird (circle one if species is unknown):	Raptor (hawk, falcon)	Eagle	Owl	Crow / Raven	Passerine (small bird)	Waterfowl/ Aquatic/ Wading Bird	Unknown
Number of Birds:							
Age of Bird(s) (circle all that apply):	Adult		Juvenile	Nestling	Eggs	Unknown	
Surrounding Habitat (circle all that apply):	Agricultural		Chaparral / Shrubs	Desert Scrub			
	Disturbed / Developed		Grassland	Riparian			
Type of Incident (circle one):	Injury		Mortality				
Description of Incident. *Describe condition of bird, circumstances and cause of injury or mortality, and any damage or impacts to construction.*							

Attachment E: Seasonal and Spatial Restrictions for Biological Resources

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C1: Biological Resources Conservation Plan

Attachment E: Seasonal and Spatial Restrictions for Biological Resources

Prepared by:

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Phoenix, Arizona 85004

July 2023

CONTENTS

Tables

Abbreviations

BLM	Bureau of Land Management
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
RMP	Resource Management Plan
UDWR	Utah Division of Wildlife Resources
USDA	U.S. Department of Agriculture

1 SEASONAL AND SPATIAL RESTRICTIONS FOR BIOLOGICAL RESOURCES

The purpose of this document is to summarize the seasonal and spatial restrictions required during construction of the Cross-Tie 500-kV Transmission Project (Project). This document will be implemented by the Construction Contractor(s) during construction and, as applicable, by TransCanyon, LLC, (the Company) during operation and maintenance of the Project to avoid, minimize, and mitigate impacts to sensitive biological resources presented in the Plan of Development (POD) Appendix C1: Biological Resources Conservation Plan. These seasonal and spatial restrictions were derived from Bureau of Land Management (BLM) resource management plans (RMPs), the *Approved Utah Greater Sage-Grouse Resource Management Plan Amendment* (BLM 2015), the *Greater Sage-grouse Record of Decision for Idaho and Southwest Montana, Nevada, and Utah* (U.S. Department of Agriculture [USDA] Forest Service 2015), the *Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan* (BLM 2018), the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Romin and Muck 2002), and through the Project's National Environmental Policy Act (NEPA) process.

Seasonal and spatial restrictions relevant to biological resources present in the Project area are summarized in Table 1. Seasonal and spatial restrictions specific to non-raptorial migratory birds are summarized in Table 2. Raptor (including eagles) specific seasonal and spatial restrictions are in Table 3.

POD Appendix C1: Biological Resources Conservation Plan, Attachment C: Wildlife Variance Management Plan describes processes for requesting modifications, waivers, or exceptions to the seasonal restrictions presented in this attachment, where applicable.

Table 1. Seasonal and Spatial Restrictions for Biological Resources (*to be updated as applicable*)

Resource [1]	Species [2]	Restriction Language [3]	Temporal Restriction [4]	Spatial Restriction [5]	Geographic Applicability [6]	Reference [7]	Data Source [8]
Federally listed species	Multiple	Measures that may be developed during the consultation period with U.S. Fish and Wildlife Service and/or BLM/Forest Service under Section 7 of the Endangered Species Act would be adhered to. Also, mitigation developed in conjunction with state authorities would be adhered to.	To Be Determined	To Be Determined	Project-wide	To Be Determined	Not Available
Sensitive species	Multiple	Special status species or other species of particular concern would be considered during Project implementation in accordance with management policies set forth by the BLM/Forest Service and other appropriate land-management agencies. This may entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities, and the monitoring for these species as agreed upon by the land-management agencies during construction. In cases where such species are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat to the degree possible.	To Be Determined	To Be Determined	Project-wide	To Be Determined	Not Available
Sensitive species	Multiple	With the exception of emergency repair situations, ROW construction, reclamation, maintenance, and termination activities in designated areas would be modified or discontinued during sensitive periods (e.g., nesting and breeding periods) for candidate, proposed threatened and endangered, or other sensitive animal species. Sensitive periods, species affected, and areas of concern would be approved in advance of construction or maintenance by the Authorized Officer(s).	To Be Determined	To Be Determined	Project-wide	To Be Determined	Not Available
Sensitive species	Multiple	Prior to activities occurring in suitable habitat, an experienced biologist would conduct a special status wildlife species survey, searching for signs of special status species such as pygmy rabbit and kit fox to determine if activities are likely to impact those species. During those surveys, the biologist(s) would document sign or occurrence of special status species within or immediately adjacent to the Project area and expand their search as they deem necessary to locate burrows within 0.25 mile. Should burrows of pygmy rabbit and/or kit fox be confirmed during surveys, a biological monitor familiar with the species would be assigned to conduct more thorough monitoring effort per the appropriate species and geographical survey methodology (i.e., BLM Fillmore Field Office Kit Fox Occupancy and Habitat Survey Protocol, Surveying for Pygmy Rabbits [Ulmschneider 2008]) to ensure active burrows within up to 0.25 mile of Project activities are monitored and that work does not result in a discernible negative impact to occupants.	Year-round	Suitable habitat	Project-wide	To Be Determined	Year-of-construction survey data
Sensitive species	Multiple	When managing the spread of noxious or invasive species in areas of special status species, the impacts of the treatment on such species would be considered. Wherever possible, hand spraying of herbicides is preferred over other methods.	Not Available	Not Available	Project-wide	To Be Determined	Not Available
Sensitive species	Multiple	Noxious and invasive weed control would not occur within 0.5 mile of nesting and brood rearing areas for special status species during the nesting and brood rearing season.	During listed nesting and brooding seasons for special status species.	0.5-mile buffer surrounding sensitive area.	Project-wide	To Be Determined	Not Available

Resource [1]	Species [2]	Restriction Language [3]	Temporal Restriction [4]	Spatial Restriction [5]	Geographic Applicability [6]	Reference [7]	Data Source [8]
Special Status Wildlife	Greater sage-grouse	All activities would be consistent with the currently implemented Approved Resource Management Plan Amendment for greater sage-grouse (ARMPA; BLM 2015). To avoid potential impacts on the greater sage-grouse, disturbance would be avoided during the sensitive seasons as defined in the ARMPA.	Multiple: See below	Multiple: See below	Project-wide	To Be Determined	UDWR and NDOW data
Special Status Wildlife	Greater sage-grouse	All activities would be consistent with the currently implemented ARMPA (BLM 2015). To avoid potential impacts on the greater sage-grouse, disturbance would be avoided during the sensitive seasons as defined in the ARMPA.	In breeding habitat within 4 miles of active and pending greater sage-grouse leks	March 1 through June 30			
Special Status Wildlife	Greater sage-grouse	All activities would be consistent with the currently implemented ARMPA (BLM 2015). To avoid potential impacts on the greater sage-grouse, disturbance would be avoided during the sensitive seasons as defined in the ARMPA.	• Lek (active / pending) • Lek hourly restrictions: 6 p.m. to 9 a.m.	March 1 to May 15			
Special Status Wildlife	Greater sage-grouse	All activities would be consistent with the currently implemented ARMPA (BLM 2015). To avoid potential impacts on the greater sage-grouse, disturbance would be avoided during the sensitive seasons as defined in the ARMPA.	Nesting	April 1 to June 30			
Special Status Wildlife	Greater sage-grouse	All activities would be consistent with the currently implemented ARMPA (BLM 2015). To avoid potential impacts on the greater sage-grouse, disturbance would be avoided during the sensitive seasons as defined in the ARMPA.	• Brood-rearing habitat • Early • Late	See below: • May 15 to June 15 • June 15 to September 15			
Special Status Wildlife	Greater sage-grouse	All activities would be consistent with the currently implemented ARMPA (BLM 2015). To avoid potential impacts on the greater sage-grouse, disturbance would be avoided during the sensitive seasons as defined in the ARMPA.	Winter habitat	November 1 to February 28			
Special Status Wildlife	Greater sage-grouse	Noise will be limited to not exceed 10 decibels above ambient sound levels at least 0.25 mile from active and pending leks, from 2 hours before to 2 hours after sunrise and sunset during the breeding season.	Breeding season	0.25 mile of leks	Project-wide	To Be Determined	UDWR and NDOW data
Aquatic species	Multiple	Access Roads would not be constructed through perennial streams	Not Available	Not Available	Project-wide	To Be Determined	Not Available
Aquatic species	Multiple	For streams currently occupied by any special status species, extraction of water from ponds or pools would not occur.	Not Available	Not Available	Project-wide	To Be Determined	Not Available
Big game [9], [10]	Elk/Mule Deer	Avoid construction in crucial summer habitat to avoid impacts to critical life cycles such as calving.	May 15 to July 15	Within crucial summer habitat	Utah	To Be Determined	UDWR Data
Big game [9], [10]	Elk/Mule Deer/Pronghorn	Where appropriate, restrict permitted activities in big game calving/fawning/kidding/lambing grounds and crucial summer range	April 15 to June 30	Within crucial summer habitat	Nevada	To Be Determined	NDOW data
Big game [9], [10]	Elk/Mule Deer	Avoid construction activities when in crucial winter habitat December 1 – April 15.	December 1 to April 15	Within crucial winter habitat	Utah	To Be Determined	UDWR Data

Resource [1]	Species [2]	Restriction Language [3]	Temporal Restriction [4]	Spatial Restriction [5]	Geographic Applicability [6]	Reference [7]	Data Source [8]
Big game [9], [10]	Elk/Mule Deer/Pronghorn	Restrict permitted activities in crucial winter range.	November 1 to March 31	Within crucial winter habitat	Nevada	To Be Determined	NDOW data
Big game [9], [10]	Pronghorn	Avoid construction activities when in crucial year-long habitat to avoid critical life cycles such as fawning from April 15 to June 15; when severe snow conditions occur, avoid construction activities from December 1 to April 15	April 15 to June 15 December 1 to April 15	• Within crucial year-long • Within crucial winter	Utah	To Be Determined	UDWR Data

1. Resource = Biological resource species group, typically separated taxonomically
2. Species = Common name (and scientific name if relevant) with a specific restriction
3. Refer to Appendix C1 Attachment C: Wildlife Variance Management Plan for the variance request process.
4. Temporal Restriction = Date range in which the restriction applies
5. Spatial Restriction = Geographical range or distance in which the restriction applies, typically listed as a mapped range or distance buffer.
6. Geographic Applicability = Geographical extent in which the restriction applies, typically listed as a state, National Forest, or other land-management agency lands.
7. Reference = Root source of the restriction, typically listed as the Plan of Development, Record of Decision document,
8. Data Source = Source of data that informs where and when specific restrictions would apply.
9. Although the BLM does not have authority over state or private land, the Company has agreed that provisions of the POD will be applied consistently to state and private lands as well as federal land, unless otherwise indicated by state and/or private landowners.
10. UDWR and NDOW updates big game spatial data annually. Big game seasonal and spatial restrictions that apply to the Project may vary annually based on current data available at the time of construction.

Table 2. Seasonal and Spatial Restrictions for Migratory Birds

Taxonomic Group	Restriction Language [1]	Temporal Restriction	Spatial Restriction
Waterfowl (geese ducks, mergansers)	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active waterfowl nests
Upland game birds [2]	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active upland game bird nests
Wading birds	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active wading bird nests
Rails and coots	No surface disturbance will be allowed within a 100-foot radius of active nest sites.	March 15 to August 31	Within 100 feet of active rail and coot nests
Cranes	No surface disturbance will be allowed within a 600-foot radius of active nest sites.	March 15 to August 31	Within 600 feet of active crane nests
Shorebirds (Exception long-billed curlew)	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active shorebird nests
Long-billed curlew	No surface disturbance will be allowed within a 600-foot radius of active nest sites.	March 15 to August 31	Within 600 feet of active long-billed curlew nests
Pigeons and doves	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active pigeon and dove nests
Goatsuckers	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active goatsucker nests
Swifts	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active swift nests
Hummingbirds	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 100 feet of active hummingbird nests
Kingfishers	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active kingfisher nests
Woodpeckers	No surface disturbance will be allowed within a 100-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active woodpecker nests
Flycatchers, kingbirds, and phoebes	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active flycatcher, kingbird, and phoebe nests
Shrikes	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active shrike nests
Vireos	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active vireo nests
Jays and corvids (Exception pinyon jay)	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active jay and corvid nests
Pinyon Jay	No surface disturbance will be allowed within a 1,640 to 3,280-foot radius of active nest sites	March 15 to August 31	Within 1,640 to 3,280 feet of active pinyon jay nests
Larks	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active lark nests
Martin and swallows [3]	No surface disturbance will be allowed within a 100-foot radius of active nest sites.	March 15 to August 31	Within 100 feet of active martin and swallow nests
Chickadees, titmice, bushtits, and nuthatches (Exception verdin)	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active chickadees, titmice, bushtit, and nuthatch nests
Verdin	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active verdin nests
Wrens (Exception canyon wren, cactus wren, and rock wren)	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active wren nests
Canyon wren, cactus wren, and rock wren	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active canyon wren, cactus wren, and rock wren nests
Gnatcatchers	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active gnatcatcher nests
Bluebirds, solitaires, robins, and thrushes	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active bluebird, solitaire, robin, and thrush nests
Catbirds, thrashers, and mockingbirds	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active catbird, thrasher, and mockingbird nests
Warblers (Exception Lucy's warbler, MacGillivary's warbler, Virginia's warbler, Wilson's warbler, and yellow-breasted chat)	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active warbler nests

Taxonomic Group	Restriction Language [1]	Temporal Restriction	Spatial Restriction
Lucy's warbler, MacGillivary's warbler, Virginia's warbler, Wilson's warbler, and yellow-breasted chat	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active Lucy's warbler, MacGillivary's warbler, Virginia's warbler, Wilson's warbler, and yellow-breasted chat nests
Towhees, sparrows, and juncos	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active towhee, sparrow, and junco nests
Tanagers, grosbeaks, and Buntings (Exception Lazuli bunting)	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active tanager, grosbeak, and bunting nests
Lazuli bunting	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active Lazuli bunting nests
Blackbirds, meadowlarks, grackles, cowbirds, and orioles (Exception Western meadowlark)	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of active blackbird, meadowlark, grackle, cowbird, and oriole nests
Western meadowlark	No surface disturbance will be allowed within a 300-foot radius of active nest sites.	March 15 to August 31	Within 300 feet of active western meadowlark nests
Finches, crossbills, siskins, and goldfinches	No surface disturbance will be allowed within a 200-foot radius of active nest sites.	March 15 to August 31	Within 200 feet of finches, crossbills, siskins, and goldfinches

Source: BLM 2022

1. Active nests are defined as a nest containing eggs or chicks. Migratory bird nest surveys will be conducted by the Construction Contractor(s) in accordance with the survey methodology provided in Appendix C1 Attachment A: Biological Resources Survey Requirements. Spatial buffers may be altered depending upon the active status of the nest site or upon the geographic relationship of topographical barriers and vegetation screening to the nest site. Refer to Appendix C1 Attachment C: Wildlife Variance Management Plan for the variance request process. A nest of any species not listed in a taxonomic group in this table will automatically receive a buffer zone of 300 feet. An avian biologist will determine if it should be otherwise, with the concurrence of the BLM Authorized Officer or their designated representatives and the supervisory avian biologist.
2. Seasonal and spatial restrictions for greater sage-grouse are provided above in Table 1.
3. Swallows nesting under preexisting bridges or other structures may not require a buffer zone.

Table 3. Seasonal and Spatial Restrictions for Raptors, Including Eagles

Species	Restriction Language [1]	Temporal Restriction [2]	Spatial Restriction [1]
Bald eagle (including known winter roosts	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• January 1 to August 31 (Project-wide)	• 1.0 mile (Project-wide)
Golden eagle	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• January 1 to August 31 (Project-wide)	• 1.0 mile (Nevada) • 0.5 mile (Utah
Northern goshawk	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 15 (Utah) • March 15 to August 15 (Nevada)	• 0.5 mile (Project-wide)
Northern harrier	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• April 1 to August 15 (Utah) • March 1 to July 31 (Nevada)	• 0.5 mile (Project-wide)
Cooper's hawk	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 31 (Utah) • April 1 to August 31 (Nevada)	• 0.5 mile (Project-wide)
Ferruginous hawk	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 1 (Utah) March 1 to July 31 (Nevada)	• 0.5 mile (Project-wide)
Red-tailed hawk	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 15 to August 15 (Utah) • April 1 to August 15 (Nevada)	• 0.5 mile (Project-wide)
Sharp-shinned hawk	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 15 to August 31 (Utah) • March 15 to August 15 (Nevada)	• 0.5 mile (Project-wide)
Swainson's hawk	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 31 (Utah) • April 1 to August 15 (Nevada)	• 0.5 mile (Project-wide)
Turkey vulture	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• May 1 to August 15 (Utah) • February 1 to August 15 (Nevada)	• 0.5 mile (Project-wide)
California condor	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• Undefined	• 1.0 mile (Project-wide)
Peregrine falcon	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• February 1 to August 31 (Project-wide)	• 1.0 mile (Utah)
Prairie falcon	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• April 1 to August 31 (Utah) March1 to August 31 (Nevada)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Merlin	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• April 1 to August 31 (Project-wide)	• 0.5 mile (Project-wide)
American kestrel	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• April 1 to August 31 (Project-wide)	• No buffer (*direct take is prohibited*) (Utah) • 0.5 mile (Nevada)
Osprey	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• April 1 to August 31 (Project-wide)	• 0.5 mile (Project-wide)
Boreal owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• February 1 to July 31 (Utah)	• 0.25 mile (Utah)
Burrowing owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 31 (Utah) • April 1 to August 31 (Nevada)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Flammulated owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• April 1 to September 30 (Project-wide)	• 0.25 mile (Utah) • 0.5 mile (Nevada)

Species	Restriction Language [1]	Temporal Restriction [2]	Spatial Restriction [1]
Great horned owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• December 1 to September 31 (Project-wide)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Long-eared owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• February 1 to August 15 (Project-wide)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Northern saw-whet owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 31 (Project-wide)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Short-eared owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 1 (Utah) • February 1 to August 1 (Nevada)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Northern Pygmy owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• April 1 to August 1 (Project-wide)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Western Screech owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• March 1 to August 15 (Project-wide)	• 0.25 mile (Utah) • 0.5 mile (Nevada)
Common Barn-owl	No human activity or surface disturbance will be allowed within spatial and seasonal restriction buffer of occupied nest.	• February 1 to September 15 (Utah) • March 1 to July 31 (Nevada)	• No buffer (*direct take is prohibited*) • 0.5 mile (Nevada)

Sources: Romin and Muck 2002, BLM coordination for the Project

1. The definition of an active raptor nest includes both occupied and unoccupied nests as defined in Romin and Muck (2002):
   Occupied nests are defined as those nests which are repaired or tended in the current year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or nest marking, freshly molted feathers or plucked down, or current year's mute remains (whitewash) suggest site occupancy. Additionally, all nest sites in a nesting territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site remains occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.
   Unoccupied nests are defined as those nests not selected by raptors for use in the current year. Nests would also be considered unoccupied for the non-breeding period of the year. The exact point in time when a nest becomes unoccupied should be determined by a qualified wildlife biologist based upon knowledge that the breeding season has advanced such that nesting is not expected. Inactivity at a nest site or territory does not necessarily indicate permanent abandonment.
2. Temporal and spatial restrictions for Utah are from Romin and Muck 2002 and for Nevada are from Nevada guidance NV-E-06-A-TL

2 LITERATURE CITED

Bureau of Land Management (BLM). 2015. *Record of Decision and Approved Utah Greater Sage-Grouse Resource Management Plan Amendment.* BLM Utah State Office.

Bureau of Land Management (BLM). 2022. *Cross-Tie Transmission Project – Migratory Bird (non-raptor) Buffer Radiuses.* Prepared by the Fillmore and Bristlecone Field Offices. June 21, 2022.

Romin, L.A., and J.A. Muck. 2002. *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances*. U.S. Fish and Wildlife Service, Utah Ecological Services, West Valley City, Utah.

U.S. Department of Agriculture (USDA) Forest Service. 2015. *Greater Sage-grouse Record of Decision for Idaho and Southwest Montana, Nevada, and Utah.* September 2015.

Attachment F. Biological Opinion
(*to be included, if needed and when available*)

Appendix C2. Weed Management Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C2. Weed Management Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Attachments

Tables

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measures
BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
EDRR	Early Detection Rapid Response
EI	Environmental Inspectors
EIS	environmental impact statement
Forest Service	U.S. Department of Agriculture Forest Service
NDA	Nevada Department of Agriculture
Plan	Weed Management Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
PUP	Pesticide Use Proposal
ROW	Right-of-Way
UDAF	Utah Department of Agriculture and Food
USC	U.S. Code
USDA	U.S. Department of Agriculture

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Weed Management Plan (Plan) provides the principles and procedures to be used to prevent the introduction and spread of state-listed noxious weeds and other invasive plant species of concern associated with the construction, operation, and maintenance of the Project. The Company would have the overall responsibility of ensuring that this Plan is satisfactorily implemented and complied with while the Construction Contractor(s) will be responsible for the implementation of this Plan during construction and for five years following the completion of construction. The Company will be responsible for implementing this Plan during the operation and maintenance phase.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

The Company and the Construction Contractor(s) will work in coordination with the Compliance Inspection Contractor (CIC) and the respective federal land management agencies' Authorized Officer(s) to ensure that state-listed noxious weeds and other invasive plant species of concern are identified and controlled and that all federal, State of Utah, State of Nevada, county, and other local requirements are satisfied.

Maintaining ecosystem health is a principal objective of land management planning and the expansion of noxious weeds and invasive plants is a central obstruction to fulfilling this objective. The Plant Protection Act of 2000 (7 United States Code [USC] 7701 et seq.) defines a noxious weed as "any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment." Noxious weed and invasive plant species have the potential to be introduced or spread along the Project ROW as a result of actions associated with the Project.

The format and content of this Plan is based on the principles and procedures outlined in the BLM Integrated Weed Management Manual 9015 (BLM 1992a) and the Forest Service Invasive Species Management Manual 2900 (Forest Service 2011). This Plan includes a discussion on 1) the plan purpose, goals, and objectives; 2) the regulatory framework; 3) the noxious weed and invasive plant inventory; 4) noxious weed and invasive plant management, including prevention and treatment; and 5) monitoring.

2 REGULATORY FRAMEWORK

This Plan incorporates the regulations and stipulations of the following U.S. statutes, state statutes, an executive order, BLM-authored plans, and BLM and Forest Service manuals and resource management plans applicable to state-listed noxious weed species and other invasive plant species of concern, as well as approved noxious weed management techniques as applied to the Project:

- Plant Protection Act of 2000 (7 USC 7701 et seq.)

- Federal Noxious Weed Act (7 USC 2801–2813)
- Noxious Plant Control Act (43 USC 1241-43)
- Federal Environmental Pesticide Control Act (7 USC 136 et seq.)
- Carlson-Foley Act (43 USC 1241)
- Executive Order 13112: Invasive Species
- Executive Order 13751: Safeguarding the Nation from the Impacts of Invasive Species (amends Executive Order 13112) *Fillmore House Range Resource Management Plan and Record of Decision Rangeland Program Summary* (BLM 1987a)
- Warm Springs Resource Area Approved Resource Management Plan (BLM 1987b)
- Ely District Approved Resource Management Plan and Record of Decision (BLM 2008a)
- BLM Integrated Weed Management Manual 9015 (BLM 1992a)
- BLM Manual 1740-1 – Renewable Resource Improvement and Treatment Guidelines and Procedures (BLM 1987c)
- BLM Manual 1740-2 – Integrated Vegetation Management (BLM 2008b)
- Utah Noxious Weed Act (Rule R68-9, Section 4-17-3)
- Utah Pesticide Control Act (Rule R68-7)
- Nevada Control of Insects, Pests, and Noxious Weeds (NRS Chapter 555 and NAC 555)
- Juab County Noxious Weed Policy
- Millard County Noxious Weeds (10-17-40)
- White Pine County Noxious Weeds and Invasive Species (Public Lands Policy Chapter 16)
- Land and Resource Management Plan for Humboldt-Toiyabe National Forest (Forest Service 1986, as amended)
- Forest Service Invasive Species Management Manual 2900 (Forest Service 2011)

3 NOXIOUS WEED AND INVASIVE PLANT INVENTORY

The Utah Department of Agriculture and Food (UDAF) and Nevada Department of Agriculture (NDA) have identified noxious weeds of concern to the State of Utah and State of Nevada, some of which are either known to occur or are likely to occur within the Project area. In addition to state-listed noxious weeds, the Company will coordinate with the BLM, county weed and pest control districts, and the Forest Service to determine if there are other invasive plant species of concern that have the potential to occur along the Project. A compiled list of these species is provided in Table 1.

The Company will conduct preconstruction state-listed noxious weed and other invasive plant species of concern inventories. The preconstruction state-listed noxious weed and other invasive plant species of concern inventories will be completed on all portions of the Project that will be subject to ground

disturbance, including, but not limited to, new access roads, existing access roads that will be improved by the Project, overland access routes, tower sites, substations, pulling and tensioning sites, fly yards, and laydown yards. These inventories will include 1) identification of weed species designated as noxious by the State of Utah (UDAF 2022), State of Nevada (NDA 2010) priority declared county weed species, and other invasive plant species of concern for the BLM and Forest Service; 2) a background review of information regarding known state-listed noxious weed and invasive plant species of concern populations in the Project area; and 3) field surveys to document the extent of state-listed noxious weed species and other invasive plant species of concern in the Project Area. The inventory results will be found in Appendix A: Detailed Route Alignment Figures. Table 1 shows the noxious weeds and other invasive plant species that may occur along the Project.

Table 1. Noxious Weeds and Other Invasive Plant Species of Concern Known to Occur or with Potential to Occur along the Project in Utah and Nevada

Common Name [1]	Scientific Name	UT Designation [2]	NV Designation [3]	Flowering Season [4]
African rue	*Peganum harmala*	1A	A	April to September
Asian mustard (African mustard)	*Brassica tournefortii*	1B	B	January to June
Austrian fieldcress	*Rorippa austriaca*	Not Available	A	June to August
Austrian peaweed	*Sphaerophysa salsula*	Not Available	A	June to August
Barbed goatgrass	*Aegilops triuncialis*	Not Available	A	May to August
Bermudagrass	*Cynodon dactylon*	3	Not Available	April to May
Black henbane	*Hyoscyamus niger*	2	B	June to September
Broadleaved pepperweed (perennial pepperweed)	*Lepidium latifolium*	3	C	May to September
Bufflegrass	*Pennisetum ciliare*	Not Available	A	April to October
Bull thistle	*Cirsium vulgare*	Not Available	Not Available	June-September
Butter and eggs (yellow toadflax)	*Linaria vulgaris*	2	A	May to September
Camelthorn	*Alhagi maurorum*	1B	A	May to July
Canada thistle	*Cirsium arvense*	3	C	June to September
Carolina horse nettle	*Solanum carolinense*	Not Available	B	May to September
Cheatgrass	*Bromus tectorum*	Not Available	Not Available	May-June
Cogongrass (Japanese blood grass)	*Imperata cylindrica*	4	Not Available	March to May
Common crupina	*Crupina vulgaris*	1A	A	May to August

Common Name [1]	Scientific Name	UT Designation [2]	NV Designation [3]	Flowering Season [4]
Common reed	*Phragmites australis ssp.*	3	Not Available	July to October
Common St. Johnswort	*Hypericum perforatum*	1B	A	June to July
Common viper's bugloss	*Echium vulgare*	1B	Not Available	May to September
Curly-leaf pondweed	*Potamogton crispus*	Not Available	A	June to July
Cutleaf vipergrass	*Scorzonera laciniata*	1B	Not Available	June to September
Dalmatian toadflax	*Linaria dalmatica*	2	B	May to September
Dames rocket	*Hesperis matronalis*	4	Not Available	May to July
Desert knapweed	*Volutaria tubuliflora*	Not Available	A	February to April
Diffuse knapweed	*Centaurea diffusa*	2	B	June to September
Dyers woad	*Isatis tinctoria*	2	A	April to June
Elongated mustard	*Brassica elongata*	1B	Not Available	June to July
Eurasian water-milfoil	*Myriophyllum spicatum*	Not Available	A	July to September
Field bindweed	*Convolvulus arvensis*	3	Not Available	April to October
Flowering rush	*Butomus umbellatus*	Not Available	A	July to September
Garlic mustard	*Alliaria petiolata*	1B	Not Available	March to April
Giant reed	*Arundo donax*	1B	B	August to October
Giant salvinia	*Salvinia molesta*	Not Available	A	Does not flower
Green fountain grass	*Pennisetum setaceum*	Not Available	A	July to October
Gypsyflower (Houndstongue)	*Cynoglossum officinale*	3	A	May to July
Halogeton	*Halogeton glomeratus*	Not Available	Not Available	June-September
Hardhead (Russian knapweed)	*Acroptilon repens*	3	C	May to September
Hydrilla	*Hydrilla verticillate*	Not Available	A	May to October
Iberian starthistle	*Centaurea iberica*	Not Available	A	July to August
Japanese knotweed	*Polygonum cuspidatum*	1B	Not Available	August to September
Jointed goatgrass	*Aegilops cylindrica*	3	A	May to July

Common Name [1]	Scientific Name	UT Designation [2]	NV Designation [3]	Flowering Season [4]
Leafy spurge	*Euphorbia esula*	2	B	June to September
Maltese star-thistle (Malta starthistle)	*Centaurea melitensis*	1A	A	April to August
Mayweed chamomile	*Anthemis cotula*	Not Available	B	June to September
Mediterranean sage	*Salvia aethiopis*	1A	A	June to August
Medusahead (medusahead rye)	*Taeniatherum caput-medusae*	2	B	April to July
Myrtle spurge	*Euphorbia myrsinites*	4	Not Available	March to May
Nodding plumeless thistle (musk thistle)	*Carduus nutans*	3	C	June to September
North Africa grass (Ventenata)	*Ventenata dubia*	1A	A	May to June
Oxeye daisy	*Leucanthemum vulgare*	1B	Not Available	June to August
Perennial sorghum spp.	*Sorghum halepense, Sorghum almum*	3	C	May to August
Perennial sowthistle	*Sanchus arvensis*	Not Available	B	June to October
Poison hemlock	*Conium maculatum*	3	C	April to September
Professor-weed (goatsrue)	*Galega officinalis*	1B	A	June to July
Puncturevine (goathead)	*Tribulus terrestris*	3	C	April to October
Purple loosestrife	*Lythrum salicaria*	2	A	June to September
Quackgrass	*Elymus repens*	3	Not Available	June to August
Red star-thistle (purple starthistle)	*Centaurea calcitrapa*	1B	A	July to October
Rush skeletonweed	*Chondrilla juncea*	2	A	July to October
Russian olive	*Elaeagnus angustifolia*	4	Not Available	May to June
Saltcedar (tamarisk)	*Tamarix ramosissima*	3	C	March to September
Scotch broom	*Cytisus scoparius*	4	Not Available	May to June
Scotch thistle	*Onopordum acanthium*	3	C	June to September
Silverleaf nightshade	*Solanum ekaeagnifolium*	Not Available	B	May to October
Small bugloss	*Anchusa arvensis*	1A	Not Available	June to August.

Common Name [1]	Scientific Name	UT Designation [2]	NV Designation [3]	Flowering Season [4]
Spiny plumeless thistle (plumeless thistle)	*Carduus acanthoides*	1A	Not Available	May to August
Spotted knapweed	*Centaurea stoebe*	2	B	June to October
Spring milletgrass (spring millet, milium)	*Milium vernale*	1A	Not Available	March to June
Squarrose knapweed	*Centaurea virgata*	2	A	June to September
Sulfur cinquefoil	*Potentilla recta*	Not Available	A	May to July
Syrian beancaper	*Zygophyllum fabago*	1A	A	July to September
Water hemlock	*Cicuta maculate*	Not Available	C	June to August
Whitetop (hoary cress)	*Cardaria draba*	3	C	March to July
Yellowspine thistle	*Cirsium ochrocentrum*	Not Available	Not Available	—
Yellow starthistle	*Centaurea solstitialis*	2	A	May to October

1. Common names/scientific names are based on the USDA Federal Noxious Weed Species list (USDA 2014).
2. **Class 1A: EDRR Watch List** – Declared noxious and invasive weeds not native to the state of Utah and not known to exist in the state that pose a serious threat to the state and should be considered as a very high priority; **Class 1B: EDRR** – Declared noxious and invasive weeds not native to the state of Utah that are known to exist in the state in very limited populations and pose a serious threat to the state and should be considered as a very high priority; **Class 2: Contro**l – Declared noxious and invasive weeds not native to the state of Utah that pose a threat to the state and should be considered a high priority for control. Weeds listed in the control list are known to exist in varying populations throughout the state. The concentration of these weeds is at a level where control or eradication may be possible. **Class 3: Containment** – Declared noxious and invasive weeds not native to the state of Utah that are widely spread. Weeds listed in the containment noxious weeds list are known to exist in various populations throughout the state. Weed control efforts may be directed at reducing or eliminating new or expanding weed populations. Known and established weed populations, as determined by the weed control authority, may be managed by any approved weed control methodology, as determined by the weed control authority. These weeds pose a threat to the agricultural industry and agricultural products; **Class 4: Prohibited** – Declared noxious and invasive weeds, not native to the state of Utah, that pose a threat to the state through the retail sale or propagation in the nursery and greenhouse industry. Prohibited noxious weeds are annual, biennial, or perennial plants that the commissioner designates as having the potential or are known to be detrimental to human or animal health, the environment, public roads, crops, or other property.
3. **Category A** – Noxious weeds that are generally not found or that are limited in distribution throughout the State; **Category B** – Noxious weeds that are generally established in scattered populations in some counties of the State; **Category C** – Noxious weeds that are generally established and generally widespread in many counties of the State.
4. Flowering seasons are from invasive.org.

4 NOXIOUS WEED AND INVASIVE PLANT MANAGEMENT

Existing populations of state-listed noxious weeds and other invasive plant species of concern identified during the preconstruction inventories and within Project disturbance areas will be treated and monitored by the Construction Contractor(s) during construction and for 5 years following the completion of construction, and by the Company during operation and maintenance. If Project activities cause an existing state-listed noxious weed or invasive plant species of concern's population to exceed the extent identified and delineated during the preconstruction inventories, the Construction Contractor(s) will be required to treat and monitor the population during construction and for 5 years following the completion of construction, and the Company will be responsible for treating and monitoring the population during operation and maintenance.

The Construction Contractor(s) will also be responsible for treating any new population of state-listed noxious weeds and other invasive plant species of concern that are located within a Project disturbance area during construction and for 5 years following the completion of construction and the Company will be responsible for treating and monitoring any new population during operation and maintenance.

However, neither the Company nor the Construction Contractor(s) will be responsible for treating and monitoring state-listed noxious weeds and other invasive plant species that occur outside of Project disturbance areas, unless Project-related activities cause an existing state-listed noxious weed or invasive plant species population to exceed their delineated extent.

This section of the Plan describes the roles and responsibilities of the Company and the Construction Contractor(s) and the steps each will take to prevent and control the establishment and spread of state-listed noxious weeds and other invasive plant species of concern as a result of Project ground disturbance. The management of state-listed noxious weeds and other invasive plant species of concern will be considered throughout all stages of the Project, and will include the following:

- Educating all construction personnel regarding identified problem areas, the importance of preventive measures, and treatment methods.
- Implementing specific preventive measures to counteract the spread of state-listed noxious weeds and other invasive plant species of concern during construction, operation, and maintenance activities.
- Implementing postconstruction treatment methods to be applied to areas where state-listed noxious weeds and other invasive plant species of concern are present.

4.1 Roles and Responsibilities

The Company is responsible to ensure the treatment and monitoring of state-listed noxious weeds and other invasive plant species of concern that occur within Project disturbance areas.

The Company and the Construction Contractor(s) will not be responsible for treating and monitoring state-listed noxious weeds and other invasive plant species introduced into the Project area by activities other than Project construction or operation and maintenance activities, such as recreational use, grazing, other construction projects, or natural occurrences. The determination of whether state-listed noxious weeds and other invasive plant species were introduced into the Project area by activities other than Project construction or operation and maintenance activities will be made by the Company and the Construction Contractor(s), in coordination with the BLM or Forest Service. The Company and the Construction Contractor(s) will also not be responsible for treating and monitoring state-listed noxious weeds and other invasive plant species outside of the Project area or state-listed noxious weeds and other

invasive plant species of concern along existing access roads not improved by the Project. The Construction Contractor(s) will be responsible for obtaining any required permits and approvals for control of state-listed noxious weeds and other invasive plant species of concern during construction. The Company will assume these responsibilities during operation and maintenance. All herbicides proposed for use on the Project will require the Construction Contractor(s) and, as applicable, the Company to obtain an approved Pesticide Use Proposal (PUP) from the BLM and/or Forest Service (as appropriate based on land jurisdiction) prior to herbicide application.

During construction, the Construction Contractor(s) will be responsible to hire or contract with appropriately trained and qualified personnel to perform weed management activities. The Company will assume these responsibilities during operation and maintenance. Once the Construction Contractor(s) have been released from responsibility for the Project, the Company will be responsible for weed control. The control methods shall be in accordance with this Plan and the PUP, as well as guidelines established by the U.S. Environmental Protection Agency, the BLM, and/or Forest Service, and state and local authorities.

4.2 Preconstruction Flagging

Prior to construction, areas of state-listed noxious weed and other invasive plant species of concern populations identified during the inventories will be flagged by the Construction Contractor(s) in accordance with Appendix B2: Flagging, Fencing, and Signage Plan and reviewed by the CIC. The CIC will be responsible for coordinating state-listed noxious weed and other invasive plant species of concern population flagging activities and data with the BLM and/or Forest Service. This flagging will alert construction personnel to the presence of state-listed noxious weeds and other invasive plant species of concern and will prevent access to these areas until noxious weed and invasive plant control measures have been implemented.

During construction, new and existing state-listed noxious weeds and other invasive plant species of concern flagged within the Project area by the Construction Contractor(s) will be recorded and used to update the inventories by the Construction Contractor(s) (Section 5.1). The Construction Contractor(s) will be responsible for providing the updated state-listed noxious weeds and other invasive plant species of concern inventory data to the Company and CIC, who will provide it to the BLM and Forest Service.

4.3 Education and Personnel Requirements

Prior to the initiation of construction activities, the Construction Contractor(s) will provide construction personnel with training and information on the importance of controlling/managing noxious weeds and invasive plants (refer to Appendix B5: Environmental and Safety Training Plan). The importance of preventing the spread of noxious weeds and invasive plants in areas not infested and controlling the proliferation of weeds and invasive plants already present will be emphasized. Project personnel will also be informed of areas that have been flagged for avoidance or treatment, and they will be trained on the locations and correct use and timing of construction equipment wash stations (Section 4.4.1.2; Appendix A: Detailed Route Alignment Figures).

All contractors or personnel conducting weed and invasive plant management actions will have training and experience in weed and invasive plant identification and management prior to beginning work in that role on the Project. Herbicide applicators will either hold a commercial applicator license and be certified in the state of Utah or Nevada or work under the direct supervision of a certified/licensed applicator, as required by the applicable state.

Weed management specialists will also have the following qualifications:

- Training and experience in native plant taxonomy/identification
- Training and experience in field ecology and plant community mapping
- Training in weed management or integrated pest management with an emphasis in weeds

4.4 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

The applicant committed environmental protection measures (ACEPMs) described in this section are applicable to Project construction, operation, and maintenance. This section includes the ACEPMs as well as other specific measures and methods to avoid and minimize impacts and reduce the likelihood of state-listed noxious weed and other invasive plant species of concern establishment and infestation.

Applied Project-wide, Project ACEPMs have been developed in accordance with federal land management agency and/or state standards and will address many of the concerns associated with noxious weed and invasive plant management. The ACEPMs that address construction, operation, and maintenance of Project facilities regarding noxious weed and invasive plant management can be found in Section 9 of the POD.

4.4.1 Other Specific Measures and Methods

4.4.1.1 Noxious Weed and Invasive Plant Preventive Measures

The following noxious weed and invasive plant preventive measures will be implemented by the Construction Contractor(s) and the Company, as applicable, to prevent the spread of state-listed noxious weeds and other invasive plant species of concern during construction and operation and maintenance of the Project. Detailed information regarding reclamation, along with reclamation measures that will further prevent the spread and establishment of state-listed noxious weed species and other invasive plant species of concern, are provided in POD Appendix C9: Reclamation, Revegetation and Monitoring Plan.

POD Appendix A: Detailed Route Alignment Figures will identify areas where populations of state-listed noxious weed and invasive plant species of concern have been recorded. Prior to all ground-disturbing activities, the Construction Contractor(s) as well as any disturbance during operations and maintenance activities will implement the following noxious weed and invasive plant species of concern measures:

4.4.1.2 Wash Stations

Cleaning of equipment, vehicles, and clothing is a significant cultural control for the Project. Mud and dirt on personnel, equipment, and vehicles have the potential to carry weed seeds and reproductive parts to areas that are not infested both on and off the Project. Vehicles, equipment, and clothing will be cleaned at wash stations on the Project. Refer to Attachment A - Weed Washing Unit Specifications.

In addition to training, the following are requirements for ensuring that vehicles, equipment, and personnel are weed free when moving about the Project:

- Vehicles, equipment, and clothing must be cleaned of seed as well as weed free prior to arrival at the Project and upon departure from the Project.
- Wash stations will be strategically placed to prevent weed infestation spread.

- Vehicular access to infested areas that are flagged with yellow flagging is prohibited (see POD Appendix B2: Flagging, Fencing and Signage Plan).
- When working in areas that are bladed and no weeds are present, weed washing prior to leaving the area or when moving through the area is not required.
- When working in infested areas that are not bladed, vehicles and equipment will be washed at approved wash stations prior to leaving the infested area.
- If noxious weed and/or other invasive plant species of concern infestations occur during construction or maintenance activities, vehicles and equipment will be washed at approved wash stations prior to leaving the infested area.

The Construction Contractor(s)' Environmental Inspectors (EIs) will monitor the efficacy of wash station placement by monitoring the use of each station and inspecting vehicles for potentially weed bearing material in areas that require washing. Changes to the number and/or location of mobile wash stations as well as station protocols will be coordinated with the CIC and approved by the applicable federal land management agency.

4.4.1.2.1 Personnel

Construction personnel will inspect, remove, and dispose of weed seeds and plant parts (i.e., reproductive, roots, and rhizomes) found on their clothing, shoes, and inside their vehicles. These activities should take place both prior to arrival at the Project and prior to departure from the Project at Project wash stations. Debris will be bagged by the construction personnel, disposed of in a trash receptacle at the wash station, and removed from the Project by the Construction Contractor(s) to an approved facility.

4.4.1.2.2 Equipment and Vehicles

Upon arrival to the Project, all vehicles and equipment must be inspected by the vehicle operator. The vehicle operator will ensure that all vehicles and equipment are free of soil and debris capable of transporting weed seeds, roots, or rhizomes before the vehicles are allowed to use Project access roads. Vehicle operators will be briefed daily by the Construction Contractor(s) on the location of wash stations and requirements at the stations for cleaning vehicle exteriors and interiors and personnel clothing. The EIs have the authority to refuse entry to Project access roads and/or work areas for those vehicles that are not cleaned.

Operators should plan on washing vehicles for a minimum of 3 to 5 minutes or long enough to adequately clean the vehicles. The vehicle washing will concentrate on tracks, tires, and the undercarriage including axles, frame, cross members, motor mounts, on and underneath steps, running boards, front bumper, and brush guard assemblies. If there is accumulation of sediment from the washing at static wash stations, it will be shoveled out and placed in sealed containers for disposal at an approved facility.

A logbook will be maintained by the Construction Contractor(s) at each wash station. Vehicle operators will fill the logbook out each time a vehicle is inspected. The Construction Contractor(s) and all other authorized entities on the ROW will be required to fill out a form at each cleaning station indicating their compliance with weed-free equipment requirements and the forms will be retained at each cleaning station and checked daily for tracking purposes. The CIC will inspect the wash stations and logbooks for compliance with applicable requirements.

4.4.1.3 Wash Station Location and Design

Due to the nonlinear progression of work for the Project and the number of areas that will be worked at any one time, it is necessary to prioritize mobile wash station placement throughout the Project. The three highest priorities for wash station placement are to protect areas that do not have infestations documented preconstruction, occupied habitat for sensitive plants or sensitive wildlife species habitat, and nearby perennial streams. It is understood that the need to limit wash station placement will be based on an assessment of both logistics and feasibility, and that not all infestations can be contained in areas identified as infested during preconstruction. As such, monitoring for and treatment of newly infested areas will be continuous, particularly in areas where there are gaps in wash station locations.

Wash stations will be placed on either end of contiguous infestations in order to contain those infestations and to protect stretches of the ROW that are either not infested or are relatively less infested. Wash stations will also be placed a minimum of 100 feet away from all natural watercourses. The type and number of wash stations operating will depend on the location of construction activities occurring at any given time.

Wash stations will only be sited within approved locations shown in POD Appendix A: Detailed Route Alignment Figures. If wash stations are placed on National Forest System lands, they will comply with the National Best Management Practices for Water Quality Management on National Forest System Lands (Forest Service 2012).

In areas that may include sensitive species habitat or habitat for threatened and endangered species, the Company and Construction Contractor(s) are required to follow additional conservation measures. Equipment and vehicles planned for use in identified, occupied habitat for sensitive plants or sensitive wildlife species habitat will be cleaned with water before entering the habitat to minimize the spread of noxious weeds and other undesirable vegetation. As part of these measures, mobile wash stations will be located at the ingress and egress of mapped sensitive plant areas and habitat to ensure vehicles entering these habitats are weed free, to the extent practicable.

Static wash stations will generally be located within multipurpose or other approved yards and will operate in those specific locations for the duration of construction. The Construction Contractor(s) will supplement the static wash stations with mobile wash stations that can be moved among the approved locations as necessary to adjust for changing construction conditions and to efficiently conduct construction operations. Mobile wash stations will not be prioritized for placement in the following areas:

- Already infested in a contiguous manner along access routes and work areas
- Entirely bladed after pioneering—both work areas and access roads
- Noxious weed and other invasive plant species of concern infestations with low cover (1%–10%) as documented during inventory and/or preconstruction
- Exposed to relatively less vehicular traffic according to placement along the access roads (e.g., those that do not lie directly on an access road) as well as having low percent cover of noxious weeds or other invasive plant species of concern (1%–10%)
- Along paved public access roads

The POD Appendix A: Detailed Route Alignment Figures does not specifically identify which locations will be static or mobile wash stations.

Project wash stations will be no more than 1 acre in size and typically located in Project disturbance areas or in areas that have previously been disturbed. There will be two types of wash stations: 1) temporary, installed (static); and 2) mobile (portable). Static Project wash stations will be numbered corresponding to POD Appendix A: Detailed Route Alignment Figures approved locations. Wash station placement among the approved locations will be continuously assessed through coordination with the CIC. Additional wash stations may be required if new noxious weed or other invasive plant species of concern infestations are identified prior to construction and these areas will be addressed by locating a mobile station at the location. If the Construction Contractor(s) wants to relocate or add any wash station locations, a Level 1 variance request will need to be submitted to the CIC to 1) document the new or moved locations, and 2) ensure the new or moved locations are consistent with any requirements (i.e., design features other measures) and do not impact any resources. New or adjusted wash stations, through the variance request process, will be coordinated with the respective federal land management agencies' Authorized Officer(s) or their designated representative.

The wash stations will be capable of supporting a high-pressure water system. Wash stations will include a means of trapping wash water sediment and seeds installed around the perimeter of the wash station.

The temporary, installed (static) wash stations will be approximately 750 square feet in size and preferably located in areas that have previously been disturbed. The soil in the pad area will be stripped, piled, and labeled in accordance with POD Appendix C9: Reclamation, Revegetation and Monitoring Plan. Geo-fabric will be installed, covering the entire stripped area and/or any area that may be exposed to contamination, upon which 4- to 6-inch rock will be placed. A platform with the wash station sign and number, a power washer, water tank, and mailbox for the inspection log will be placed at the wash station locations. Temporary earthen berms will be installed around wash stations to contain wash water sediment and seed around the perimeter of the wash station, as needed. Wash stations will be marked with blue flagging and signs. Water tanker trucks will refill the wash stations as needed. Wash stations may be moved or added as activities are initiated along the ROW and through coordination with the CIC. When wash stations are deemed to be no longer necessary by the Construction Contractor(s), the Construction Contractor(s) will reclaim the site in accordance with POD Appendix C9: Reclamation, Revegetation and Monitoring Plan and will dispose of wash waste materials at an approved facility. The Construction Contractor(s) will monitor the reclaimed wash site and will treat for weed infestations as needed.

Mobile (portable) wash stations will supplement the static wash stations. The mobile stations may be composed of water tanker trucks, trailers, and/or slip-on units for all-terrain vehicles on flatbed trucks. At some of the mobile wash station locations, wash equipment will be unloaded on the site rather than remain on a trailer or vehicle. When water tankers are used for washing, the tanker's 50-foot hoses will be fitted with nozzles that allow for high-pressure, low-volume water to reduce water waste and runoff.

Temporary earthen berms will be installed around mobile wash stations to contain wash water sediment and seed around the perimeter of the wash station, as needed.

If wash processes (either static or mobile) result in water runoff outside of areas planned for disturbance, the EI(s) will be notified by the Construction Contractor(s) for assessment and the EI(s) will communicate requirements for remedying the situation to the Construction Contractor(s). The runoff problem will be fixed by the Construction Contractor(s) as soon as possible but no more than 24 hours after receiving requirements from the EI(s).

In the event that the power water washing unit of a weed-washing station is no longer functioning properly, the Construction Contractor(s) will consult with the CIC and vehicles and equipment using that facility will be either cleaned by dry brushing/scraping, or they may be required to use an alternative wash station until the unit is fixed. The Construction Contractor(s) will be required to fix the malfunction within 24 hours, or the issue will be deemed a noncompliance and the noncompliance process described

in POD Appendix B6: Environmental Compliance Inspection Plan will be followed. If two or more noncompliance incidents occur, the federal land management agency will require the wash stations to be directly monitored by Construction Contractor(s).

4.4.1.4 Winter Preventive Measures

During winter construction, the Construction Contractor(s) may implement the following best management practices to support noxious weed and invasive plant preventive measures during potentially freezing conditions, defined as conditions in which water is in a frozen state. The Construction Contractor(s) will be responsible for coordinating with the CIC and the BLM to find approved solutions for winter noxious weed control.

- Equipment, vehicles, and materials are to arrive on-site clean and free of weedy materials.
- Equipment that has traversed a weedy area will be cleaned at a wash station prior to entering a weed-free area. This will be accomplished by washing weed material and dirt clumps from equipment, tires, and undercarriages at a weed washing station.
- The Construction Contractor(s) and all other Project entities on the ROW will be required to fill out a weed washing logbook at each cleaning station indicating their compliance with weed-free equipment requirements and the logbooks will be retained at each cleaning station and checked daily for tracking purposes.
- In the event that the power water washing unit of a weed-washing station is no longer functioning properly, the Construction Contractor(s) will replace it with a functioning wash station before any vehicles are allowed in or out of the area serviced by that wash station or the situation will be deemed a noncompliance event, and the noncompliance process described in POD Appendix B6: Environmental Compliance Inspection Plan will be followed.

4.4.2 Control Measures

Control measures implemented by the Construction Contractor(s) or the Company, as applicable will be based on species-specific and site-specific conditions, such as the proximity to water or riparian areas, special-status species, agricultural areas, and seasonality. If existing weed populations are currently under treatment by the BLM, Forest Service, and/or other entities, the Company and/or the Construction Contractor(s) will coordinate efforts with the federal land management agency and/or with the other government entities, as applicable, to treat the state-listed noxious weeds and other invasive plant species of concern associated within the Project area. In the event that new state-listed noxious weed or other invasive plant species of concern populations are identified on the Project in the future, the methods outlined in this Plan will be followed.

In areas that may include sensitive species habitat or habitat for threatened and endangered species, the Company and Construction Contractor(s) are required to follow additional conservation measures detailed in POD Appendix C1: Biological Resources Conservation Plan and Attachment E: Seasonal and Spatial Restrictions for Biological Resources of POD Appendix C1: Biological Resources Conservation Plan. Additional conservation measures may be required following the analysis and approval of the Project PUP.

Control measures will include one or more of the methods in the subsections below prior to implementation of reclamation actions.

4.4.2.1 Mechanical

Mechanical methods rely on cutting roots with a shovel, other hand tools, hand pulling, or employing equipment that can be used to mow or disc weed or invasive plant populations. This type of methodology is useful for smaller, isolated populations in areas of sensitive habitats or if larger populations occur in agricultural lands where tillage can be implemented (Table 2). Some rhizomatous weeds or invasive plants can spread by discing or tillage; therefore, implementation will be species specific. If such a method is used in areas to be reclaimed, subsequent seeding will be conducted to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of noxious weeds and invasive plants. The following measure will be followed by the Construction Contractor(s) or the Company, as applicable:

- Discing or other mechanical treatments that will disturb the soil surface in native habitats will be avoided in favor of herbicide application, which is an effective means of reducing the size of noxious weed populations, as well as preventing the establishment of new colonies.

4.4.2.2 Cultural

Cultural control methods rely on prevention education of the public as well as construction, operation, and maintenance personnel. Cultural control of noxious weeds and invasive plants also can include the minimization of vehicular travel through areas of known populations. Noxious weed and invasive plant populations identified during the inventories, or by federal and State of Utah or Nevada land management agencies and/or county weed control officials that are located adjacent to active construction sites and access, or active operation and maintenance sites and access and will be cordoned off with flagging or fencing by the Construction Contractor(s) or the Company, as applicable, as determined by the BLM on federal lands, to avoid spreading seed or plant materials. The following measures will be followed by the Construction Contractor(s) or the Company, as applicable (Table 2):

- Implement preventive measures, such as quarantine and closure, to reduce and contain existing populations in Utah and Nevada. Flagging of the perimeter of the infested area by the Construction Contractor(s) or the Company, as applicable, will alert personnel and prevent access into areas where noxious weeds occur. Construction disturbance will be minimized in these areas until control measures have been implemented (with the exception of reclamation treatments, as applicable).

- Reclamation treatments applied by the Construction Contractor(s) or the Company, as applicable, such as seeding, will be based on site-specific conditions and the appropriate seed mix approved by the applicable federal land management agency for those conditions. Seeding will help reduce the spread of noxious weeds by revegetating exposed soils. If areas are not seeded until the following spring because of weather or scheduling constraints, all undesirable vegetation will be treated by the Construction Contractor(s) or the Company, as applicable, before seeding.

4.4.2.3 Biological

Biological control involves using living organisms (e.g., insects, diseases, livestock) to control noxious weeds and invasive plants to achieve management objectives. Many noxious weed and invasive plant species have been introduced recently into North America and have few natural enemies to control their population. The biological control agent is typically adapted to a specific species and selected for their ability to attack critical areas of the plant that contribute to its persistence. The use of biological control methods is not expected to be required for the Project in Utah and Nevada but may be used if needed.

4.4.2.4 Chemical

Chemical control can effectively remove noxious weeds and invasive plants through the proper use of selective pesticides (herbicides). Herbicide treatment can be temporarily effective for large populations of noxious weeds and invasive plants where other means of control may not be feasible (Table 2—table will be updated as necessary after field surveys described in Section 3 are completed for the selected alternative). Herbicide application, handling, spills, and cleanup will be controlled by the Construction Contractor(s) or the Company, as applicable, to minimize the impacts on the surrounding vegetation and will follow regulations outlined in the PUP. A list of agency-approved herbicides to be applied for the Project by the Construction Contractor(s) or the Company, as applicable, will be provided in the PUP. Additional information regarding use, storage, and disposal of herbicides can be found in POD Appendix C12: Hazardous Materials Management Plan.

4.4.2.4.1 Herbicide Application and Handling

The list of herbicides to be used will be reviewed and approved by the BLM and/or Forest Service and herbicide application will be conducted by the Construction Contractor(s) or the Company as applicable in accordance with the Project PUP and based on information gathered from the BLM and/or Forest Service (federal lands) and State of Utah or Nevada noxious weed authorities (state lands). Before application, all required permits from local authorities (BLM, Forest Service, and/or State of Utah or Nevada noxious weed authorities) will be obtained by the Construction Contractor(s) or the Company, as applicable. Permits may contain additional terms and conditions that go beyond the scope of this management plan. Additional information regarding use, storage, and disposal of herbicides can be found in POD Appendix C12: Hazardous Materials Management Plan. The following measures will be implemented by the Construction Contractor(s) or the Company, as applicable:

- A certified herbicide applicator, approved in the State of Utah or the State of Nevada where herbicide is to be applied, will perform the application using herbicides selected and approved by the federal land management agency in accordance with applicable laws, regulations, and permit stipulations. All herbicide applications will follow U.S. Environmental Protection Agency label instructions.
  - Application of herbicides will be suspended when any of the following conditions exist:
- Wind velocity exceeds 6 miles per hour during application of liquids.
- Wind velocity exceeds 15 miles per hour during application of granular herbicides.
- Snow or ice covers the foliage of noxious weeds.
- Precipitation is occurring or is imminent.
  - Note: Herbicide applicators will either hold a commercial applicator license and be certified in the state of Utah/Nevada or work under the direct supervision of a certified applicator, as required by the state(s).
- Vehicle-mounted sprayers may be used in open areas readily accessible by vehicle. Hand-application methods that target individual plants will be used to treat small or scattered weed populations in rough terrain and in areas within 500 feet of sensitive plant occurrences. Calibration checks of equipment will be conducted at the beginning and periodically during spraying to ensure proper application rates are achieved.

Table 2. Control Methods for Project Noxious Weeds and Invasive Species of Concern

Weed Common Name	Potential Control Methods Mechanical	Potential Control Methods Cultural	Potential Control Methods Biological	Potential Control Methods Chemical	Primary Direct Control Method and Timing	Example Herbicide Active Ingredients	Example Herbicide Trade Names
Black henbane	Mow before bolt then chemical	Yes	—	Yes	• Post-emergence before flowering to prevent seed production and dispersal; • annual treatments	2,4-D; Dicamba; Picloram; Glyphosate; Chlorsulfuron; Metsulfuron	2,4-D; Banvel; Clarity; Tordon 22K; Roundup; Accord; Plateau; Escort
Broadleaved pepperweed (perennial pepperweed)	N/A	Yes	—	Yes	• Herbicide application at both early flower to flowering growth stages as well as spot treatment post-emergence; • annual treatments	Chlorsulfuron; Metsulfuron; Imazapic	Telar; Escort XP; Plateau; Panoramic
Canada thistle	Mow then chemical	Yes	Yes	Yes	• Herbicide application in spring in bud to early bloom stage, until flowering and fall regrowth application (fall application is expected to be most effective); • annual treatments	Aminopyralid; Clopyralid + Triclopyr	Milestone; Prescott

Weed Common Name	Potential Control Methods Mechanical	Potential Control Methods Cultural	Potential Control Methods Biological	Potential Control Methods Chemical	Primary Direct Control Method and Timing	Example Herbicide Active Ingredients	Example Herbicide Trade Names
Cogongrass (Japanese blood grass)	Not Applicable	Yes	—	Yes	• Herbicide application preemergent in the fall; • annual treatments	Imazapyr; Glyphosate	Habitat; Arsenal; Rodeo-approved aquatic label; Roundup
Field bindweed	Not Applicable	Yes	Yes	Yes	• Post-emergence when weeds are growing rapidly or when vegetation is fully developed; • annual treatments	2.4-D Amine; Dicamba; Picloram; Glyphosate; Imazapic; Metsulfuron	2,4-D; Banvel; Clarity; Tordon 22K; Roundup; Plateau; Escort
Houndstongue	Mow before bolt then chemical	Yes	Yes	Yes	• Herbicide application in spring to rosettes through early flower growth stage; • annual treatments	Metsulfuron + 2,4-D; Chlorsulfuron + 2,4-D; Metsulfuron + chlorsulfuron	Escort XP; Telar + 2,4-D; Cimarron X-tra
Nodding plumeless thistle (musk thistle)	Dig small areas before seeds	Yes	—	Yes	• Herbicide application to both spring rosette / early bolting stage and in fall to rosettes; • annual treatments	Aminopyralid; Chlorsulfuron; Clopyralid	Milestone; Telar; Transline
Oxeye daisy	Mow before seeds	Yes	—	Yes	• Herbicide application from rosette to bolting stages, pre- and post-emergence; • annual treatments	Aminopyralid; Aminopyralid + metsulfuron; Clopyralid; Triclopyr; Metsulfuron + chlorsulfuron	Milestone; Opensight; Transline; Garlon 4; Cimarron X-tra

Weed Common Name	Potential Control Methods Mechanical	Potential Control Methods Cultural	Potential Control Methods Biological	Potential Control Methods Chemical	Primary Direct Control Method and Timing	Example Herbicide Active Ingredients	Example Herbicide Trade Names
Quackgrass	Not Applicable	Yes	—	Yes	• Herbicide application when grass is 8 or more inches tall; • annual treatments	Glyphosate	Accord
Russian olive	Pull saplings	Yes	—	Yes	• Cut-stump treatment or basal bark treatment; throughout most of the year; stump sprouts will be retreated	Triclopyr; Glyphosate	Garlon 4; Remedy; Rodeo-approved aquatic label
Saltcedar (tamarisk)	Cut-stump with chemical	Yes	Yes	Yes	• Herbicide application via cut-stump treatment or basal bark treatment; stump resprouts will be retreated	Triclopyr; Glyphosate	Garlon 4; Remedy; Rodeo - approved aquatic label
Scotch cotton thistle (Scotch thistle)	Dig small areas before seeds	Yes	—	Yes	• Herbicide application applied in spring at rosette to early bolting growth stages and in late fall to rosettes; requires treatment on even the smallest of infested areas due to its ability to spread quickly; • annual treatments	Aminopyralid; Chlorsulfuron; Metsulfuron + chlorsulfuron; Clopyralid	Milestone; Telar Cimarron X-tra; Transline

Weed Common Name	Potential Control Methods Mechanical	Potential Control Methods Cultural	Potential Control Methods Biological	Potential Control Methods Chemical	Primary Direct Control Method and Timing	Example Herbicide Active Ingredients	Example Herbicide Trade Names
Spiny plumeless thistle (plumeless thistle)	Dig small areas before seeds	Yes	Yes	Yes	• Herbicide application applied both in spring to rosettes and early bolting growth stages as well as in fall to rosettes; • annual treatments	Aminopyralid; Chlorsulfuron; Clopyralid	Milestone; Telar; Transline
Spotted knapweed	Dig small areas before seeds	Yes	Yes	Yes	• Herbicide application in spring to rosette and early bolt stage as well as in fall to rosettes; • annual treatments	Aminopyralid; Clopyralid; Clopyralid + 2,4-D	Milestone; Transline; Stinger; Curtail
Whitetop (hoary cress)	Mow before bolt then chemical	Yes	—	Yes	• Herbicide application at flowering (early spring to mid-July) or apply at late flower to post-flower growth stage; • annual treatments	Chlorsulfuron; Metsulfuron; Imazapic	Telar; Escort XP; Plateau; Panoramic

Source: DiTomaso et al. (2013)

- Herbicides will be transported to the Project site daily during required application periods with the following provisions:
- Only the quantity needed for that day's work will be transported.
- Concentrate will be transported only in approved and labeled containers in a manner that will prevent tipping or spilling and will be stored in a location isolated from the vehicle's driving compartment, food, clothing, and/or safety equipment.
- Mixing will be done off-site over a drip-catching device and at a distance greater than 400 feet from open or flowing water, wetlands, or other sensitive environmental resources. No herbicides will be applied at these areas unless authorized by appropriate regulatory agencies.
- All herbicide equipment and containers will be inspected for leaks daily.
- Disposal of spent containers will be in accordance with the herbicide label and will adhere to the methods prescribed in Appendix C4: Hazardous Materials Management Plan.
- Herbicides will not be applied over surface water. Only herbicides registered for use near water will be used within 328 feet (100 meters) of surface water or in areas with a high leaching potential. Minimum herbicide spray distances (buffers) from live water are as follows:
- Backpack spraying operations: 20 feet
- Other mechanized applications: 50 feet

4.4.2.4.2 Herbicide Spills and Cleanup

The Construction Contractor(s) or the Company, as applicable, will take all reasonable precautions to avoid herbicide spills. The following measures will be implemented by the Construction Contractor(s) or the Company, as applicable:

- In the event of a spill, cleanup will be immediate. The Construction Contractor(s) will keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills. Items to be included in the spill kit include the following:
- Protective clothing and gloves
- Absorptive clay, "kitty litter," or other commercial absorbents
- Plastic bags and a bucket
- Shovel
- Fiber brush and screw-in handle
- Dustpan
- Caution tape
- Detergent

- The response to an herbicide spill will vary with the size and location of the spill, but general procedures include:
- CIC, BLM, and/or Forest Service notification
- Traffic control
- Dressing the cleanup team in protective clothing
- Stopping any leaks
- Containing spilled material
- Cleaning up and removing spilled herbicide and contaminated absorptive material and soil
- Transporting spilled herbicide and contaminated material to an authorized disposal site

4.4.2.4.3 Worker Safety and Herbicide Spill Reporting

In the event that an herbicide spill occurs, appropriate measures will be taken by the Construction Contractor(s) or the Company, as applicable, to document and report the incident. The following measure will be followed by the Construction Contractor(s) or the Company as applicable:

- Prior to the start of herbicide treatment and/or spill clean-up, herbicide contractors will be State of Utah or Nevada–certified to apply herbicides and will obtain, be knowledgeable of, and possess readily available copies of the appropriate material safety data sheets for the herbicides used, according to the treatment label. During treatment activities and/or spill clean-up, herbicide treatment personnel will wear all personal protective equipment necessary and/or required for the herbicide being used. All herbicide spills will be reported within 24 hours of the spill by the Construction Contractor(s) or the Company, as applicable, to the appropriate federal land management agency, the Tribe, the State of Utah or Nevada land management agency or private landowner, as appropriate, and in accordance with applicable federal and State of Utah or Nevada laws and requirements.

Additional information regarding the handling of hazardous materials is provided in POD Appendix C12: Hazardous Material Management Plan.

4.4.3 Reclamation Actions

As specified in POD Appendix C9: Reclamation, Revegetation and Monitoring Plan, in areas where weed and invasive plant control measures have been implemented by the Construction Contractor(s) or the Company and require postconstruction reclamation actions, the following measures will be implemented by the Construction Contractor(s) or the Company, as applicable:

- If areas are not immediately seeded after construction, due to weather or scheduling constraints, all noxious weeds and other invasive plant species of concern will be treated before seeding, preferably timed to maximize treatment effectiveness and not impact reseeding and revegetation.
- If discing or tilling is an appropriate and feasible treatment method, it will only be implemented in previously bladed areas.

- Seed selection will be based on site-specific conditions and the appropriate agency-approved seed mix will be identified for those conditions based on the presence and treatment of noxious weeds in the Project area.

- Contractor(s)' and/or Company's weed specialist may recommend modified seeding application rates and/or timing of implementation to achieve site-specific weed management objectives. Federal land management agency approval is required before implementation of the modified rates and/or timing.

- Additional weed control measures recommended by the Construction Contractor(s)' EI during monitoring will follow the preventive and control measures outlined in this plan (see Section 4.4.1). Continued cooperation with the current BLM and/or Forest Service coordinator, as well as with the State of Utah, State of Nevada, or local weed management areas also is encouraged.

4.4.4 Agency-Specific Requirements

UDAF and NDA regulates noxious weed control under respective noxious weed statutes, which mandate that property owners will control noxious weeds on their land and property. Pest management, including noxious weed and invasive plant control, will be intended for prevention, eradication, rehabilitation, control, or containment efforts as required by the state statutes.

Through the implementation of this Plan and in conjunction with the BLM and Forest Service (as described below), the Project will be in compliance with Utah and Nevada noxious weed statutes. The following is a discussion regarding BLM and Forest Service measures, as well as personnel and equipment requirements.

4.4.4.1 Bureau of Land Management and Forest Service

All Project-related weed and invasive plant control activities will be implemented in accordance with local BLM and Forest Service management requirements. The following measures will be implemented by the Construction Contractor(s) or the Company, as applicable:

- Herbicide use is not authorized in areas that contain the following biologically sensitive habitats, as detailed in the Project PUP.

- The use of herbicides for vegetation management and noxious weed control will be limited to hand application methods that target individual plants, within 500 feet of sensitive plant occurrences unless otherwise approved by the respective federal land management agencies' Authorized Officers. Weed management within 500 feet of sensitive plant occurrences will occur under the supervision of a qualified botanist hired or contracted by the Construction Contractor(s) or the Company as applicable to ensure general herbicide is not used in or near sensitive plant occurrences.

- If previously unknown sensitive biological resources are located during weed control operations, those operations will cease, and federal land management agencies will be notified immediately.

- Equipment and vehicles planned for use in identified occupied habitat for sensitive plants or sensitive wildlife species habitat will be cleaned with water before entering the habitat to minimize the spread of noxious weeds and other undesirable vegetation.

- Herbicides and application rates used on BLM-administered land and National Forest System land will be consistent with site-specific management practices and may differ relative to field office and/or district office guidelines.

  Note: Application rates will not exceed BLM-approved rates.

- Material (e.g., soil, gravel) transported from offsite locations is required to be weed-free and approved by the appropriate federal land management agency. This measure will require additional permits and/or certification for the material, depending on the source.

All herbicides proposed for use by the Construction Contractor(s) or the Company, as applicable, on the Project will require obtaining an approved PUP from the BLM or Forest Service (as appropriate based on land jurisdiction) prior to application. The Company will be the Originator of the proposal and the Construction Contractor(s) will be the Preparer. Once the Construction Contractor(s) has been released, the Company will be responsible for PUP preparation and weed control. The herbicides approved for use on the Project will be reviewed and approved by the BLM and/or Forest Service prior to beginning construction and herbicide application will only include herbicides and adjuvants approved for use on BLM-administered land and National Forest System land. Use of chemical control for vegetation on BLM-administered land and National Forest System land will be consistent with the guidelines presented in BLM Manual 9011 – Chemical Pest Control (BLM 1992b) and Forest Service Manual 2150 – Pesticide-Use Management and Coordination (Forest Service 2014), respectively. Once herbicide use is approved by the BLM or Forest Service, the Construction Contractor(s) or the Company as applicable will maintain herbicide application records and herbicide use reports. The Construction Contractor(s) or the Company, as applicable, will submit these records and reports monthly to the BLM or Forest Service, as appropriate.

5 MONITORING

The Construction Contractor(s) and a third-party contractor will monitor areas of Project disturbance for 5 years following completion of Project construction using current BLM and/or Forest Service weed treatment inventory and monitoring standards. Postconstruction monitoring of Project disturbance areas will be conducted annually by a third-party reclamation monitoring contractor during the growing season, to the extent practicable, when noxious weeds and invasive plant species of concern identified in the Project area and included in the state-listed noxious weed and invasive plant species of concern inventory are still identifiable (Table 1). Monitoring time may take into consideration the treatment windows for target weed and invasive plant species, which include species more readily detected prior to peak growing season (April–May) or later in the growing season (after July). Growing seasons will vary from year to year, and consequently the timing of seasonal monitoring and treatment will vary as well.

Monitoring of previously identified affected/disturbed areas and noxious weed and invasive plant treatment areas will be initiated during the first summer following construction. Infestation delineations and general species information of noxious weed and other invasive plant species of concern occurrences will be included in the evaluations of revegetation success as described in Section 5.1 below and in Appendix C9: Reclamation, Revegetation and Monitoring Plan. Reporting will be provided by the third-party reclamation monitoring contractor to the BLM and/or Forest Service on an annual basis, in accordance with Section 5.1 below.

During postconstruction monitoring of the Project area, the Company will consult with the BLM, Forest Service, and/or landowner should issues arise pertaining to noxious weeds and invasive plants. The BLM and/or Forest Service may also contact the Company to report on the presence of noxious weeds and invasive plants within the Project area.

5.1 Reporting

Data collection and report preparation of state-listed noxious weeds and invasive plant species of concern occurrences, treatment methods, and monitoring efforts will be completed by the Construction Contractor(s) in compliance with the current BLM and/or Forest Service weed treatment inventory and monitoring standards. Monitoring will include infestation delineations and general species information evaluating population attributes, plant phenology, and population health. Noxious weed and invasive plant conditions will also be included in the third-party reclamation monitoring contractor– prepared Reclamation Monitoring Report, as described in POD Appendix C9: Reclamation, Revegetation and Monitoring Plan. The purpose of the Reclamation Monitoring Report is to provide a status update on progress toward meeting reclamation goals, including prevention of state-listed noxious weed or invasive plant species of concern spread and establishment of desirable native vegetation communities. The presence of state-listed noxious weeds and invasive plant species of concern will be documented in plant species lists recorded for each site-specific reclamation monitoring site. General monitoring will include documentation of overall recovery conditions associated with the Project, including concerns such as state-listed noxious weed and invasive plant species of concern populations resulting from Project construction. The third-party reclamation monitoring contractor will document their observations and make the Reclamation Monitoring Report available to the Company, Construction Contractor, BLM, and Forest Service.

Further evaluation of areas where the spread of a state-listed noxious weed or plant species of concern population is noted—particularly in previously unaffected locations—will determine if these areas require remedial action and additional treatment by the Construction Contractor(s). The third-party reclamation monitoring contractor will identify such areas in the Reclamation Monitoring Report and the Construction Contractor(s) will be responsible for implementing and documenting any additional state-listed noxious weed and invasive plant species of concern control treatments. The Reclamation Monitoring Report documenting state-listed noxious weed and invasive plant species of concern control activity will be submitted annually by the third-party reclamation monitoring contractor to the Company, Construction Contractor(s), BLM, and Forest Service.

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Attachment A. Weed Washing Unit Specifications

Weed Washing Unit Specifications

Vehicle Cleaning For Noxious Weed Control

Equipment shall arrive at the worksite washed and free of noxious weed seeds. Equipment with frames and cross-members will be inspected and all debris collecting areas including belly pans, guards and coverings must be washed to alleviate the spread of noxious weed seeds and to protect against grease and oil-soaked residues catching on fire in belly pans and skid plates. Heavy equipment operators shall manually clean tracks and belly pans before leaving project site on all heavy equipment.

Equipment Requirements

a) Weed Wash Containment Station Equipment. Wash systems shall be high pressure with low volume and may be supplemented with low pressure with high volume. High pressure systems have water pressures designated above 1000 pounds per square inch (psi), while high volume systems deliver 10 gallons of water per minute or more.

b) Self-Contained with Recycling Water System.

c) The Contractor shall:

1) Thoroughly wash vehicles and equipment to remove, but not limited to, soil, mud, caked dirt, plant parts, seeds, and vegetative parts off of the undercarriage, cross members, frame, skid plates, belly pans, wheels, treads, tracks, suspension, bumpers, wheel wells, radiator grills, and the ledges on the inside of rear and front bumpers.

2) Inspect hard to reach areas to ensure that they are clean.

3) Inspect and wash all soil and plant parts off of drafting hoses and drafting gear if applicable.

4) Ensure that the system used does not cause damage to the paint or electrical connections of vehicles and equipment being washed.

5) Keep the wash station in repair and fully operational during the designated assignment.

6) Capture, package, and label solid waste in secure, easily transportable containment packages/devices. Solid waste shall be properly disposed of.

7) Maintain a daily record of all washed vehicles.

8) Provide Personal Protective Equipment (PPE to include clothing) to all personnel working the washing station. Required PPE shall include EYE PROTECTION: One pair per employee (meets standards ANSI Z87, latest edition) and HEARING PROTECTION: Use hearing protection whenever sound levels exceed 85 DB.

Minimum Equipment Requirements.

(a) Self-Contained with Recycling Water System.

1) Portable commercial power washers with two hand-held, high-pressure wands/nozzles. These nozzles must be suitable to wash all surfaces of the vehicle or equipment that contain soil, mud, caked dirt, plant parts, seeds, and vegetative parts.

2) Underbody washer. The underbody washing system must provide water spray at such an angle to ensure complete coverage of underbody surfaces and must be suitable to wash all underbody surfaces that contain soil, mud, caked dirt, plant parts, seeds, and vegetative parts.

3) A wash water storage tank. The wash water storage tank shall have adequate capacity to operate the wash system continuously for a minimum of two hours.

4) Wastewater shall be contained by the wash system. Wash residues shall be removed from the tracking surfaces of the vehicle being washed before vehicle exits system to prevent contamination to the exiting vehicle. Wash residues shall be contained so that the washed vehicle does not track removed residue from the weed wash containment station.

5) Wash water shall be filtered to a 100-micron particle size or less or use a clean water final rinse. Contractor is responsible for maintaining the quality of the recycled water to ensure clean and safe washed equipment. Contractor shall maintain the containment system in a functional condition at all times. Prior to disposal, all wastewaters shall be filtered to 100 microns or smaller particle size. Wastewater shall be disposed of in accordance with wastewater requirements of the authority having jurisdiction.

6) Contractor shall provide secure, easily transportable containment packaging/devices for holding the solid waste. The packaging/devices when full shall not exceed 50 lbs.

7) Process time to wash vehicles and equipment shall be sufficient to meet the requirements of this agreement.

8) The contractor shall provide at least two (2) skilled operators to perform operations. The operators shall be knowledgeable in the safe operation, maintenance, and repair of the wash system.

9) The wash system must be able to accommodate equipment up to 10' wide.

10) A minimum of two 1000-watt, or equivalent, work lights on stands with GFI module.

11) The wash system must comply with all applicable OSHA regulations related to operator safety and all segments of the washer must be in operating condition with no missing parts.

12) All vehicles/equipment offered and under hire on this Agreement shall contain a fire extinguisher, multi-purpose 2A 10BC, that is securely mounted to the vehicle/equipment and accessible by the operator. The fire extinguisher shall have a current annual inspection tag.

Appendix C3: Water Resources Protection Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C3: Water Resources Protection Plan

Prepared by:

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July 2023

CONTENTS

Attachments

Tables

Abbreviations

ACEPM	Applicant-committed environmental protection measures
BLM	Bureau of Land Management
BMP	Best management practices
CFR	Code of Federal Regulations
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
CWA	Clean Water Act
DBB	Defined Bed and Bank
EIS	Environmental impact statement
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
Forest Service	U.S. Department of Agriculture Forest Service
LRMP	Land and resource management plans
NDEP	Nevada Division of Environmental Protection
NFIP	National Flood Insurance Program
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OHWM	Ordinary High Water Mark
Plan	Water Resources Protection Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
RMP	Resource management plans
ROD	Record of Decision
ROW	Right-of-way

SPCC	Spill Prevention, Control and Countermeasures
SWPPP	Stormwater pollution prevention plan
TMDL	Total maximum daily load
U.S.	United States
UPDES	Utah Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers
WQC	Water Quality Certification

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500 megawatt, 500 kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

The purpose of this Water Resources Protection Plan (Plan) is to minimize potential impacts on water resources (i.e., wetlands, streams, riparian areas, springs, seeps, wells, open waters) due to construction, operation, and maintenance activities associated with the Project. The Plan provides direction, guidance, specific protection measures, and best management practices (BMPs) for the protection of water resources that are required to be implemented by the Construction Contractor(s) during construction and by the Company during operation and maintenance, as applicable.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the United States (U.S.) Department of Agriculture Forest Service (Forest Service) record of decisions (RODs) and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

This Plan, as well as the other POD appendices listed below, identify additional federal and state requirements that the Construction Contractor(s) and as applicable, the Company, must comply with to protect water resources. Additional measures for the protection of water resources are contained in the following appendices:

- Appendix C7: Erosion, Dust Control, and Air Quality Plan;
- Appendix C9: Reclamation, Revegetation, and Monitoring Plan;
- Appendix C10: Stormwater Pollution Prevention Management Plan (SWPPP);
- Appendix C11: Spill Prevention, Control, and Countermeasure (SPCC) Management Plan;
- Appendix C12: Hazardous Materials Management Plan; and
- Appendix C14: Blasting Management Plan.

Compliance with this Plan, in combination with those required measures contained in the POD appendices listed above, will accomplish the following:

- Control of Project-related erosion from construction, operation, and maintenance within Project ground disturbance areas, with particular emphasis on minimizing the contribution of sediment to streams, wetlands, and other water resources;
- Reduction of disturbance and erosion of streambeds and banks;
- Protection of water quality;

- Protection of springs, seeps, and wells in the Project area from impacts due to blasting and hazardous materials contamination; and

- Compliance with requirements of the BLM ROD and the terms and conditions of relevant permits and the BLM executed ROW grant, and the Forest Service special use permit in the form of an electric transmission line permit for non-federal entities.

2 REGULATORY OVERVIEW AND FRAMEWORK

The Project is subject to various federal and state laws, regulations, policies, land use decisions, and programs designed to protect environmental resources and the public. Those relevant to water resources are outlined in this section.

2.1 Federal

- The objective of the Clean Water Act (CWA), codified generally in 33 United States Code 1251 et seq., is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The following sections of the CWA may influence construction and maintenance of the Project: Sections 301, 302, 303, 311, and 319 identify standards and enforcement of the CWA while Sections 401, 402, and 404 relate to permits that may be required for CWA compliance.

  - **Section 301: Effluent Limitations from Point Sources** indicates that the volume of pollutants generated by a known source or point source is limited by specific water resources as described in Section 303(d). These limitations require permitting of discharges of a controlled pollutant, such as sediment, into regulated waters.

  - **Section 302: Water Quality Related Effluent Limitations** sets state-specific levels of allowable pollutants called total maximum daily load (TMDL) to maintain water quality. This pollutant allotment criterion is designated for specific waterbodies relative to particular uses identified for each waterbody. A water quality criterion (numeric pollutant concentrations and narrative requirements) is also designated to protect particular resource uses. Project discharges to a resource protected by a TMDL may require that the discharge be included in the TMDL permit.

  - **Section 303: Water Quality Standards and Implementation Plans, Designation of Impaired Waters** indicates that waterbodies not meeting state-mandated water quality standards are presented to the U.S. Environmental Protection Agency (EPA) for designation as *impaired waters* and issuance of federal protection under a TMDL. Impaired waters that may potentially be affected by the Project are subject to limitations set forth by the TMDL issued for the particular impaired water. If there is a high probability that the Project will affect the impaired water, modification to the state construction general permit could be required.

  - **Section 311: Oil and Hazardous Substances Liability** provides the framework for determining whether an oil spill to inland and coastal waters and/or their adjoining shorelines should be reported to the federal government. In particular, the regulation requires the person in charge of a facility or vessel responsible for discharging oil that may be "harmful to the public health or welfare" to report the spill to the federal government. The regulation establishes the criteria for determining whether an oil spill may be harmful to public health or welfare, thereby triggering reporting requirements.

- **Section 319: Effluent Limitations from Nonpoint Sources** was created following the 1987 amendments to the CWA for management of nonpoint-source pollution. Section 319 regulates the discharge of pollutants from various sources that accumulate to reduce water quality standards set by the state. If the Project has the potential to add nonpoint-source pollutants to a particular resource protected by a TMDL, it may be necessary to mitigate impacts and may potentially require the Project to be included into the TMDL permit.

- **Section 401: Water Quality Certification** requires that an application for a federally permitted activity that may result in a discharge into a water of the U.S. must obtain a water quality certification from the state with jurisdiction, certifying that the action will not violate state or federal water quality standards. In many states, Section 401 certification is satisfied with conditions through Section 404 authorization under certain nationwide permits (described in more detail under Section 2.2).

- **Section 402: National Pollutant Discharge Elimination System** regulates water quality standards specifically by issuing and monitoring construction-related permits for discharges into waters of the state.

- **Section 404: Dredge or Fill in waters of the U.S.** regulates the dredging or filling of any material in a water of the U.S. under the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE). If the Project requires dredging or fill in a water of the U.S. as defined in 33 Code of Federal Regulations (CFR) 328.3 of the CWA, it may be necessary to obtain a federal permit to conduct the work. As a provision of the federal permitting process, mitigation for the permanent loss of jurisdictional wetlands or other waters of the U.S. may be required by the USACE and the EPA.

- The Safe Drinking Water Act sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards, but it does not regulate private wells that serve fewer than 25 individuals. The Safe Drinking Water Act also mandates that a Groundwater Wellhead Protection Program be developed by each state to protect groundwater resources that serve as sources for public drinking water.

- The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA), a component of the U.S. Department of Homeland Security. In support of the NFIP, FEMA identifies flood hazard areas throughout the U.S., including special flood hazard areas, which are defined as areas of land that would be inundated by a flood having a 1% chance of occurring in any given year (previously referred to as the base flood or 100-year flood). Development may take place in special flood hazard areas, provided that the development complies with local floodplain management ordinances, which must meet the minimum federal requirements. Not all jurisdictions along the Project route have been mapped for flood zones under the NFIP.

- Executive Order 11988: Floodplain Management requires that if structures are to be placed in a FEMA-designated flood-hazard area, a floodplain modification permit may be required.

- BLM resource management plans (RMPs) for Utah, including those developed for the Fillmore field Office (BLM 1987a, 1987b), and for Nevada, including those developed for the Ely District Office (BLM 2008), specify goals and objectives for management of BLM-administered land and establish management actions to protect fish and wildlife and the habitats on which they depend. Those restrictions, as well as how the Project will comply with those restrictions, are listed in Table 1 below.

- Utah BLM Riparian Policy (Instruction Memorandum 2005-091) establishes an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits; provides watershed protection while still preserving quality riparian-dependent aquatic and terrestrial species habitats; and, as appropriate, allows for reasonable resource uses (BLM 2010).

- Under the Federal Antidegradation Policy, the EPA requires each state to develop, adopt, and retain a statewide antidegradation policy regarding water quality standards and establish procedures for implementing the policy through the water quality management process. The state antidegradation policy and implementation procedures must be consistent with the detailed three-tier management components of Sections 131.13(a)(1), 131.12(a)(2), and 131.12(a)(3) of 40 CFR 131.12.

- Forest Service National Forest land and resource management plans (LRMPs), including Humboldt-Toiyabe National Forest (Forest Service 1986a, 1986b), as amended; as well as standards and guidelines detailed in the forest plans, require compliance with protective measures that ensure that water resources and associated aquatic, biological, and geologic components are being maintained or improved. LRMPs also identify restrictions to protect fish, wildlife, and management indicator species.

Table 1. BLM RMP and Forest Service LRMP Water Resource Stipulations

Restriction Language	Temporal Restriction	Spatial Restriction	Compliance Approach
BLM Fillmore Field Office (West Desert District; BLM 1987a, 1987b)			
No clearing within a 100-foot buffer strip on each side of streams. Selective partial harvest methods could be allowed within this strip. The actual width of the strip could vary, depending on the aspects of specific sites (e.g., slopes, soil condition, and understory vegetation).	Year-round	Within 100 feet of each side of live streams.	If clearing is necessary within 100 feet of either side of a live stream, the Construction Contractor(s) will be responsible for working with the BLM Fillmore Field Office resource specialist to define methods for compliance with this restriction.
Disturbed areas will be reseeded to provide ground cover and minimize soil loss.	Year-round	All disturbed areas that are cleared of vegetation.	See Section 9 of the POD
Before chemicals are applied, the BLM will comply with the Department of the Interior regulations. All chemical applications will be carried out in compliance with the State pesticide laws of Utah.	Year-round	Project-wide	See Section 9 of the POD
Bristlecone Field Office (Ely District; BLM 2008)			
Construct a containment barrier around all pumps and fuel containers utilized within 100 feet of a stream channel. The containment barrier would be of sufficient size to contain all fuel being stored or used on site.	Year-round	Within 100 feet of a stream channel	See Section 9 of the POD
Construct access roads and fords that cross stream channels to BLM road standards.	Year-round	Within / adjacent to stream channels	See Section 9 of the POD
Do not construct new roads or mechanical fire control lines or improve existing roads within 300 feet of a stream channel unless authorized by the BLM Field Manager or Authorized Officer.	Year-round	Within 300 feet of a stream channel	See Section 9 of the POD

Restriction Language	Temporal Restriction	Spatial Restriction	Compliance Approach
Limit stream crossings on travel routes and trails to the minimal number necessary to minimize sedimentation and compaction. The BLM Authorized Officer will determine if any impacts need to be rehabilitated by the permittee.	Year-round	Within / adjacent to stream channels	See Section 9 of the POD
Conduct mixing of herbicides and rinsing of herbicide containers and spray equipment only in areas that are a safe distance from environmentally sensitive areas and points of entry to bodies of water (storm drains, irrigation ditches, streams, lakes, or wells).	Year-round	Near sensitive areas	See Section 9 of the POD
Forest Service (Humboldt-Toiyabe; Forest Service 1986a, 1986b)			
Protect wet areas around springs for wildlife habitat, livestock grazing, and recreation opportunities	Year-round	Wet areas	See Section 9 of the POD
Do not allow construction of new roads except for crossings within the riparian area unless no other alternatives are available. Reconstruction should consider alternate locations.	Year-round	Riparian areas	See Section 9 of the POD
Avoid development of 100-year floodplain unless it is the only practicable alternative.	Year-round	100-year floodplain	The Project route is generally located upslope and out of floodplains. Roads associated with the Project are located primarily along or part of existing two track or improved roadways. However, if Project areas subject to development and ground disturbance in floodplains or suspected floodplains are proposed, the appropriate floodplain administrator would need to be contacted to determine if permitting is necessary, as much of the assessment area is mapped as Zone D, which suggests a lack of flood risk data.

Restriction Language	Temporal Restriction	Spatial Restriction	Compliance Approach
Hand application of herbicides to control noxious weeds will be allowed provided that herbicides are not allowed to enter water.	Year-round	Near waterbodies	See Section 9 of the POD
Install erosion control structures and seed as needed to reduce gully erosion and improve ground cover	Year-round	Disturbance areas	See Section 9 of the POD

2.2 State

2.2.1 Utah

- The Utah Pollutant Discharge Elimination System (UPDES), Utah Administrative Code R317-8, mandates that both direct and indirect discharges to waters of the state be regulated and permitted by the Utah Division of Water Quality, including surface-water discharges; wastewater discharges; indirect discharges; stormwater discharges from commercial, industrial, and municipal activities; groundwater discharges; and discharges resulting from underground injection. Construction general permits for stormwater discharge, hydrostatic testing, and dewatering likely will be required during construction of the Project. Additional details of the Utah stormwater discharge requirements for the Project are described in POD Appendix C10: Stormwater Pollution Prevention Plan.

- Utah Division of Water Quality, Utah State Stream Alteration Permit (Utah Administrative Code R655-13) requires the issuance of a State Stream Alteration Permit. A USACE Sections 404 and 401 permit or a Programmatic General Permit 40 would be applicable if work is to be done to the bed and banks of a water of the U.S.

- Programmatic General Permit 40: Minimal Impact Activities under the Stream Alteration Program for the State of Utah was issued by the District Engineer of the Sacramento District of the USACE for certain activities in waters of the U.S. that have been authorized under the State of Utah's Stream Alteration Program. This permit is designed to eliminate duplication and expedite authorization of the activities that fall under the USACE Regulatory Program that have been authorized through a stream alteration permit. This permit applies to all waters of the U.S. that are considered to be part of the surface tributary system and over which the State Engineer has regulatory authority under the Stream Alteration Program. Limits of the state of Utah's jurisdiction are defined in Utah Administrative Code R655-13, Stream Alteration. This permit does not apply to springs, lakes, fens, pool and riffle areas, wetlands, and some ephemeral waterbodies. It also does not cover discharge or fill activities to waters of the U.S. on Tribal lands or in emergency situations.

2.2.2 Nevada

- The Nevada Section 401 Water Quality Certification program is to ensure that federally permitted or authorized activities be conducted in a way that complies with applicable Nevada discharge and water quality standards. An application must be made to the Nevada Division of Environmental Protection (NDEP).

- The Nevada water pollution control discharge permit authorizes NDEP to issue general or temporary permits for the discharge of pollutants or the injection of fluids. Issued permits are valid for up to six month and cover discharges, working in waterways, as well as routine maintenance activities.

- The Nevada nonpoint source pollution management program established the state's approach to protecting and improving water quality by describing the goals, objectives, milestones, and timeframes that guide activities. Reduction in nonpoint source pollution will be accomplished with partners through a combination of technical and financial assistance, training, education, planning, and implementation of water quality improvement projects.

- Revised statutes 533 and 534 of the Nevada Water Rights Law provides rules for applying for and holding a water right, as well as guidelines for the State Engineer in managing the state's water resources. The state evaluates water right permits based on two principles, appropriation (first in right) and beneficial use. The State Engineer is responsible for administering and enforcing Nevada water law, which includes the appropriation of surface and ground water and the adjudication of pre-statutory vested water rights.

3 INVENTORY OF WATER RESOURCES

Publicly available information and field reconnaissance was used to complete the analysis conducted for the Project environmental impact statement (EIS). Prior to completion of this Plan, an in-depth desktop analysis and field verification was conducted to identify water resources that may be impacted by the Project. Using a combination of the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), U.S. Geological Survey National Hydrography Dataset (NHD), aerial imagery, topography, and hydric soils data, water resources that could be impacted by the Project were identified and field verified. These included wetlands, streams, springs, rivers, lakes, playas and ponds. Water resources were mapped, and preliminary Project design was overlaid on that mapping. Potential water resources impact areas were then determined, and Project facilities were adjusted to avoid or reduce impacts where possible.

In addition to the field verification described above, information on the location of water resources, which in this document refer to streams, wetlands, riparian areas, springs, rivers, lakes, and ponds, were collected and refined from publicly available data sets, and through interpretation of aerial photography. The locations of water resources are shown in the POD Appendix A: Detailed Route Alignment Figures.

3.1 Wetlands and Waters of the U.S.

Waters of the U.S. are regulated by the USACE and may include lakes, rivers, streams and their tributaries, (including ephemeral waterways which are common in the arid western U.S.), and wetlands. Wetlands are unique, important, and limited resources in the western U.S. that provide essential breeding, rearing, and feeding grounds for many species of fish and wildlife. In addition to affording valuable habitat resources, wetlands also perform important hydrologic functions, such as groundwater recharge, flood protection, and pollution control. Both collectively and individually, wetlands in the western U.S. represent a significant landscape-level resource depended upon by a variety of migratory birds and other wildlife.

The definition of waters of the U.S., or waters that are regulated by the USACE, has changed over time. On August 30, 2021, the U.S District Court of Arizona ordered that the previous definition of waters of the U.S. be vacated (e.g., the Navigable Waters Protection Rule). On November 18, 2021, EPA and USACE announced the signing of a proposed rule to revise the definition of waters of the U.S. On January 18, 2023, the final "Revised Definition of 'Waters of the United States'" rule was published in the Federal Register and took effect on March 20, 2023. The USACE implemented this rule which was similar to the longstanding pre-2015 regulatory definition for waters of the U.S. until the May 25, 2023, U.S. Supreme Court opinion of Sackett vs. EPA. Through this ruling the U.S. Supreme Court reversed and remanded the recently updated definition of waters of the U.S., consistent with the notion that the CWA extends only to waters or wetlands with a continuous surface connection to waters of the U.S. (i.e., relatively permanent, standing or continuously flowing bodies of water connected to a traditional interstate navigable water).

For the purposes of this Project, and to provide a clear path forward through potential future changes to the definition of waters of the U.S., all waters affected by the Project, regardless of jurisdiction, including ephemeral drainages, wetlands, streams, springs, rivers, lakes, or ponds will be considered sensitive resources and protected accordingly and CWA permitting requirements will be adhered to based on the implementation of waters of the U.S. at the time of Project permitting. The protection measures described in this document will be applied to these sensitive resources.

Transmission line structures will be placed to avoid wetlands, streams, or other waters to the extent feasible. While avoidance of impacts is the goal, this might not be possible in all situations due to terrain, engineering limits and other resource constraints.

Access roads have been designed to avoid or minimize potential impact to water resources; however, construction of certain access roads will result in minor unavoidable impacts to water resources, primarily ephemeral drainages. Most of the impacted ephemeral drainages are very small, averaging 2 to 10 feet wide. The Project is located across several closed-basin watersheds; therefore, jurisdictional waters of the U.S. (e.g., those wetlands, streams, etc., protected under the CWA) are not expected to occur within impacted areas. USACE permits are discussed in Section 4 for reference; however, the need for CWA Section 404 permitting is not anticipated.

3.2 Wells and Springs

Water wells and springs were identified using data collected during the preparation of the Project EIS; updated with NWI, NHD; and supplemented by field observations made during surveys for wetlands and other waters.

Wells and springs in known blasting zones will be identified prior to construction by the Construction Contractor(s). Wells and springs in blasting areas will be protected under requirements described in Appendix C14: Blasting Plan Methodology and the site-specific blasting plan that the Construction Contractor(s) will be required to prepare. The Construction Contractor(s) will be required to submit the blasting plan to the appropriate state authority, the BLM, the Compliance Inspection Contractor (CIC), and the Company for review and approval prior to the blasting activity.

3.3 Riparian Areas

Riparian areas were identified using data collected during the preparation of the Project EIS. Riparian areas in the Project are primarily associated with perennial streams and rivers or intermittent streams. As described in the applicant-committed environmental protection measures (ACEPM) in Section 9 of the POD, measures are in place to protect these areas. These protection areas encompass riparian areas and are subject to applicable ACEPMs, selective measures provided by BLM and/or Forest Service, and BMPs as described in this Plan and Section 9 of the POD.

4 OVERVIEW OF PERMITTING ACTIONS

Project construction, operation, and maintenance activities are not expected to affect waters of the U.S. due to the Project's geographic position across interior, closed-basin hydrological units with no evidence of connectivity to known jurisdictional downstream waterbodies. However, if impacts are anticipated to streams or wetlands that span the Utah-Nevada state line (i.e., interstate waters), coordination with USACE is recommended to determine jurisdiction of specific features. Acquisition of certain permits will be the responsibility of the Company as a component of the general permitting actions, while certain permits will be the responsibility of the Construction Contractor(s) as a component of construction

actions. Important permitting actions relevant to water resources are summarized in this section, and additional permitting actions are reviewed in Section 2.

4.1 Section 404 of the Clean Water Act

The USACE CWA Section 404 authorization process involves two types of permits: general permits for actions that are similar in expected effects and will likely have a minor effect on waters and wetlands, and individual permits for more significant actions. A Nationwide Permit (NWP) is a form of general permit that authorizes a category of activities throughout the nation and is valid only if the conditions applicable to the permit are met. The NWP program is intended to provide timely authorizations while protecting the nation's aquatic resources. These permits are issued under authority of Section 404(e) of the CWA and Section 10 of the Rivers and Harbors Act of 1899. Ultimately, the USACE has discretionary authority on all aquatic resource permitting issues and could require Project-specific conditions and/or additional permitting requirements if permitting became necessary. If, at any time it is determined that the Project requires a CWA Section 404 permit, NWP-57 (2021) would likely be the most applicable for minor impacts to jurisdictional features.

4.2 Section 10 of the Rivers and Harbors Act

There are no Section 10 navigable waters crossed by the Project.

4.3 Additional Relevant Permits and Authorizations

4.3.1 Section 401 Water Quality Certification

4.3.1.1 Utah

CWA Section 401 Water Quality Certification (WQC) in Utah is administered by the Utah Department of Environmental Quality. CWA 401 WQC is required for federal actions and is intended to ensure that those actions do not contribute to the violation of applicable state water quality regulations. If a Section 404 permit is required for the Project, a WQC is also required from the appropriate state. The EPA provides discretion to states and Tribes to waive individual WQC requirements for activities permitted under all or a selection of NWPs.

Though not anticipated, should a NWP be required, the Utah Department of Environmental Quality has "certified subject to conditions" WQC for activities permitted under NWP-57 with conditions specific to the state.

4.3.1.2 Nevada

CWA Section 401 WQC in Nevada is administered by the NDEP. NDEP did not certify the 2021 NWP-57, and several other NWPs; therefore, an individual WQC would likely be required if a CWA Section 404 permit was needed.

4.3.2 National Pollution Discharge Elimination System Permitting

4.3.2.1 Utah

The UPDES is the Utah counterpart to the National Pollutant Discharge Elimination System (NPDES) to satisfy CWA Section 402 pollution discharge control requirements, including stormwater, in waters of the U.S. and waters of the state. Coverage under the Utah Construction General Permit for Discharges (UPDES Permit No. UTRC00000) is required for and covers all types of construction activities that

disturb one or more acres of non-Indian Country land in Utah. A notice of intent to discharge stormwater and a stormwater pollution prevention plan (SWPPP) are required to obtain coverage under UTRC00000. The EPA administers the NPDES directly on Indian Country lands under the 2017 Federal Construction General Permit. In addition, coverage under the Construction Dewatering and Hydrostatic Test Permit (UTG070000) would be required to meet UPDES requirements if dewatering activities related to the Project are necessary. The Construction Contractor(s) will be responsible for submitting all required information and documents and obtaining approved permits under the UPDES and NPDES.

4.3.2.2 Nevada

The Nevada Stormwater General Permit (NVR050000) is administered by NDEP and covers the same requirements as stated above in Utah.

4.3.3 Stream Alteration Permit

4.3.3.1 Utah

Section 73-3-29 of the Utah Administrative Code requires any person, governmental agency, or other organization wishing to alter the bed or banks of a natural stream to obtain written authorization from the State Engineer before beginning work. The State of Utah asserts jurisdiction over "blue-line" streams on topographic maps, those that have a common name used on maps, and/or streams supporting xeri-riparian vegetation communities. Authorization from the State Engineer is required 1) if an activity will fall within two times the width of the active channel up to a maximum of 30 feet from the water's edge; 2) if the activity will take place within continuous riparian areas adjacent to the stream; or 3) if the activity will take place in areas of the floodplain that have been observed conducting or storing water during high-flow events or that show physical evidence of conducting or storing water during high flows.

For impacts authorized by the Utah's Stream Alteration Permit, the permit satisfies Section 404 permitting requirements under Programmatic General Permit 40. This permit applies to all waters of the U.S. that are considered to be part of the surface tributary system and over which the State Engineer has regulatory authority under the Stream Alteration Program. Limits of the state of Utah's jurisdiction are defined in Utah Administrative Code R655-13, Stream Alteration, as summarized above. This permit does not apply to springs, lakes, fens, pool and riffle areas, wetlands, and some ephemeral waterbodies.

4.3.3.2 Nevada

In Nevada, a Working in Waterways Temporary Permit is required for operation of equipment in a water of the State. These permits are generally applicable to impacts that are temporary in nature, lasting between 48 hours and 6 months. Application for these permits often works in tandem with CWA Section 404 permitting, similar to the process in Utah.

5 SELECTIVE MEASURES AND BEST MANAGEMENT PRACTICES

This section describes practices intended to protect water resources through appropriate avoidance and minimization of impacts to water resources. The protection measures described below include ACEPMs and BMPs.

5.1 ACEPMs of the Project

To minimize the potential impacts from the Project, a suite of ACEPMs have been developed to address potential conflicts with environmental resources and to minimize the potential for conflicts with public health and safety. These ACEPMs can be found in Section 9 of the POD. As applicable, measures which

are required to be applied on a site-specific basis to delineate limits of disturbance and protect water resources, will be implemented by the Company/Construction Contractor(s) and will be included and shown on POD Appendix A: Detailed Route Alignment Figures.

5.2 Best Management Practices

The following BMPs will be utilized as additional measures acceptable to the BLM and Forest Service for further protection of water resources. These measures will be used by the Construction Contractor(s) for construction and by the Company for operation and maintenance to select from and to implement for surface disturbance that is necessary to occur within applicable distances of waters and/or wetland and riparian areas in Utah and Nevada.

BMPs are practices used to minimize erosion, sedimentation, and the negative effects stormwater can have on a site. BMPs will be used by the Construction Contractor(s) in addition to the design features, agency applied selective measures, and other specific stipulations and methods described above, as well as the requirements of the SWPPP. This section outlines the BMPs that will be used during the construction of the Project to control erosion and prevent or minimize the transport of sediment-laden stormwater off construction areas. These measures are detailed in the Project SWPPP. BMPs for construction activities were selected from various BMP manuals and recent, similar Projects in the region (BLM 2016a, 2016b).

The Construction Contractor(s) will implement BMPs that are appropriate for the specific construction site conditions during construction to control erosion and prevent or minimize the transport of sediment-laden stormwater off construction sites. In addition to the BMPs in the list, the Construction Contractor(s) may propose other BMPs to the BLM and Forest Service but only after consultation with and concurrence by the BLM may the Construction Contractor(s) implement BMPs not listed below. The CIC will be responsible for providing BMP concurrence documentation to the Construction Contractor(s) and the Construction Contractor(s) will be responsible for depicting the BMPs in amended SWPPP mapping.

5.2.1 Wet and Dry Stream Crossing Methods

Streams and ephemeral drainages that will need to be crossed by Project vehicles and equipment during construction are identified in POD Appendix A: Detailed Route Alignment Figures. When implemented, the crossing methods detailed in this section will help protect water quality by minimizing stream channel disturbance, erosion, and sedimentation due to Project activities. If the chosen crossing method is not adequately preventing and/or minimizing sedimentation and erosion, the BLM or the CIC may require additional sediment controls when circumstances warrant. The Construction Contractor(s) will monitor the pattern, profile, and dimension of streams crossed by the Project throughout construction for signs of bed and/or bank degradation. The types of crossing methods are discussed in detail in Sections 5.2.2, 5.2.3, and 5.2.4 below.

Table 1-2 in Section 1 of the POD outlines federal, state, and local permits required for the Project, including permits and/or authorizations required for crossings or working within streams and drainages (i.e., stream alteration permits, working in waterways permits). These permits may impose additional stipulations, monitoring requirements, or impact thresholds not included in the POD and must be complied by the Company and/or Construction Contractor(s) in conjunction with the other specific stipulations and methods described in the POD.

5.2.2 Vehicular Crossings of Wet and Dry Streams/Washes

The Construction Contractor(s) will cross wet and dry streams with vehicles and equipment at existing bridges or established crossings whenever possible to avoid constructing a new crossing location. In cases where it is impractical and highly disruptive to the environment to construct temporary crossings, such as over very large ravines, gullies, washes, and watercourses, vehicles will not attempt to cross. In the case of installing the wires, the conductor will be strung across these resources by hand or by another method and construction equipment will be routed around.

If a stream is identified that was not included in Attachment A: Stream Crossing Table and POD Appendix A: Detailed Route Alignment Figures, the Construction Contractor(s) will be responsible to document and incorporate the stream(s) into the Project through the variance request process as identified in Appendix B6: Environmental Compliance Inspection Plan. The Construction Contractor(s) will also be responsible to assign an appropriate crossing type(s) to each previously unidentified stream crossing.

When it is not practical to cross streams and drainages at existing bridges or established crossings, the Construction Contractor(s) will implement the crossing methods described below as appropriate for the drainage conditions. The limits of disturbance for any stream crossings will be 50 feet wide and 150 feet long.

- **Avoidance.** Equipment and vehicles will cross streams at existing bridges or established crossings whenever possible to avoid a new stream crossing location. The number of stream crossings will be limited to the minimal number necessary to minimize sedimentation and compaction.

- **Type 1 – Graded crossing.** Generally, smaller crossings may require grading to accommodate vehicle passage. Graded crossings will be accomplished by excavating a ramp on either side of the drainage to allow vehicles to cross. Vehicle access ramps will be graded so soil is pushed away from the drainage rather than toward it. Topsoil will be salvaged and kept separate from grade spoils. It will be placed above the high-water mark and outside of floodplains, or a minimum of 20 feet from stream banks, whichever is greater. As needed, straw bale barriers or silt fences will be used around the stockpiles and along the stream banks for erosion control. Neither grading nor blading will be used to facilitate a stream crossing carrying a discernible flow of water.

  – A graded crossing will only be conducted where a resource does not exhibit a Defined Bed and Bank (DBB). If a resource does exhibit a DBB, a variance request will be required to construct a Type 1 crossing and the appropriate permit (see Section 4.3.3) will be obtained prior to work commencing.

  – Refer to Figures 1 and 2 in Attachment B: Defined Bed and Bank Example Figures for comparison photographs depicting drainages with and without a DBB and Appendix C9: Reclamation, Revegetation and Monitoring Plan for postconstruction reclamation of graded crossings.

- **Type 2 – Rock armor crossing.** This graded crossing may be used in dry and wet streams using standard Company crossing methods, which will be subject to approval by state and federal agencies if jurisdiction is ascertained by either a federal and/or state agency. Rock armor may be used in flowing streams or where there is the potential for intense, sudden rainfall or other seasonal conditions that could potentially occur, as long as the high-flow conveyance is maintained during construction and allows for vehicle crossing without affecting water quality. When using rock armor, clean rock will be installed 4 to 8 inches deep as required to construct a

stable travel route. Rock armor crossings should be installed with a discernable low point in the center of the crossing so that water flows over and through the center of the crossing and not the edges. Rock armor crossings should also generally be installed so that the upstream end of the crossing is at grade with the streambed. Rock armor will be arranged to leave preconstruction hydrology intact, including maintenance of a low-flow channel. Rock armor crossings will be used if a DBB is present. A variance request will not be required for constructing a Type 2 crossing on a channel with no DBB. Refer to Figure 1 in Attachment C: Typical Stream Crossing Figures for a typical drawing of this crossing type.

  - Culverts, if required, will be installed according to the Company's culvert installation standards and would follow fish passage guidelines as described by Evans and Johnston (1980).

- **Type 3 – Prefabricated equipment pad crossing.** Prefabricated equipment pads will be used for temporary crossings on saturated ground or in low-flow streams with shallow banks. Prefabricated equipment pads disperse the weight of vehicles and equipment, thereby protecting the streambed from erosion. Prefabricated equipment pads are not appropriate for use in high-flow streams or in fast or deep water. If prefabricated equipment pads are used in a stream with a discernible flow, attempts will be made to span the water. If spanning is not feasible, the area will be periodically monitored for signs of erosion. Refer to Figures 2 and 3 in Attachment C: Typical Stream Crossing Figures for typical drawings of this crossing type.

- **Type 4 – Temporary bridge crossing.** Temporary bridges may be used, as appropriate, for drainages, as well as for flowing streams where the crossing cannot be postponed. Temporary bridges will be constructed per the Company's standards. In most cases, some preparation to the tops of banks will be necessary to properly seat the bridge. Bridge approaches will be constructed of clean granular material, prefabricated equipment pads, or other suitable material to avoid cutting the banks wherever feasible. If grading of banks occurs, topsoil will be removed and appropriately segregated and stockpiled. The bridge will be placed completely across the stream and will span the high water channel and as much wetland vegetation as practical. Prefabricated equipment pads will be placed over any saturated portion of the wetland that is not spanned by the bridge. Refer to Figure 4 in Attachment C: Typical Stream Crossing Figures for a typical drawing of this crossing type.

Flow of sediment into a stream will be prevented by installing water bars on the travel route at or near the top of the bank (or other slope break) to redirect road runoff away from the stream. If necessary, downslope protection will be increased by extending properly installed and maintained silt fence from the down-gradient end of the water bar.

Table 2 provides vehicular stream crossing methods and construction details for dry and wet crossing conditions. For the purpose of this plan, streams have been divided into two categories: streams with dry crossing conditions and streams with wet crossing conditions.

Reclamation of construction related crossings is included in POD Appendix C9: Reclamation, Revegetation, and Monitoring Plan.

Table 2. Vehicular Stream Crossing Methods and Construction Details

Stream Condition	Suggested Vehicular Crossing Method
Stream – dry crossing condition	Use existing bridges or established crossing where possible. If no existing crossing is present, establish a graded crossing or install rock armor in the channel. Graded crossings will not be used in streams with a discernible amount of flow.
Stream – wet crossing condition	Use existing bridges or established crossing where possible. If crossing is unavoidable, use rock armor, a temporary bridge, culverts, or prefabricated equipment pads. Span the entirety of the stream bed and banks where possible. Prefabricated equipment pads are not recommended for streams with high flow. If bank or bed degradation occurs due to Project activities, the CIC will work with the Construction Contractor(s) to develop a solution, which may require installation of rock armor, silt fence, straw bale dike, or erosion control matting.

Note: This table is intended to provide general guidance and suggestions. The Company/Construction Contractor(s), the CIC, and the BLM will work together to determine the appropriate measures for site-specific treatments and alternative approaches if needed. It is intended to provide flexibility and workable options for the Company/Construction Contractor(s) to meet the goals of this Plan and comply with permit requirements.

5.2.3 Wetland and Playa Crossing Methods

These crossing methods have been developed based on numerous factors, including slope, hydrological regime, presence or absence of bank, erodibility of substrate, soil surface disturbance, and disturbance of wetland plant communities. It is the responsibility of the Construction Contractor(s) to ensure that any wetland or playa crossing complies with applicable law, regulation, policy, and permit requirements prior to conducting the work.

If a wetland or playa is identified that was not included in Attachment A: Stream Crossing Table and POD Appendix A: Detailed Route Alignment Figures, the Construction Contractor(s) will be responsible to document and incorporate the wetland(s) or playa(s) into the Project through the variance request process as identified in Appendix B6: Environmental Compliance Inspection Plan. The Construction Contractor(s) will also be responsible to assign an appropriate crossing type(s) to each previously unidentified wetland crossing.

5.2.4 Vehicular Wetland Crossings

The Construction Contractor(s) will limit the crossings of wetlands and playas to vehicular crossings along access roads as described below:

- **Avoidance and routes in proximity to wetlands and playas.** Equipment and vehicles will avoid crossing wetlands and playas to the greatest extent possible by driving around them on an approved POD access road or using an existing crossing if one exists nearby. If a wetland or playa will be avoided but a travel route will be bladed within 20 feet of the wetland or playa edge, a silt fence will be installed along the travel route on the resource side unless the wetland or playa is upgradient. If a wetland or playa is upgradient and the travel route is within 20 feet of the wetland or playa boundary, flagging or construction fencing will be installed to establish a barrier to avoid wetlands.

- **Wetland and playa crossing.** If the wetland or playa cannot be avoided, vehicles and equipment will cross the wetland or playa while implementing the following other specific stipulations and methods required in the ROD:

In addition, if wetland soils are disturbed or potentially compacted, the soil will be temporarily stored either on construction matting or in upland areas close to the wetland boundaries and will be used to reclaim back to preconstruction contours, to the extent practicable. Silt fencing will be installed around tower sites and stockpiles where necessary to minimize the potential for sediment discharge from excavated spoil into adjacent, undisturbed wetlands. Stockpiles will be located only in disturbance areas, and appropriate sediment control features installed as identified by the SWPPP to minimize the potential for sediment discharge. Table 3 provides suggested vehicular wetland crossing methods and construction details. For the purpose of this Plan, wetlands have been divided into two categories: wetlands with dry crossing conditions and wetlands with wet crossing conditions.

Table 3. Vehicular Wetland and Playa Crossing Methods and Construction Details

Wetland/Playa Condition	Suggested Vehicular Crossing Method
Wetland/Playa – dry crossing condition	Drive around wetland on an approved POD access road, if possible. If crossing is unavoidable, restrict traffic corridor to 20 feet wide and minimize traffic to only the equipment necessary to do the work.
Wetland/Playa – wet crossing condition	If crossing is unavoidable, use prefabricated equipment pads (or equivalent protection practices/materials) over saturated areas, restrict traffic corridor to 20 feet wide, and minimize traffic to only the equipment necessary to do the work. The CIC also may require a silt fence or straw bale dike if the potential for erosion exists.

Note: This table is intended to provide general guidance and suggestions. The Company/Construction Contractor(s), CIC, BLM, and Forest Service will work together to determine the appropriate measures for site-specific treatments and alternative approaches if needed. It is intended to provide flexibility and workable options for the Company/Construction Contractor(s) to meet the goals of this Plan and comply with permit requirements.

Also see Sections 5.2.5 and 5.2.6 below for additional other specific stipulations and methods for wetlands.

5.2.5 Spill Prevention

To prevent potential spills or discharges from entering and affecting streams and wetlands, the Construction Contractor(s) will implement all ACEPMS detailed in Section 9 of the POD (as applicable) and follow specific stipulations and methods detailed in Project specific Spill Prevention, Control, and Countermeasure Management Plan(s).

5.2.6 Erosion and Sedimentation

To limit erosion and sedimentation from affecting streams and wetlands, Construction Contractor(s) (for construction) and the Company (for operation and maintenance) will implement all ACEPMS detailed in Section 9 of the POD (as applicable) and follow specific stipulations and methods detailed in Project specific SWPPP(s).

5.2.7 Storage of Soil or Organic Debris Near Streams

Any soil or other organic debris piled by bulldozers and grading equipment near stream banks during construction will be stored at distances in accordance with the surface-disturbance setbacks from riparian areas prescribed by state through Project specific Design Features and appropriately redistributed and stabilized to prevent sedimentation during rainfall events. The Construction Contractor(s) also will adhere to any additional soil storage measures as required by applicable Project permits, such as applicable state construction general permits, stream alteration permits, and CWA permits (if required).

5.2.8 Stream Obstruction and Flash Flood Hazard

The placement of transmission towers in the channel of a stream, drainage, playa lake, or flash flood area will be avoided to the extent possible. If placement in these areas is unavoidable, the towers will be engineered to withstand the force of flood flows and will be constructed according to all applicable permits. Where placement of a transmission tower or road is unavoidable in a stream channel, armoring for pole foundations, permanent diversion structures, and/or culverts sufficient to carry the stream's preconstruction conveyance capacity at the site will be constructed. Riprap or other erosion protection materials will be sufficient in size and placed in such a manner as to withstand peak flows comparable to a 100-year flood.

5.2.9 Protection of Wells and Springs

All applicable laws and regulations will be followed in respect to the protection of drinking water sources. Wells and springs in known blasting zones will be identified prior to construction by the Construction Contractor(s) and protected using measures found in Appendix C14: Blasting Plan Methodology. Additionally, all ACEPMs will be implemented to protect the function and quality of wells and springs.

For additional measures pertaining to the protection of wells and springs, refer to Appendix C11: Spill Prevention, Control and Countermeasures (SPCC) Plan and Appendix C12: Hazardous Materials Management Plan.

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Attachment A. Stream Crossing Table

Road Type	Road Unique ID	Stream Type	Stream Crossing ID	Stream Crossing Impact Length (feet)	Stream Impact Type	Stream Crossing Type	Latitude (Deg)	Longitude (Deg)	BLM Field Office/ National Forest
TO BE UPDATED									

Road Type	Road Unique ID	Stream Type	Stream Crossing ID	Stream Crossing Impact Length (feet)	Stream Impact Type	Stream Crossing Type	Latitude (Deg)	Longitude (Deg)	BLM Field Office/ National Forest

Attachment B. Defined Bed and Bank Example Figures

Figure 1. Example drainage with a defined bed and bank.

Figure 2. Example drainage without a defined bed and bank.

Attachment C. Typical Stream Crossing Figures

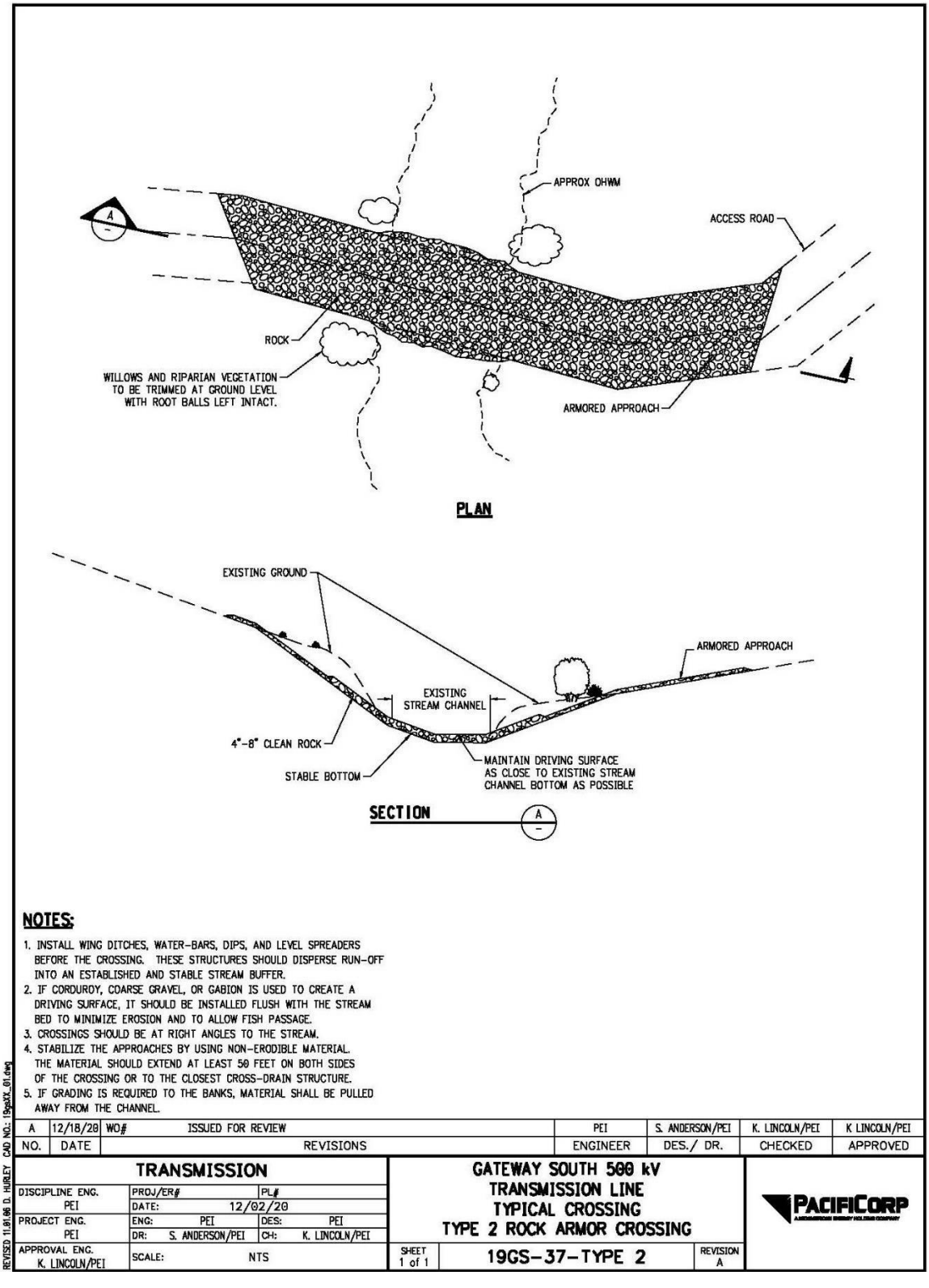

Figure 1. Typical Type 2 rock armor crossing.

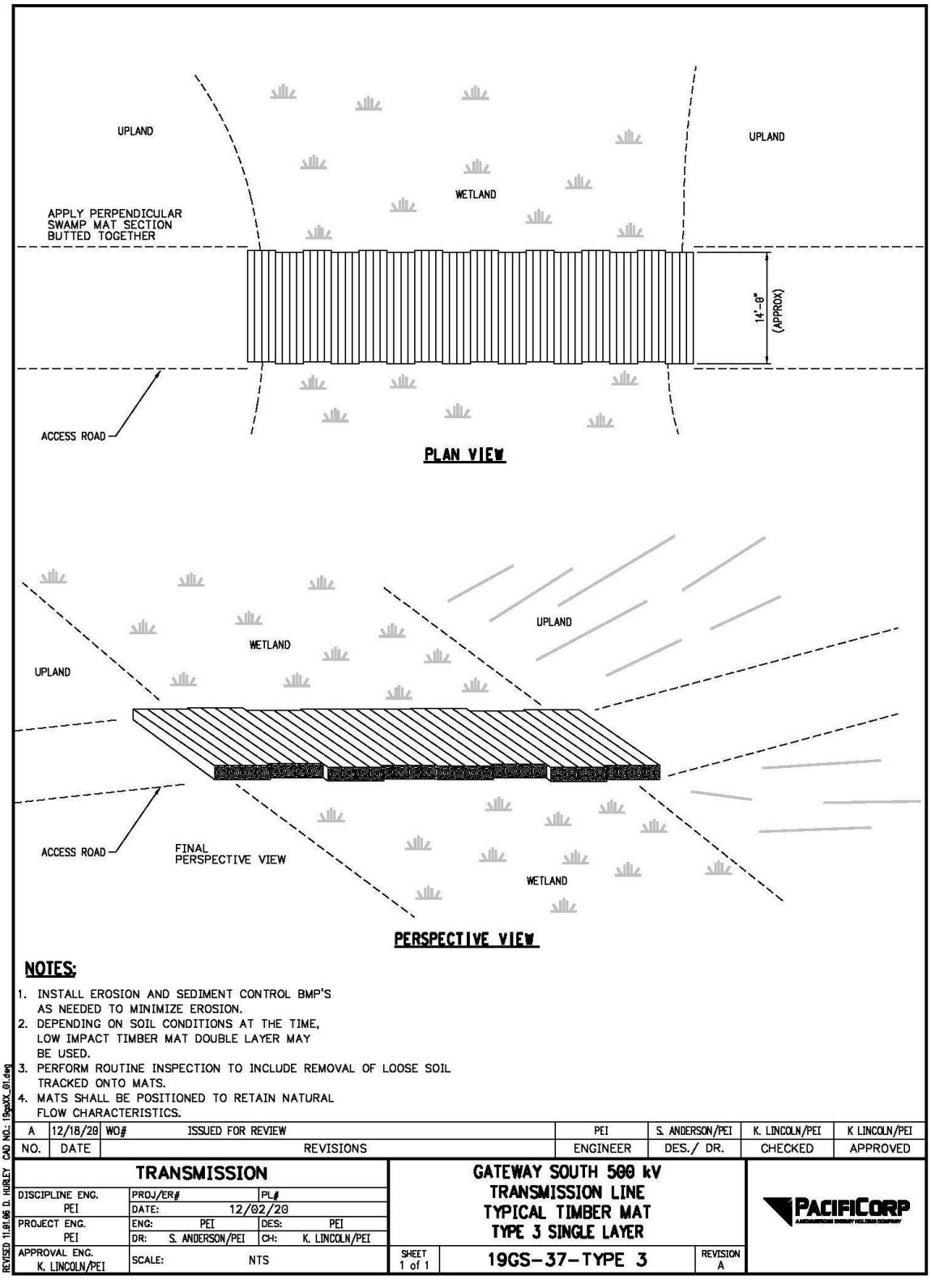

Figure 2. Typical timber mat Type 3 single layer.

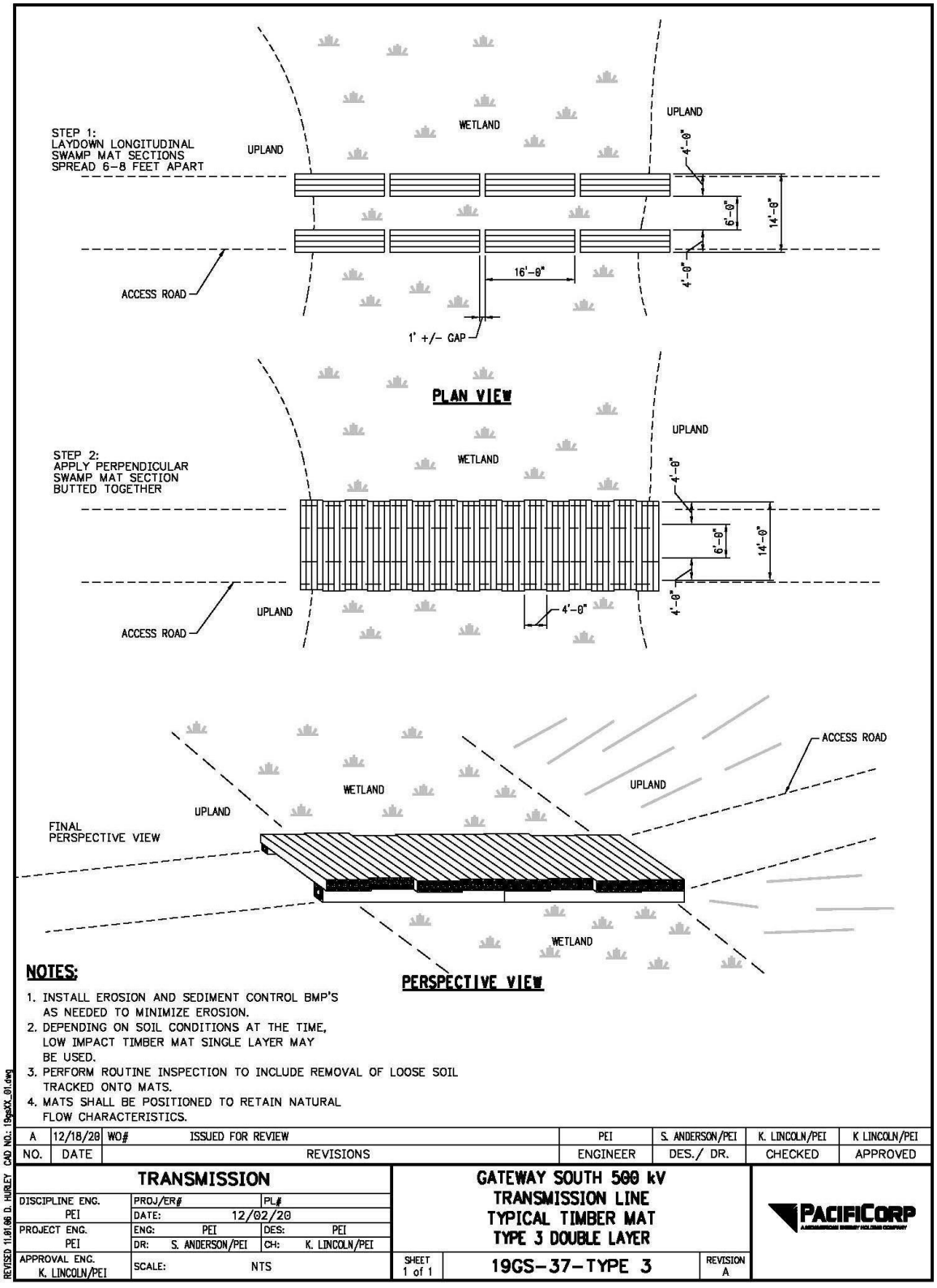

Figure 3. Typical timber mat Type 3 double layer.

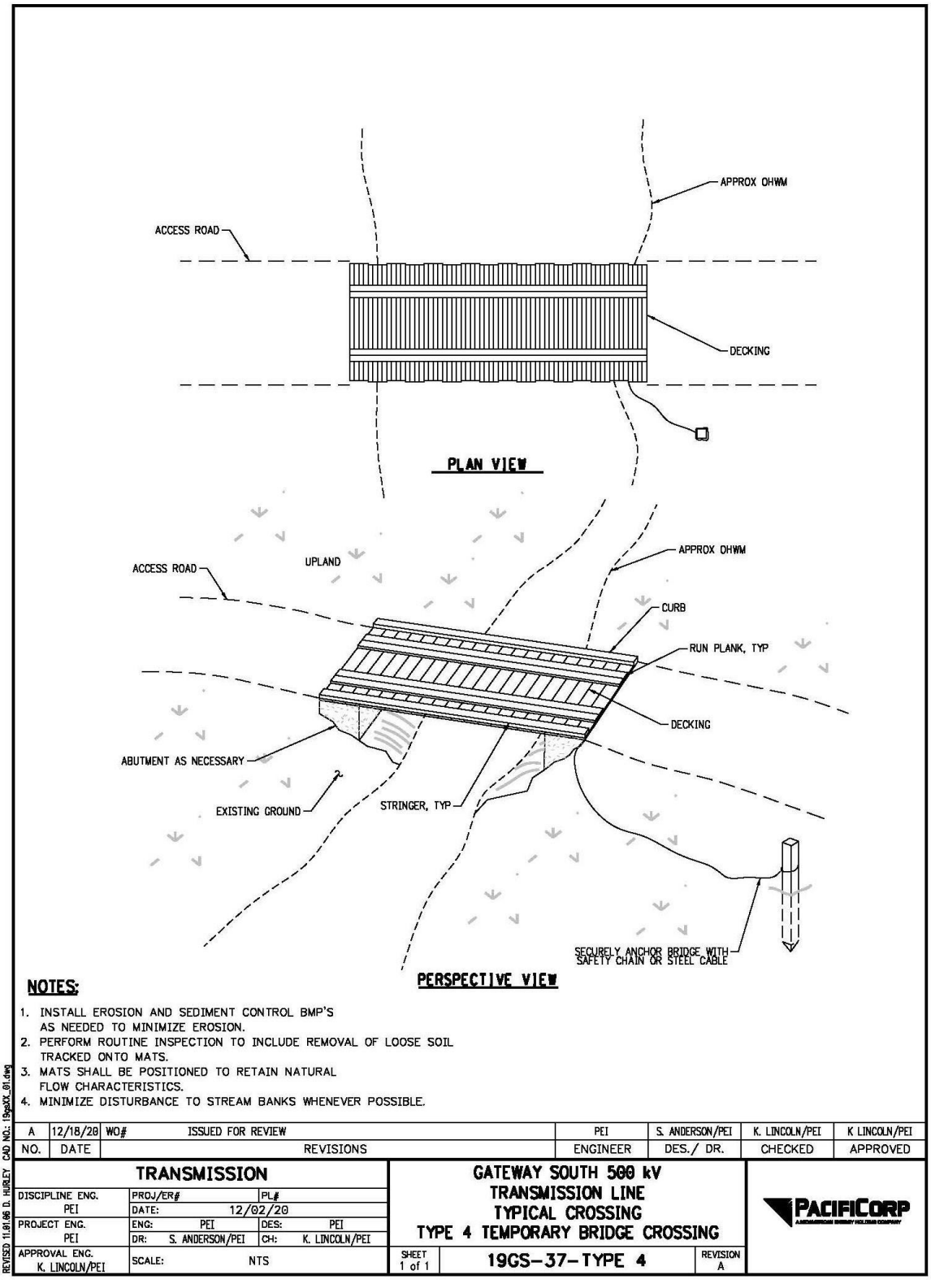

Figure 4. Typical Type 4 temporary bridge crossing.

Appendix C4. Vegetation Management Plan, Bureau of Land Management– and U.S. Forest Service–Administered Lands - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C4. Vegetation Management Plan, Bureau of Land Management– and U.S. Forest Service–Administered Lands

Prepared by:

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July 2023

CONTENTS

Attachments

Figures

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Abbreviations

ANSI	American National Standards Institute
APM	Accident Prevention Manual
BLM	Bureau of Land Management
Company	TransCanyon, LLC
EEI	Edison Electric Institute
EIS	environmental impact statement
FERC	Federal Energy Regulatory Commission
Forest Service	U.S. Department of Agriculture Forest Service
IM	Instruction Memorandum
ISA	International Society of Arboriculture
IVM	integrated vegetation management
kV	kilovolt
MVCD	Minimum Vegetation Clearance Distance
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NTP	notice to proceed
OSHA	Occupational Safety and Health Administration
PAR	Pesticide Application Record
Plan	Vegetation Management Plan
POD	plan of development
Project	Cross-Tie 500-kV Transmission Project
PUP	Pesticide Use Plan
PVM	PacifiCorp Vegetation Management
ROD	record of decision
ROW	right-of-way
SUP	Special Use Permit
WECC	Western Electricity Coordinating Council

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500 megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Vegetation Management Plan (Plan) was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (Forest Service) records of decision and the BLM right-of-way (ROW) grant and Forest Service special use permit (SUP) before issuance of the notices to proceed and commencement of construction.

The Plan is intended for implementation by the Construction Contractor(s) on BLM administered lands and Forest Service National Forest System land during construction and by the Company during operation and maintenance to assure the Company, the BLM and Forest Service that the Project will be compliant with Companywide vegetative management requirements and standards and specific BLM and Forest Service requirements. On private and state lands, the Construction Contractor(s), during construction, and the Company, during operation and maintenance, will implement Attachment A: PacifiCorp Vegetation Management Protocols.

Attachment A: PacifiCorp Vegetation Management Protocols is a document that applies to all existing PacifiCorp transmission and distribution lines as well as to all new PacifiCorp projects. As PacifiCorp has partnered with the Company for the Project, the Company is adopting these protocols for the Project. Therefore, this document cannot be revised specifically for the Project, and will apply to private and state lands.

1.1 Purpose

Trees growing into or near power lines can create safety and service reliability risks, and PacifiCorp's *Transmission and Distribution Vegetation Management Program Standard Operating Procedures* (Attachment A: PacifiCorp Vegetation Management Protocols) seeks to minimize such risks, primarily by pruning trees, scientifically based arboricultural practice of removing tree parts, or removing trees which could grow into power lines.

The risks of unchecked vegetation growth are well known. Close growing branches can provide access for children and others to high-voltage lines, exposing them to the potential danger of serious injury or death due to electric contact. Branches touching power lines can spark and start fires and cause interruptions in electric supply. Trees whipped by winds or weighed down by rain or snow can interrupt power, which disrupts businesses, homes, and compromises critical community infrastructure, such as hospitals and emergency services. Three major electric grid failures, including the catastrophic blackout on August 14, 2003, were initiated by tree-caused outages on transmission lines (Cieslewicz and Novembri 2004). For these reasons and others, the National Electrical Safety Code (NESC) (American National Standards Institute [ANSI] 2016). Section 2l8-A-l, states:

> Trees which may damage ungrounded supply conductors should be pruned or removed. Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage and sagging of conductors at elevated temperatures are among the factors considered in determining clearance specifications.

Particularly in the case of transmission lines, the Company favors the removal of tall-growing trees in favor of low-growing species that will never interfere with the high-voltage lines. In considering the interests of property owners and other land use objectives, however, it is not always possible to remove conflicting trees. Thus, tall-growing trees that cannot be removed must be pruned to keep power lines clear. To this end, the Company uses modern, arboriculturally-sound pruning practices.

The Company's vegetation management program is modeled on the industry's best practices, including systematic maintenance, scientifically based pruning, tree removal, tree replacement, cover type conversion, herbicide use, and the use of specialized tools and equipment. The Company is progressive in trying innovative methods, products, and equipment to improve safety and productivity. These standard operating procedures cover the vegetation management program for both distribution and transmission facilities. These procedures also include program descriptions, specifications, and protocols for customer relations. In addition to providing direction for the Company's professional foresters, these standard operating procedures are binding on all contractors performing vegetation management on the Company's system.

1.2 Regulatory Compliance

The goal of the Company is to provide its customers with a reliable supply of electricity while maintaining the overall integrity of the regional electrical grid. The Company's obligation to maintain reliable operation of the electrical system is directed through compliance with industry standard codes and practices. The design, operation, and maintenance of the Project meets or exceeds applicable criteria and requirements outlined by the Federal Energy Regulatory Commission (FERC), the Western Electricity Coordinating Council (WECC), the NESC, and the U.S. Department of Labor Occupational Safety and Health Standards for the safety and protection of landowners and their property and the general public. The NESC governs the design and operation of high-voltage electric utility systems.

In 2005, Congress passed the Energy Policy Act of 2005, which provided a regulatory basis for the implementation of specific incentives (and penalties) for maintaining reliable service, among other issues. As a result of the passage of the Energy Policy Act of 2005, FERC selected the North American Electric Reliability Corporation (NERC) to act as the enforcement agency for compliance with electric utility reliability and operating standards, among other issues. The Company is required to be in compliance with the various reliability standards promulgated through the implementation of NERC policies and procedures. Additionally, the Company is governed by the WECC standards that will be additional or more stringent than those currently required by NERC.

The Project will become critical infrastructure for the Company, as well as the electrical grid in the western United States. Limiting the duration of unplanned outages and planning for the use of live-line maintenance techniques to minimize the requirement for any outage is an important part of the design, construction, and operation and maintenance requirements for this Project.

1.2.1 Instruction Memorandum UT-2021-004

BLM Instruction Memorandum (IM) UT-2021-004, *Routine Operations and Maintenance to Reduce Fire Risk on Utility Rights-of-Way*, is intended to establish policy regarding routine operation and maintenance activities on utility rights-of-way (ROWs) to reduce the risk of wildfire (Attachment B: Bureau of Land Management Instruction Memorandum UT-2021-004). As Nevada does not have active, comparable IM, this would apply to both states. In recent years, the number and scope of wildfires across the West has increased and the destructive trend emphasizes the need for effective vegetation management and facilities maintenance to reduce the risk of wildfire with electrical transmission. ROW holders must

implement vegetation management, to the extent practicable, to prevent and suppress wildfires within or near their ROWs, and comply with project-specific terms, conditions, and stipulations.

The BLM through implementation of this IM, should encourage ROW holders to conduct routine operation and maintenance activities for their infrastructure and facilities on BLM-administered lands. ROW holders are responsible for ensuring their operation and maintenance activities comply with all applicable state and federal laws, to the extent practicable. If the ROW holder determines that operation and maintenance activities, in terms of vegetation management, is necessary to prevent or suppress wildfire, then the BLM field offices should not require the ROW holder to obtain any additional notice to proceed (NTP) or other form of prior approval before conducting the work. Preceding NTP or other form of prior approval should not be interpreted to apply to actions that have already been authorized. The BLM field offices should request that any ROW holder conducting operation and maintenance work to prevent wildfire consult with the appropriate BLM field office, the Utah Division of Wildlife Resources, and Nevada Department of Wildlife to ensure that the activities take into consideration wildlife and greater sage-grouse (*Centrocercus urophasianus*) seasonal restrictions as well as big game migration corridors. A vegetative sale contract may need to be prepared after work has been completed.

This IM builds upon Secretary Order 3372, Reducing Wildfire Risks on Department of the Interior Land, and Executive Order 13855, Promoting Active Management of America's Forests, Rangelands, and Other Federal Lands to Improve Conditions and Reduce Wildfire Risk. The Washington Office IM 2018-070 emphasizes that routine vegetation maintenance is the responsibility of the electrical utility facility owners, and to the extent feasible, the BLM will address vegetation management issues without the need for additional authorizations and processes.

1.2.2 Transmission Rights-of-Way Widths

ROW clearing will conform to the width indicated on the easement determined in the Project final EIS and records of decisions RODs. Additional limb or tree removal adjacent to the ROW may be required on the Project, where there may or may not be an easement, ROW grant, or SUP allowing encroaching vegetation to be cleared. The POD includes a table of all major federal, state, and local permits and approvals required for the Project—incorporating the necessary ROW, easements, and SUP, and is further detailed below in Section 4. Ground disturbance will be minimized in the Project ROW, and ROW clearances are further discussed in Section 5.6.

1.2.3 Access

POD Appendix B3: Traffic and Transportation Management Plan addresses regulatory compliance, traffic management practices, levels of ROW access, and measures to help reduce impacts related to transportation and the construction of temporary and long-term access for the Project.

Ground travel will be the primary means of transportation supporting Project operation and maintenance. All Project-related vehicles will obey jurisdictional traffic speed regulations and the posted speed limit. On roads where speed limits are not posted, the speed limit will be 15 miles per hour, unless otherwise directed by the appropriate federal land management agency. Helicopter-assisted could be used as deemed necessary and approved by the BLM or Forest Service Authorized Officer(s) or their designated representative(s) and in coordination with the Company.

All Construction Contractor(s) will attend an environmental training program (POD Appendix B5: Environmental and Safety Training Plan). Through this program, field personnel will be instructed to use only approved access roads, drive within the delineated road limits of disturbance, and obey jurisdictional and posted speed limits to minimize potential impacts on environmental resources. Construction Contractor(s) will maintain a communications network that consists of one or both of the following

devices: two-way radios and cellular and/or satellite phones. This will allow for coordination of equipment traffic along existing access roads so that public safety, traffic impacts, and resource impacts are minimized (Section 3.1).

2 RESPONSIBILITIES

This section provides a high-level overview of roles and responsibilities related to vegetation management on BLM-administered and National Forest System lands. For detailed roles and responsibilities related to fire response and suppression, see Section 4.4 and POD Appendix C8: Fire Precaution and Response Plan.

2.1 Company

The Company will act as holder of all grants/easements and is the holder of the BLM ROW grant and the Forest Service SUP. As such, the Company is ultimately accountable for adherence to the terms and conditions of the BLM ROW grant, the Forest Service SUP, the POD, and environmental permit requirements specified in the terms of its agreements and will ensure that environmental impacts do not exceed those analyzed in the final EIS and approved in the POD. The Company will also be responsible for compliance with this Plan and its implementation during operation and maintenance activities.

All vegetation management work is authorized by a Company arborist and/or supervisor. The Company employs a staff of professional foresters to manage its vegetation program. All foresters on the Company's system are to be International Society of Arboriculture (ISA) Certified Arborists and Certified Utility Specialists. The Company also encourages ISA Board Certified Master Arborist credentials among its staff foresters.

2.1.1 Construction Contractor(s)

The Construction Contractor(s) will be contractually bound by the Company to comply with all laws, regulations, and permit requirements, including all Project-specific permitting documents (including the POD, the final EIS, the ROD, and the BLM ROW grant, Forest Service SUP, and landowner agreements throughout all phases of the Project).

The Construction Contractor(s) will be responsible for compliance with this Plan and its implementation during construction activities. The Construction Contractor(s) will be required to provide qualified personnel to implement this Plan and Attachment A: PacifiCorp Vegetation Management Protocols and to perform vegetation management services for the Company. Front-line managers for the Construction Contractor(s) must be ISA Certified Arborists and ISA Certified Utility Specialists. These front-line managers are often called supervisors or general foremen in the field and are referred to as "supervisors" in this Plan.

For additional certifications related to safety for all personnel, including forest technicians, see Section 3 below.

2.2 Bureau of Land Management and U.S. Forest Service

The BLM and Forest Service's primary objectives are to ensure compliance with the analysis and mitigation in the final EIS and the ROW grant and SUP during the construction, operation, and maintenance phases of the Project.

3 SAFETY AND EMERGENCY RESPONSE

Federal and state Occupational Safety and Health Administration (OSHA) requirements governing vegetation management activities shall be followed at all times. ANSI Z133 (ANSI 2017) and OSHA 1910.269 are examples of these requirements. Activities shall be conducted in a manner that minimizes both tree crew and public safety risks. Crews shall have functional radio or telephone communication on the job site at all times.

The Company's electrical system will continue in normal operations during routine vegetation management work. Contract employees shall be aware of the potential dangers and qualified to work in the vicinity of energized facilities. Contract personnel performing line clearance work shall hold one of the following designations as defined by ANSI Z133 (ANSI 2017):

- Qualified Line Clearance Arborist: an individual who, through related training and on the job experience, is familiar with the equipment and hazards in line clearance and has demonstrated the ability to perform the special techniques involved and who is working on behalf of the system owner/operator (ANSI 2017).

- Qualified Line Clearance Arborist Trainee: an individual undergoing line-clearance training under the direct supervision of a qualified line-clearance arborist. In the course of such training, the trainee becomes familiar with the equipment and hazards in line clearance and demonstrates ability in the performance of the special techniques involved (ANSI 2017).

Safety will be evaluated by the supervisor; however, if a forester observes unreasonable safety risks or obvious safety violations (such as someone failing to wear personal protective equipment), the forester will relate their concerns to the crew and inform that crew's supervisor so that they will remedy the situation. All crew members will know the safety requirements applicable to their positions and take responsibility for following those requirements.

3.1 Communication and Coordination

Communication should be open and interactive. It should include everyone involved: management, planners, vegetation management crews, property owners, public land managers, appropriate governmental officials, members of organizations dedicated to related causes and others.

Communication within the vegetation management department needs to be clear and concise to ensure everyone involved understands the desired outcome. Decision making authority should be delegated throughout the organization, as appropriate.

Public land managers, property owners, regulators, and civic organizations have interests in utility vegetation management activities. Educating potentially affected parties about the need for, benefits of and science behind vegetation management can clarify expectations. Members of the vegetation management team, including crewmembers, should know the facts about the program, be prepared to answer basic questions and refer more complex issues through to their supervisor.

Communication should begin well in advance of work and involve listening to and understanding the concerns of public land managers, property owners, regulators, and civic organizations. Work on federal agency–administered lands can involve administrative procedures that take months of advance work, including navigating through permit processes and the concerns of specialists who have responsibility for stewardship over public lands. It is not always clear to lands specialists how vegetation management helps balance their (the land manager's) responsibilities against the public's need for a safe and reliable electric grid. A memorandum of understanding among Edison Electric Institute (EEI) member utilities and federal

land management agencies (Attachment C: Memorandum of Understanding on Vegetation Management for Powerline Rights-of-Way) established a framework for developing cooperative ROWs integrated vegetation management (IVM) practices among EEI shareholder-owned electric companies, federal land management agencies, and the environmental protection agencies.

3.2 Transmission Safety Procedures

The safety procedures listed below will be followed by all tree crews on Company transmission facilities.

3.2.1 Pre-Work Communication with Dispatch

Operative communication capability is mandatory at all times on transmission ROWs. Communication with the Dispatch department is critical for tree crew safety. Every morning before starting transmission work, tree crews will call the dispatcher from the ROW by radio or telephone and provide the following information to comply with Power Delivery System Operations System Policy SOP-152:

- Name of crew leader
- Name of company
- Contact information (radio or cell number)
- Line section ("Clover to Robinson Summit")
- Location of work (structure number, address, or both)
- How long the crew will be working at that location
- Radio or cellular telephone number of the crew
- Name of supervisor and their cellular telephone number

If radio or telephone contact cannot be made with the dispatcher from the ROW, nonemergency work will not be performed at that site. The crew will relocate in order to work where they can communicate with the dispatcher. Satellite phones could be necessary in remote locations to provide the required communication.

3.2.2 Post-Work Communication with Dispatch

Each afternoon after completing transmission work for the day, tree crews will call the dispatcher and provide the following information:

- Name of crew foreman
- Name of company
- Contact information (radio or cell number)
- Line section ("Clover to Robinson Summit")
- Location where work was performed
- Notice that crew members and equipment are off the ROW or in the clear

3.2.3 Safe Working Procedure

Do not take chances. If a tree cannot be felled or pruned safely, do not proceed. If a tree or limb falls into the conductors, stop work immediately and follow the emergency procedures**.** Minimum approach distances will not be violated. Remember that transmission conductors can sag considerably at midspan during hot weather, ice buildup, and heavy loads. Trees that have safe clearance in the morning may not have safe clearance in the afternoon. Conditions could require a hold or clearance. Clearances on some transmission lines can take weeks or months to schedule. Conditions will require a hold or a clearance. See Section 3.3.4 for hold and clearance instructions.

3.3 Emergency Actions

An "emergency" is a major storm, event, or situation, as declared by the Company, where vegetation has either caused or presents a clear, imminent threat of causing an outage, fire, or public electric contact. An "emergency action" is defined as unplanned pruning or removal of hazard trees or vegetation on or abutting a transmission line or ROW that have contacted or present an imminent danger of contacting the transmission line facility and must be removed to avoid the disruption of electric service or to eliminate an immediate fire or safety hazard.

If a tree or tree part accidentally falls onto an energized line, work shall stop immediately. If emergency services are required, 911 should be called. The incident should also be reported to the applicable Rocky Mountain Power – North Control Center (801.220.6930).

Per Section 512 Vegetation Management, Facility Inspection, and Operation and Maintenance Relating to Electric Transmission and Distribution Facility Rights of Way of the Consolidated Appropriations Act of 2018 (43 United States Code 1772):

> "(e) EMERGENCY CONDITIONS.—If vegetation or hazard trees have contacted or present an imminent danger of contacting an electric transmission or distribution line from within or adjacent to an electric transmission or distribution right-of-way, the owner or operator of the electric transmission or distribution lines—
>
> "(1) may prune or remove the vegetation or hazard tree—
>
> "(A) to avoid the disruption of electric service; and
>
> "(B) to eliminate immediate fire and safety hazards; and
>
> "(2) shall notify the appropriate local agent of the Secretary concerned not later than 1 day after the date of the response to emergency conditions."

3.3.1 Emergency Response and Coordination

Emergency work is done under the authority of the district operations managers in cooperation with the Company foresters. Tree crews and forest technicians assigned to storms should work under the direction of circuit captains assigned by operations. Tree crews should report their progress at least daily to both the circuit captain and their supervisor. The supervisor should report crew progress to the appropriate forester. All storm work must be conducted as if the line is energized. If the line cannot be worked safely under the assumption it is energized, it must be grounded in accordance with Section 3.3.4.

Tree work will be required from time to time on emergency storm restoration of downed and/or damaged transmission lines. The primary concern in emergency storm restoration of the transmission line is to revive the transmission network, get the line back into operation as soon as possible, and to restore

electricity supply to the affected customers. Crews shall be properly equipped to perform the work. The Company will be the sole determiner of equipment appropriateness.

Contractor should provide a designated contact person for each region. Requests for crews should be routed through that contact. Contractor shall be responsible for dispatching crews whenever emergency restoration services are needed.

Crew rosters shall be provided by the contractor and maintained during restoration efforts. At a minimum, rosters shall include crew member names and position, location, contact information, equipment, and identification number.

3.3.2 Emergency Access

On federally administered lands, all areas designated as temporary in the Project's POD that were constructed in support of the Project will, upon Project completion, be removed or reclaimed to the extent feasible. Accordingly, during an emergency situation, construction of access may be required to reach that portion of the Project needing emergency maintenance, and this access development could involve significant earthwork on federal agency–administered lands to gain access to the Project ROW and necessary structures.

In constructing access to an area that requires emergency maintenance activities, the Company will take every reasonable action to minimize environmental impacts without affecting the ability to immediately respond to the incident and without endangering employee safety. The Company will use the least environmentally disturbing methods reasonable along the most efficient but safe route, using existing access to the extent feasible. This will include assessing the ability to use previous access routes that were reclaimed following construction of the Project. The Company will adhere to the same constraints identified for maintenance and major maintenance activities to minimize impacts to resources, when possible.

As provided in the POD, surface disturbance associated with required emergency maintenance activities will be temporary and reclaimed to the standards identified in the POD. The BLM or Forest Service Authorized Officer(s) may elect to have a representative present during emergency maintenance access development and/or to conduct a post-event site visit to evaluate the Company's response, assess impacts, and to determine any additional remedial measures that the BLM or Forest Service will require.

3.3.3 Fire Protection

Federal, state, and local fire protection laws and regulations shall be followed, and the contractor performing the work must obtain necessary work permits. Crews shall have all firefighting tools and equipment required by the responsible governmental agency. Contractors shall also adhere to fire restrictions concerning work hours, fire watch following work and other policies of the pertinent jurisdiction. Contractors with crews working in fire-prone rural areas are expected to provide basic fire prevention and suppression training to their crews. Details on fire protection are in POD Appendix C8: Fire Precaution and Response Plan.

3.3.4 Holds and Clearances

Minimum approach distances for qualified line clearance arborists specified in ANSI Z133 (ANSI 2017) or the Company's *Accident Prevention Manual-Utah, Idaho and Southwest Wyoming* (APM) (Joint APM Safety Committee 2017) should not be compromised. If there is a difference in the distances required in the two standards, the greater of the two is operative. If work requires violating minimum approach distances, or if a crew leader determines conditions to be unsafe, crew leaders should contact their

supervisor before proceeding. The supervisor should determine whether or not a Hold[1] or Clearance[2] is necessary at that work site. If, in the judgment of the crew leader, an energized line cannot be worked safely, the supervisor should arrange a Clearance.

The Company does not issue Holds or Clearances to tree crews. Rather, if warranted, the Company will issue Holds or Clearances to a journeyman lineman, who shall be present at the site during work. Holds require at least 48 hours' notice to the Control Center, vegetation management and the district operations manager. Customers who will be affected by planned power outages associated with Clearances must also receive 48 hours' notice, except during emergency situations such as storm restoration work. In some cases, a Clearance on transmission lines must be requested weeks or even months in advance. Customers do not need to be notified if a Clearances is necessary to safely work trees from lines in an emergency.

Deenergized lines, whether due to a planned outage, wind or storm damage, or some other reason, must be worked as if they are energized. If an energized line cannot be worked safely, it must be grounded. Linemen must set the grounds and be present during work and give approval prior to tree crew members breaching minimum approach distances to ensure safety (Table 1). Unless a lineman has given approval to tree crew members to breach minimum approach distances, minimum approach distances much be maintained by qualified line-clearance arborists and line-clearance arborist trainees at all times.

3.3.5 Slash and Spoils

In general, the Company does not dispose of slash or debris resulting from storm damage. Trees that fall during storms would do so regardless of whether or not the lines are present. It should not be the Company's responsibility to clear the debris simply because the tree or trees from which it originated damaged the Company facilities on the way down. However, if an outage is preventable, slash may be cleaned-up and removed from a property at the forester's discretion. If there is a conflict between the federal land management agency and the Company's standard procedures for vegetation management, the federal land management agency or landowner requirements will be followed, as detailed in POD Appendix B7: Operation and Maintenance Plan. Vegetation management must reduce hazardous fuels to improve or maintain wildfire mitigation conditions and must avoid adverse effects on historic properties found in the ROW. Where feasible, felled merchantable timber, if present and felled, shall be transported and stacked at the most convenient publicly accessible area. This area must not impede traffic or present a danger to persons, property, or present a potential fire hazard.

Debris from storm work is left on-site and not chipped or cleaned up, so chippers should not be taken into the field during restoration work. Notification is not required during emergency restoration work, but crews should conduct themselves respectfully.

[1] A "Hold" is defined as deactivating automatic line reclosers on a circuit. A Hold is intended to protect Company facilities and should not be considered a safety measure.

[2] A "Clearance" is defined as deenergizing a line for safety purposes. A Clearance, as defined here and capitalized as a defined term, should not be confused with the use of the word clearance in describing vegetation management work designed to maintain clearances between vegetation and conductors.

Table 1. Minimum Approach Distances for Qualified Line-Clearance Arborists and Line-Clearance Arborist Trainees

Voltage (kV) (phase-to-phase)	Minimum Approach Distance Sea Level to 5,000 feet	Minimum Approach Distance 5,000 to 10,000 feet	Minimum Approach Distance 10,000 to 14,000 feet	Source
0.050–0.300	Avoid Contact	Avoid Contact	Avoid Contact	APM/Z133
0.301–0.750	1.50	1.59	1.59	APM/Z133
0.751–15.0	2.50	2.59	2.84	APM/Z133
15.1–46.0	3.50	3.59	3.67	APM/Z133
46.1–72.5	3.50	4.00	4.34	Z133
72.5–121.0	3.92	4.50	4.84	Z133
121.1–145.0	4.50	5.17	5.59	Z133
145.1–169.0	5.09	5.75	6.25	Z133
169.1–242.0	7.00	7.92	8.59	Z133
242.1–362.0	11.75	13.50	14.59	Z133
362.1–420.0	14.67	16.75	18.17	Z133
420.1–550.0	17.50	20.00	21.67	Z133
550.1–800.0	23.75	27.17	29.42	Z133

Note: The Project is a 500-kV line only but could include smaller voltage distribution lines. APM is the Company's Accident Prevention Manual: Utah, Idaho and Southwest Wyoming (Joint APM Safety Committee 2017). Z133 is the American National Standard for Tree Care Operations (ANSI 2017).

3.3.5.1 Slash Disposal

Tree stems and tree limbs greater than 6 inches in diameter should be left on-site. "Slash" is brush and tree limbs or shrubs less than 6 inches in diameter that is removed during tree operations. At the end of the workday or upon leaving a particular worksite, all slash must be brought to ground and no severed limbs are to be left in the tree canopy (hangers). Work locations shall be left in a safe and orderly condition.

- Developed Areas. In developed areas, slash should be chipped and removed from the site unless an agreement has been reached with the property owner to leave it. Slash may be left temporarily, provided the crew has notified the property owner or tenant, and arrangements made to clean it up to the property owner's reasonable satisfaction within 2 business days.

- Rural Areas. In rural, off-road areas, slash can be disposed of on-site. All slash should be lopped into maximum lengths of 3 feet and scattered in piles no more than 18 to 24 inches high. All branches will be severed from the main trunks of cut trees as close to the main stem as is feasible. Limbs greater than 6 inches in diameter and brush should be scattered separately. Slash debris should be scattered at the sides of ROWs and outside the wire zone of transmission ROWs, unless specified otherwise by the regional forester. Slash left in the ROW will not be placed in such a way or location that it will alter drainage, cause erosion, or impact sensitive cultural,

paleontological, or biological resources. Slash and debris shall not limit or block access to the ROW, hamper installation of erosion control best management practices, or create fire risk. If brush is chipped, it may be broadcast on-site, provided that resulting chip piles are no higher than 18 to 24 inches. Debris should not limit or block access to the ROW or create fire risk.

- On National Forest System lands, all slash will be treated, chipped and hauled and disposed of at an approved location, or chipped onsite and spread to a depth of 1 to 3 inches. Bole wood would be chipped and broadcast to a depth of 4 inches or less or hauled to an approved facility. Bole wood too large to be chipped would be placed near roads where the public could remove with a fuel wood permit.

4 ENVIRONMENT

Environmental respect is a Company core value, requiring strict adherence to all environmental rules and regulations. This Plan and Attachment A: PacifiCorp Vegetation Management Protocols are intended for implementation by the Construction Contractor(s) during construction to assure the Company that the Project will be compliant with the overall Companywide vegetative management requirements and standards and specific federal land management agency requirements.

This Plan also identifies Companywide standards that are intended for use during operation and maintenance. POD Appendix B7: Operation and Maintenance Plan includes additional Company requirements for vegetative management during that phase of the Project. In the event the requirements of this Plan conflict with the requirements of POD Appendix B7: Operation and Maintenance Plan, the Company will comply with the vegetative management requirements included in POD Appendix B7: Operation and Maintenance Plan.

Vegetation management direction has been included in other applicable POD sections and appendices regarding any relevant federal agency vegetation management standards as well as the process to resolve any conflicts that arise between Company standards (Attachment A: PacifiCorp Vegetation Management Protocols) and the requirements of the ROD and federal land management agency standards. Specifically, a number of POD sections and appendices include information related to vegetation management, as described below:

- Front Matter. This section includes a table of all major federal, state, and local permits and approvals required for the Project—incorporating the necessary ROW, easements, and SUP.

- Appendix B2: Flagging, Fencing, and Signage Plan. This appendix includes a description of flagging and traffic control activities for the Project—including those that would be used during vegetation management.

- Appendix B4: Project Construction Plan. This appendix includes text stating that prior to the start of construction, a BLM and/or Forest Service forester may assess the forest products to be removed by new construction through a forest or woodland managed by the BLM or Forest Service.

- Appendix B6: Environmental Compliance Management Plan. This appendix includes Company and agency communication and notification protocols for the Project.

- Appendix C1: Biological Resources Conservation Plan. This appendix includes Project-specific migratory bird, plant, and animal species protection measures, as well as applicable design features.

- Appendix C2: Weed Management Plan. This appendix includes Project-specific survey requirements, measures for preventing the introduction and spread of noxious weeds, and applicable stipulations.

- Appendix C3: Water Resources Protection Plan. This appendix includes Project-specific details regarding herbicide use and spray buffers, vegetation removal requirements adjacent to streams and wetlands, and other stipulations associated with water resources.

- Appendix C8: Fire Precaution and Response Plan. This appendix includes all information regarding fire prevention and suppression equipment as well as fire protection and associated coordination efforts.

- Appendix C9: Reclamation, Revegetation and Monitoring Plan. This appendix includes Project-specific site preparation activities, measures for vegetation removal, guidance on native seed mixes, and other reclamation standards and criteria.

- Appendix C11: Spill Prevention, Control, and Countermeasure Management Plan. This appendix includes protocols for reporting spills to the appropriate emergency contacts.

- Appendix C12: Hazardous Materials Management Plan. This appendix includes information regarding hazardous materials coordination and associated notification protocols.

5 VEGETATION MANAGEMENT FOR TRANSMISSION

Transmission facilities are overhead lines energized to greater than 34.5 kV. Facility voltage and type determine the amount of transmission clearance needed. Table 2 in Section 5.6 provides specification clearances for transmission line ROWs.

Transmission work will comply with the IVM ANSI A300 standard (ANSI 2013) and the ISA's *Best Management Practices: Integrated Vegetation Management for Electric Utility Rights-of-Way* (Miller 2014; Smiley et al. 2011).

Transmission work on lines at or above 200 kV and those designated by the WECC as an element of the major transfer path in the bulk electric system, including those that extend greater than 1 mile or 1.609 kilometers beyond the fenced area of the generating station switchyard to the point of interconnection with a Company facility or do not have a clear line of sight from the generating station switchyard fence to the point of interconnection with a Company facility will also conform to the NERC Reliability Standard *FAC-003-4 Transmission Vegetation Management* (NERC 2016) along with other sections of this Plan.

5.1 Work Objective

The objective of systematic transmission work is to improve the reliability of the Company's transmission system by preventing outages from vegetation located on transmission ROWs and minimizing outages from vegetation located adjacent to the ROW.

5.2 Philosophy

The Company's vegetation management philosophy for transmission lines is to utilize IVM best practices to conduct cover type conversion and to cultivate stable, low-growing plant communities comprised of plants that will never interfere with transmission lines in their lifetime.

Reliability and safety are most effectively protected through establishing and maintaining a ROW consistent with the wire-border zone concept. When the line is less than 50 feet off the ground, the wire-border zone will be cleared of all incompatible vegetation unless an easement fails to provide authority or there are legal impediments preventing the work.

5.3 Initial Clearing and Construction

Newly constructed transmission lines will be cleared to the specifications in POD Appendix B4: Project Construction Plan and POD Appendix B3: Traffic and Transportation Management Plan prior to being energized.

5.4 Inspection

Transmission lines falling under the auspices of FAC-003-4 will be inspected at least once a year by ground or air, depending on the interrelationship between vegetation growth rates and vegetation control methods. Inspections will bear in mind the movement of applicable line conductors under their rating and all rated electrical conditions.

Line patrolmen have the responsibility for inspecting transmission lines subject to FAC-003-4 and reporting conditions to the Company's Vegetation Management Department. In addition, each area forester will meet twice each year with line patrolmen with mutual geographic responsibilities to discuss vegetation conditions.

Line patrolmen encountering a tree that poses a threat of causing a transmission outage at any moment will follow the procedures in PacifiCorp Operating Procedure PCC-215, in order to comply with Requirement R4 of NERC Standard FAC-003-4. Line patrolmen will do the following:

- Immediately notify the grid operator by phone and describe the nature and extent of the threat
- Complete and process the Emergency Tree Action Form
- Communicate the vegetation conditions to vegetation management for urgent attention

Examples of tree conditions that pose a threat of causing a transmission outage at any moment include (but are not limited to) trees that violate or pose a risk within 72 hours of violating the NERC Minimum Vegetation Clearance Distance (MVCD), uprooted trees that are leaning toward the line and pose a risk of immediate failure, and trees with structural failures that may cause them to break in part or whole onto transmission facilities (Smiley et al. 2011).

5.4.1 Additional Inspection

Foresters will annually select lines among those over 200 kV and those designated by WECC as elements of the major transfer path in the bulk electric system for annual inspection. These inspections supplement rather than substitute for inspections conducted by line patrolmen. Foresters will assign representatives to complete these inspections.

Such inspections will identify trees that pose a threat of causing an outage at any moment and trees that will violate NERC MVCDs within the next year. Engineering records of maximum line movement under all rated electrical operating conditions will be used to ensure against encroachments of the following types:

- An encroachment into the MVCD, observed as it is occurring, without a sustained outage.
- An encroachment due to a fall-in from inside the ROW that could cause a sustained outage.

- An encroachment due to blowing together of applicable lines and vegetation located inside the ROW that could cause a sustained outage.
- An encroachment due to vegetation growth into the line MVCD that could cause a sustained outage.

Range finders to confirm the MVCD has not or is not about to be violated. Locations will be noted on an activity report and assigned to a tree crew for work, with the appropriate forester's approval.

If the inspections discover a tree that poses a high likelihood of causing an outage at any moment, forest techs will contact the appropriate forester within 3 hours. Foresters will immediately request the appropriate line patrolman to inspect the line according to the imminent threat procedure described in Section 3.3.

5.5 Work Plan

The IVM ANSI A300 standard (ANSI 2013) and the ISA IVM *Best Management Practices: Integrated Vegetation Management for Electric Utility Rights-of-Way* (Miller 2014) recommend against cycle-based transmission work thresholds. Rather, work will be scheduled depending on line voltage, line importance, vegetation conditions that violate the action thresholds shown in Table 2 below, location, predominant species' growth rates, threatened and endangered species, archaeological sites, topography, and other factors.

A comprehensive approach that exercises the full extent of legal rights is superior to incremental management in the long term because it reduces overall encroachments and ensures that future planned work is sufficient at all locations on the ROW. Removal is superior to pruning. Removal minimizes the possibility of conflicts between energized conductors and vegetation.

5.5.1 Annual Work Plan

The Company performs vegetation management work in accordance with annual work plans that detail the circuits and facilities to be managed during a calendar year. Plans will include the following:

- A list of facilities subject to scheduled work.
- If only a portion of a line is scheduled, the line segment will be identified (e.g., structure to structure).
- Dates when work is anticipated to start and end on each project (Gantt charts are recommended).
- A description of the type of control methods (cycle, herbicide, mowing, aerial, etc.).

5.5.1.1 Annual Work Plan Adjustments

The annual work plan will be adjusted during the year to account for changes in conditions that require a circuit, line segment, or project to be moved into or out of the work plan. Examples of reasons for adjustments include, but are not limited to, vegetation growth in excess of anticipated levels, vegetation inspection results, new construction projects, or removal of existing facilities. Adjustments to the annual work plan will be documented as they occur.

5.6 Clearances

5.6.1 Minimum Clearances Following Work

Minimum clearances from conductors to be achieved at the time of work are shown in Table 2. These distances will be increased, depending upon local conditions and the expected time frame crews will return for future vegetation management work. Local conditions will include appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, worker approach distance requirements, and other factors.

5.6.2 Minimum Vegetation Clearance Distance

NERC MVCDs are established in FAC-003-4 (NERC 2016) and represent radial distances from the lines inside of which trees will not encroach (see Table 2). Trees that violate MVCDs will be corrected within 24 hours of their identification following PacifiCorp SOP-PCC-215, *Transmission Grid Operations Operating Procedure.*

Table 2. Company Transmission Clearance Requirements (in feet)

	500 kV	345 kV	230 kV	161 kV	138 kV	115 kV	69 kV	45 kV
Maximum flash distances (MVCD)	8.5	5.3	5.0	3.4	2.9	2.4	1.4	Not Applicable
Action thresholds	18.5	15.5	15.0	13.5	13.0	12.5	10.5	5
Minimum clearances following work*	50	40	30	30	30	30	25	20

Source: Table 6.1 in Attachment A: PacifiCorp Vegetation Management Protocols.

Note: The Project is a 500-kV line only but could include smaller voltage distribution lines.
kV = kilovolt
The Minimum Vegetation Clearance Distance (MVCD) represents minimum clearances that will be maintained from conductors at all times, considering the effects of ambient temperature on conductor sag under maximum design loading and the effects of wind velocities on conductor sway. MVCDs apply across the Company's service territory regardless of elevation. Action thresholds indicate work will be scheduled within the next year; they are roughly MVCD + 10 feet, with the exception of the 46 kV, for which no MVCD exists.

5.6.3 Action Thresholds

The action thresholds in Table 2 provide roughly 10-foot buffers from NERC MVCDs. Trees identified within the action thresholds will be scheduled for work within 12 months.

5.6.4 Side Clearance in Transmission Rights-of-Way

Specification side clearances from the conductors are presented in Table 2. Consider the potential sway of conductors in foreseeable high winds, particularly mid span, where clearances will need to be increased at mid span to accommodate conductor sag and swing in high temperature and winds.

5.6.5 Structure Clearances

Trees and brush will be cleared within a 25-foot radius of transmission H-frame or metal structures, a 10-foot radius of single pole construction (i.e., associated Project distribution lines) and a 5-foot radius of guy anchors. Clearing activities will not damage poles, structures, guys, or anchors.

5.6.6 Guy Wires

Trees or branches 2 inches or more in diameter applying direct pressure to or threatening to fall on or through poles or guy wires will be removed or pruned.

5.7 Substations

Forest techs will provide a limited visual assessment on the vicinity around substations for trees that have a high probability of falling into the facility. They will conduct a basic assessment of those trees. If the basic assessment indicates that trees are likely to fail and strike a substation, the trees should be assigned to a tree crew for removal or mitigation. Limited visual and basic assessments are described in Smiley et al. (2011). Tree crew substation activity will be charged to a work order supplied by sub operations.

5.8 Integrated Vegetation Management

The purpose of vegetation management on utility ROWs is to establish sustainable plant communities that are compatible with the electric facilities. These communities are stable, low growing, compatible with conductors, foster diversity, and establish a sustainable supply of forage, escape, and nesting cover; movement corridors for wildlife; reduced fire risk; and more open access to the line (Yanner and Hutnik 2004). Establishing native vegetation will also reduce the invasion of noxious weeds into the corridor (Bonneville Power Administration 2000).

5.8.1 Integrated Vegetation Management Control Methods

Control methods are the processes used to achieve objectives. Many cases call for a combination of methods. There are a variety of controls from which to choose, including manual, mechanical, chemical, biological, and cultural options (Miller 2014). Ground disturbance will be minimized on all ROWs.

5.8.1.1 Manual Control Methods

Manual methods involve workers using hand-carried tools, including chainsaws, handsaws, pruning shears, and other devices to control incompatible vegetation. Manual techniques are selective and will be used where other techniques will not be appropriate, including urban or developed areas, environmentally sensitive locations (such as wetlands or places inhabited by sensitive species), in the vicinity of archaeological sites, and on steep terrain.

5.8.1.2 Mechanical Control Methods

Machines are used for mechanical control. They are efficient and cost effective, particularly for clearing dense vegetation during initial establishment or reclaiming neglected or overgrown ROWs. On the other hand, mechanical control methods will be non-selective and disturb sensitive sites, such as wetlands, archaeologically rich localities, or developed areas. At times, machines leave behind petroleum products, leaks, and spills from normal operation. Furthermore, heavy equipment could be risky to use on steep terrain due to instability.

5.8.1.3 Chemical Control Methods

Herbicides will be used according to directives on their labels and as per POD Appendix C2: Weed Management Plan. Applicators are not only required to comply with label instructions, but also all other laws and regulations pertaining to use (see Section 6.3.2).

5.8.1.3.1 Herbicides

Herbicides control plants by interfering with specific botanical biochemical pathways. There are a variety of herbicides, each of which behaves differently in the environment and in its effects on plants, depending on the formulation and characteristics of the active ingredient. While appropriate herbicide use reduces the need for future intervention, if misused, herbicides could cause unintended environmental harm due to drift, leaching, and volatilization.

5.8.1.4 Biological Control Methods

Biological control uses natural processes to control undesirable vegetation. For example, some plants, including certain grasses, release chemicals that prevent other plant species from growing around them. Known as allelopathy, this characteristic can serve as a type of biological control against incompatible species. Promoting wildlife populations is also a form of biological control. Birds, rodents, and other animals will encourage compatible plant communities by eating seeds or shoots of undesirable plants.

A biological control known as cover-type conversion provides a competitive advantage to short-growing, early successional plants, allowing them to thrive and eventually outcompete unwanted tree species for sunlight, essential elements, and water. Cultural methods also take advantage of seedbanks of native, compatible species lying dormant on-site. In the long run, cultural control is the most desirable method, where it is applicable.

The early successional plant community is relatively stable and tree resistant and reduces the amount of work, including herbicide application, with each successive treatment.

While it is a type of biological control, cover-type conversion employs a combination of manual, mechanical, herbicide, and cultural methods. For example, although encouraging allelopathic plants and increasing wildlife populations by improving habitat are types of biological controls, they are also forms of cultural control.

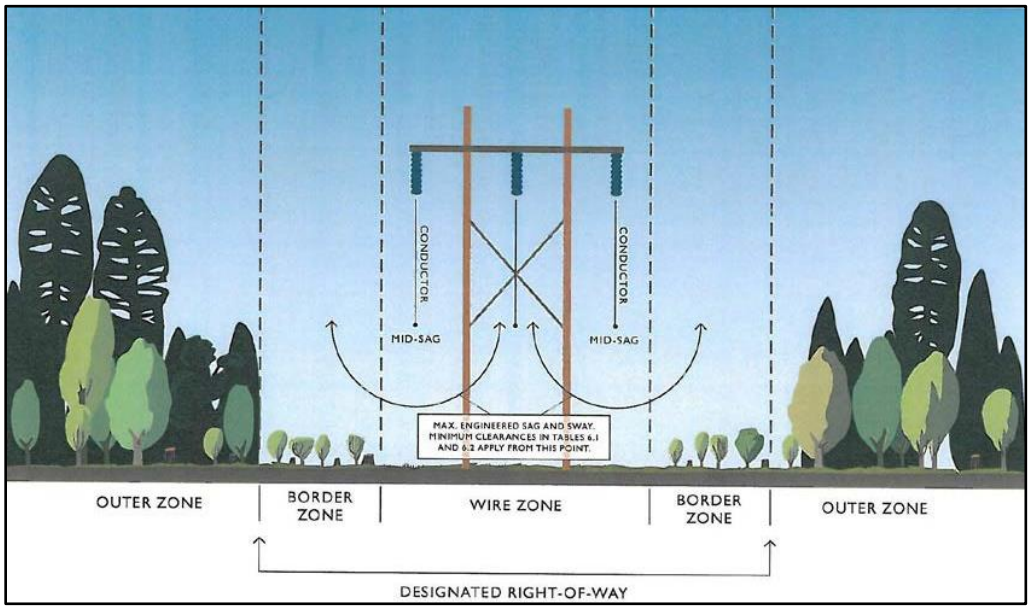
Tree-resistant communities are created in two stages. The first involves non-selectively clearing the ROW of undesirable trees using the best applicable control method or methods. The second develops a tree-resistant plant community using selective techniques, including herbicide applications and releasing the seedbank of native, compatible species for germination.

Cover-type conversion uses herbicides to remove incompatible, tall-growing trees and other vegetation from the ROW in order to establish a stable, low-growing plant community. The specific IVM technique selected for a particular site is based upon various conditions, which include terrain, accessibility, environmental considerations (wetlands, streams, etc.) cultural factors, worker and public health, economics, and other factors.

5.8.1.4.1 Wire-Border Zone

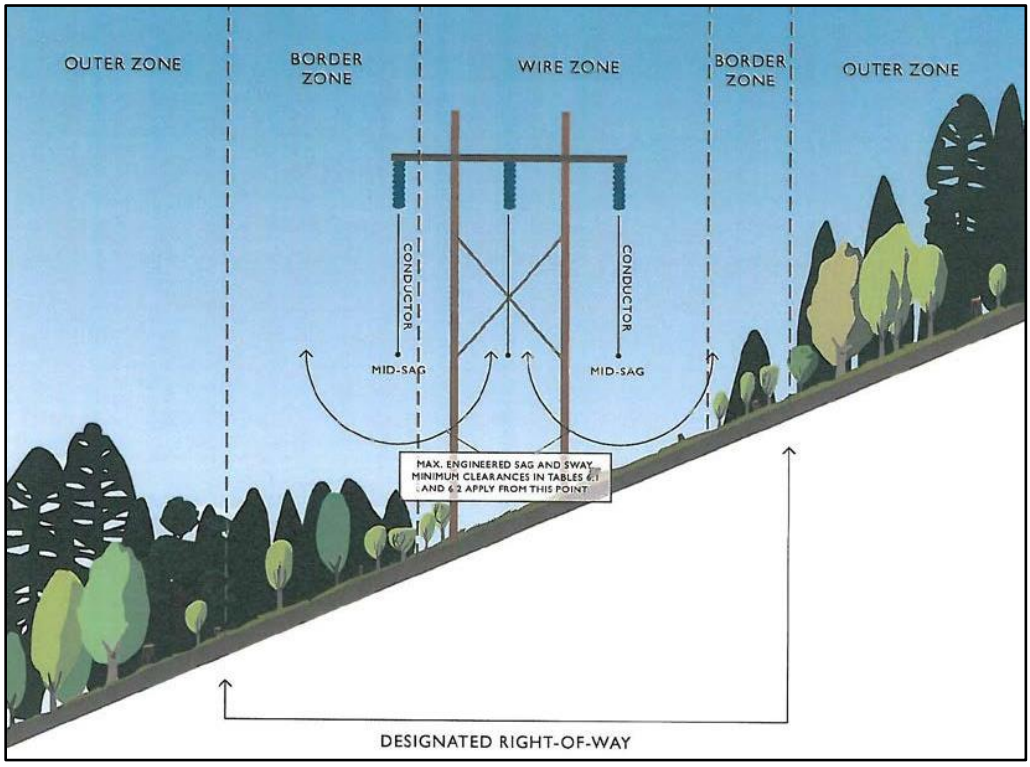
Over 60 years of research on transmission ROWs has demonstrated that IVM applied to creating distinct, compatible plant communities not only effectively manages vegetation on ROWs but also enhances wildlife habitat, at least in forested areas (Yanner and Hutnik 2004). The wire zone-border zone concept

was developed by W.C. Bramble and W.R. Byrnes (Bramble et al. 1991). Wire-Border Zones are illustrated in Figures 1 and 2.



Source: Yahner et al. 2001)

Figure 1. Bramble and Byrnes Wire Zone-Border Zone.



Source: Yahner et al. 2001

Figure 2. The border zone will be reduced or eliminated on upslopes, where wire sag and sway could bring it into contact with trees and can be extended on downslopes.

On flat terrain, the wire zone is the ROW portion directly under the wires and roughly 10 feet to the field side of the outside phases. The border zone ranges from 10 feet outside the outer phases to the ROW edge. The border zone will be reduced or eliminated on the upslopes, where wire sag and sway will preclude leaving trees of any type. It will be extended on downslopes.

Properly managed, wire-border zone linear corridors not only effectively protect electric facilities but also will become an asset for forest ecology and forest management (Bramble et al. 1991; Yanner and Hutnik 2004; Yanner et al. 2001).

5.8.1.4.1.1 Region A

Region A is the area where lines are less than 50 feet off the ground (Figure 3). The 50-foot height will be from maximum engineered sag midspan, with attention to side slope and the potential sway of conductors in high wind. The ROW in Region A will be cleared following the wire-border zone recommendations of Bramble and Byrnes (Bramble et al. 1991).

After clearing, the Region A wire zone will consist of grasses, legumes, herbs, ferns, and low-growing shrubs (under 5 feet at maturity). The border zone will consist of tall shrubs or short trees (up to 25 feet in height at maturity), grasses, and forbs. These cover types benefit the ROW by competing with and excluding undesirable plants.

5.8.1.4.1.2 Region B

Region B occurs where the lines are between 50 and 100 feet off the ground from maximum engineered sag (see Figure 3). In Region B, a border zone regime may be established throughout the ROW.

Note that many transmission structures are over 50 feet high. So, in many cases, a border zone community may be established and maintained near structures. Care will be taken to maintain access to the structure.

5.8.1.4.1.3 Region C

Region C is where the lines are 100 feet or more off the ground (see Figure 3). Tall-growing trees will be allowed in Region C provided they have at least 50 feet of clearance. Trees with less than 50 feet of clearance will be selectively removed.

5.8.1.5 Cultural Control Methods

Cultural methods modify habitat to discourage incompatible vegetation. Cultivated landscapes of compatible plants and agricultural crops are examples of cultural control.

5.9 Post-Work Assessment

Foresters will audit transmission work following the procedures outlined in Section 4.3 of Attachment A: PacifiCorp Vegetation Management Protocols. The audits will objectively assess quality, adherence to specifications, production, herbicide, and other matters. Moreover, audits will provide the tree crew leader with feedback on production, professionalism, equipment, safety, and crew efficiency. Results will be documented on a Tree Crew Audit Form. Following systematic work, the entire length of completed line will be inspected by the contractor to verify work complies with Company specifications.

5.10 Mitigation Measures

NERC Requirement R1.4 directs transmission line owners to develop mitigation measures to achieve sufficient clearances for protection of transmission facilities when it identifies locations on the ROW where the transmission owner is restricted from attaining Clearance 1.

Whenever the restriction is caused by a landowner, the refusal process in Section 8 of Attachment A: PacifiCorp Vegetation Management Protocols will be followed. If the refusal process has been completed without attaining Clearance 1 distances, such locations will be documented on the Contractor Work Release. These sites will be reported in writing to the appropriate line patrolmen within 30 days. The line patrolmen will report annually on the status of these sites. Moreover, foresters or their contract designee will inspect sites biannually.

5.11 High-Risk Trees

High-risk trees are structurally unsound and could strike a target (such as electric facilities) when they fail. Off-ROW high risk trees will be identified following Smiley et al. (2011), bearing prevailing winds and soil depth in mind. Trees on the uphill and windward sides of ROWs will receive particular scrutiny. High risk trees will be either removed or pruned to reduce the exposure. Work will be performed in a manner that neither damages trunks nor disturbs root systems of adjacent trees. Damaged trees will decline, decay, or die, threatening the conductors if they fall.

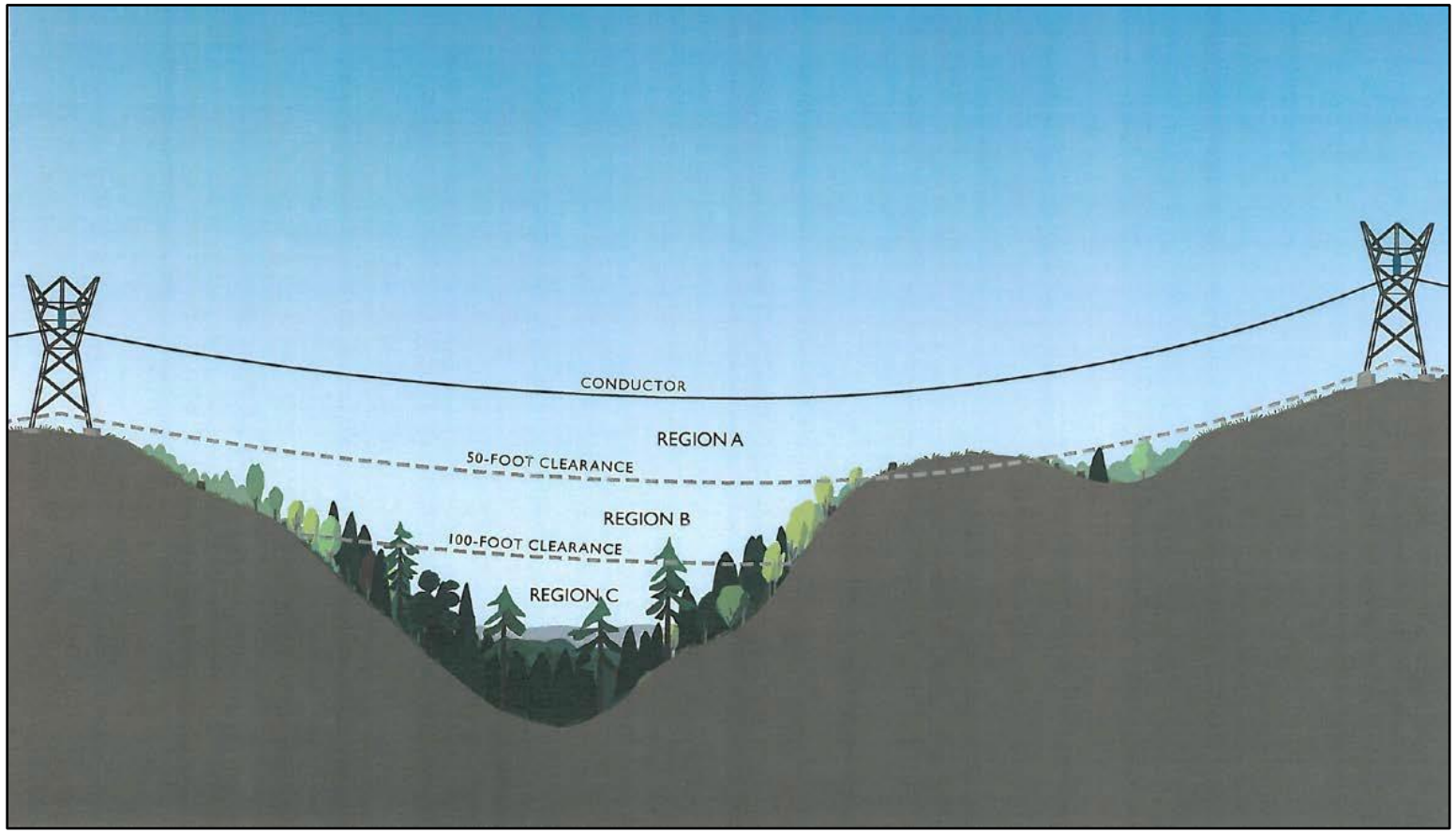
Federal and state agencies could request high-risk trees to be topped to create "wildlife trees." The Company will honor such requests provided the safety of tree workers or facilities are not compromised and the trees are topped below a height to ensure they will not contact Company facilities if they fall.

The Company manages multitudes of trees across its transmission system. In every mile of line, the Company potentially has hundreds or thousands of trees, any one of which could compromise public safety and electrical service reliability. It is impossible to completely secure an electrical system from that level of exposure. Nevertheless, the Company has a responsibility to make a reasonable effort to maintain vegetation to reduce risks to both the public and the power supply.

5.12 Vegetation Screens

Vegetation screens will be required by federal or local authorities in some locations at high-visibility areas such as major road crossings. Where these mandates exist, vegetation screens will consist of border zone communities and will be located near structures (where the line is unlikely to sag), if possible. If no border zone species are present, tall-growing trees will be left provided they have at least the minimum clearances shown in Table 2 following scheduled work.

Leaving tall-growing trees in transmission ROWs will be discouraged because they impede cover type conversion. So, trees will be removed (gradually over a number of years, if need be) rather than pruned to obtain proper clearances, if at all possible. Vegetation screens will be no more than 25 feet from frequented vantage points into the ROW. Areas where tall-growing species are retained as screens will be documented and monitored annually by line patrolmen. If remaining trees violate the work thresholds specified in Table 2, within 30 days, line patrolmen will report them to Vegetation Management for correction.



Drawing by Brad Gouch

Figure 3. Under clearance regions.

Region Definitions:

Region A: Where conductor to ground clearance is less than 50 feet (from maximum engineered sag and sway).

Region B: Where the conductor to ground clearance is 51–100 feet (from maximum engineered sag and sway).

Region C: Where the conductor to ground clearance is over 100 feet (from maximum engineered sag and sway).

Appropriate Region Plant Species:

Region A: Grasses, legumes, ferns, and low-growing shrubs (<5 feet at maturity).

Region B: Region A species as well as large shrubs and short-growing trees (< 25 feet at maturity).

Region C: All tree and shrub species.

5.13 Tree Removal

Tree removal is an important component of the Company's vegetation management program. Tree removal can reduce safety risks, improve access to facilities, clear lines of sight, and moderate future workloads. Tree conditions are site and tree specific.

Stumps will be cut to within 6 inches of the ground or as close to it as practical (for example, at the top wire of a barbed wire fence with wire that has become embedded in the trunk). Stumps of all deciduous trees, brush, and vines that are removed will be treated with an approved herbicide, where permitted. On National Forest Service system lands, all stumps will be removed or buried as approved by the Forest Service.

The Company prefers to remove the entire tree in the following situations:

- Transmission ROWs where the conductors are less than 50 feet off the ground, or between 50 and 100 feet off the ground, depending on the size of the tree.
- High-risk trees (dead, dying, clearly diseased, deformed, or unstable trees that have a high probability of falling and contacting transmission or distribution conductors). Note that every tree is potentially hazardous. With millions of trees under management, it is impossible to identify and correct every potentially hazardous tree. Nevertheless, the Company has a responsibility to maintain its system by making a reasonable effort to identify trees that are clearly hazardous and correct the problems they could cause in a timely manner.
- Fast-growing trees that could interfere with conductors or violate specific Utah or Nevada regulatory clearances before the next scheduled maintenance work (cycle-buster trees).
- Trees that will take no more than twice the time to remove than to prune during cycle work, with the exception of hazard or cycle-buster trees.
- Trees that take no more time to remove than to prune during interim and ticket work. High-risk trees excepted.
- Trees with tree houses not meeting the clearance to transmission conductors shown in Table 2.3 of Attachment A: PacifiCorp Vegetation Management Protocols.
- Volunteer trees less than 6 inches in diameter (measured at 4.5 feet above the ground, or diameter at breast height), which could eventually interfere with conductors.

5.13.1 Equipment Mowing

Mowing is often more cost effective than manual methods of tree removal and will be pursued wherever practical. Mowing will be limited to 15 feet on either side of wires within transmission ROWs.

5.14 Mechanical Trimmers

Mechanical trimmers will improve productivity in rural, densely vegetated areas.

5.14.1 Developed Areas

In developed areas, slash will be chipped and removed from the site unless an agreement has been reached with the property owner to leave it. Slash will be left temporarily, provided the crew has notified the property owner or tenant, and arrangements made to clean it up to the customer's reasonable satisfaction within 2 business days. Tree stems greater than 6 inches in diameter will be left on-site and work locations will be left in a safe and orderly condition.

5.14.2 Rural Areas

In rural areas, slash will be disposed of on-site whenever possible.

For off-road, wooded areas, brush will be lopped into 3-foot maximum lengths and scattered in piles no more than 18 to 24 inches high. Stems larger than 6 inches in diameter should be left on-site. They may be cut in firewood-sized lengths at the customer's request.

Limbs and slash will be piled separately. Limbs and slash will be disposed of the wire zone of transmission ROWs, unless specified otherwise by the forester. If brush is chipped, it will be broadcast on-site wherever possible. Resulting chip piles will be no higher than 18 to 24 inches. On National Forest System lands, all slash will be treated, chipped and hauled and disposed of at an approved location, or chipped onsite and spread to a depth of 1 to 3 inches. Debris piles will not limit or block access to the ROW or create a fire risk.

5.15 Storm Work

Storm work is done under the authority of the district operations managers. Tree crews and forest techs assigned to storms will work under the direction of circuit captains. Tree crews will report their progress at least daily to both the circuit captain and their supervisor. The supervisor will report crew progress to the appropriate forester.

All storm work will be conducted as if the line is energized. If the line cannot be worked safely under the assumption it is energized. In general, the Company does not dispose of slash or debris resulting from storm damage. Trees that fall during storms will do so regardless of whether or not power lines are present. It will not be the utility's responsibility to clear the debris simply because the tree or trees from which it originated damaged Company facilities on the way down. But if an outage is preventable, slash will be cleaned up and removed from a property at the forester's discretion.

5.16 Facility Inspection

While tree crew members are not facility inspectors, they can be helpful in identifying pronounced conditions, such as cracked poles, broken crossarms or insulators, loose guy wires, and other problems. Tree crew members will report the condition on the Maintenance Inspection Report Form.

5.16.1 Freelance Work

No one employed in the Company's vegetation management program will solicit or perform arboricultural consulting or tree work (pruning, removal, insect or disease control, fertilization, etc.) for interests outside of officially authorized Company projects on property served by feeders or grids subject to an open work release or on property adjacent to or within 220 yards of transmission lines subject to an open work release. Outside projects may include side jobs for cash, work for private arboricultural firms (whether or not they are owned by the tree crew members doing the work), consulting, or any other arboriculturally related enterprise.

6 TREE PRUNING

Pruning is primarily on distribution facilities, although it can be applied to transmission lines in some cases. The primary purpose of utility line clearance work is to minimize safety and service reliability risks caused by tree-power line conflicts.

Pruning to clear conductors will adhere to the principles of modern arboriculture. The *American National Standard for Tree Care Operations A300* (ANSI 2008), ISA *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002), *Best Management Practices: Utility Pruning of Trees* (Kempter 2004), and *An Illustrated Guide to Pruning* (Gilman 2012), among other references, convey those principles.

While proper utility line clearance work will be consistent with practices that promote tree health, utilities cannot place tree health over public welfare. Sometimes there is no way to obtain proper clearance in a manner that ensures the health of a tree (Lilly 2010). This is particularly true regarding foliage retention. In cases where the tree cannot be pruned without harming its health, tree removal is often best for the tree, the tree owner, and the utility. If tree removal is not permissible, the tree will be pruned to specification clearances, even if that work is against a customer's wishes or could harm the tree.

6.1 Utility (Directional) Pruning

Directional pruning is natural target pruning applied to routing tree growth away from utility lines (Miller 1998). ANSI A300 (2012) and ISA's Best Management Practices (Kempter 2004) instruct that pruning to clear the utility space involves thinning cuts: removing a natural target's entire branches that are growing toward (or once cut will produce sprouts that will grow toward) power lines.

While heading cuts produce sprouts that grow quickly back into the power lines, branch removal and reduction promotes growth away from conductors. Since the point of utility pruning is to train trees around power lines wherever practical, branches growing away from the electric facility will not be pruned. Instead, these stems will be allowed to develop to their natural height or length, provided that growth does not create unreasonable safety risks. This cannot be accomplished with strongly excurrent trees trapped directly beneath conductors. Topping, round-overs, flush cuts, branch tipping, and rip cuts are improper because they damage trees. Directional pruning is consistent with natural tree structure. Remaining branches retain their taper, strong attachments, growth regulators, and spacing. They continue to grow and function normally, allowing the tree to reach to its natural height. "V" shapes often result on properly pruned trees growing under power lines, particularly on decurrent, deciduous trees (Gilman 2012; Kempter 2004; Miller 1998; Shigo 1990). Limbs growing upward and toward the facility will be cut back to the trunk or to limbs growing away from the conductors.

Remaining branches should have sufficient clearance, so they do not contact the conductors in inclement weather common for the locality (high wind, freezing rain, snow, or other conditions). Excurrent trees (such as many conifers) are more problematic but will be reduced to appropriate laterals or whorls.

"L" or one-sided shapes often result on properly pruned trees to the side of conductors (Gilman 2012; Shigo 1990). Limbs on the wire side of trees located adjacent to facilities will be cut back to the trunk, or to limbs growing vertically, sideways, or downward, depending on the distance to the line or available natural target.

6.1.1 Natural Target Pruning

Natural targets are proper final pruning cut locations at strong points in the tree's disease defense system. Removing branches at natural targets rarely damages the joining trunk or limb (Gilman 2012). The ISA Best Management Practices: Tree Pruning (Gilman and Lilly 2002) and ANSI A300 (ANSI 2008) describe the technique. Targets vary depending on whether a branch is removed or reduced.

6.1.2 Collar Cuts

Branches should be removed at the collar. Cutting into the collar, known as flush cutting, is inappropriate because it creates a direct port of disease entry into the parent stem.

Disease can weaken stems, potentially creating safety risks. On the other hand, proper branch removal does not leave stubs that pathogens can use as an energy source to overcome the tree's defense system and spread into the trunk. If the branch is removed correctly, only the branch protection zone is exposed, giving an advantage to trees in keeping out disease. As a result, collar cuts virtually prevent decay from entering the parent stem (Gilman 2012).

6.1.3 Approximating the Collar

Occasionally, branch collars are not readily evident and the collar must be approximated using the branch bark ridge. Start the cut in the branch crotch, just outside the branch bark ridge, and follow an outward angle that mirrors the inward angle the branch bark ridge makes with the trunk or parent stem. The cut will end roughly opposite the bottom of the branch bark ridge.

6.1.4 Reduction Cuts

Reduction cuts shorten leads to appropriate laterals. An appropriate lateral is no less than one-third the diameter of the original limb and retains at least three-quarters of the lead's foliage (ANSI 2008). The reason for these requirements is that branches are autonomous in their energy requirements. Removing too much foliage from a limb could deprive it of sufficient energy to establish apical dominance, maintain its taper, close the wound, and compartmentalize and out race disease that will enter the wound. As a result, the lateral will not develop into a structurally viable leader. Moreover, shortening a lead removes apical meristems and other points of growth regulator production, which can disrupt orderly growth. If, for example, auxin concentrations are insufficient, on some species a crowded mass of upright, rapidly growing, poorly attached shoots can sprout from the cut and grow directly back into the lines.

Removing more than 25% of foliage from a limb has the same damaging result as a random topping cut, regardless of whether or not the cut is made to a proper-sized lateral. Even under the best circumstances, reduction cuts are potentially harmful, acting more like a heading than a thinning cut (Gilman 2012). Consequently, if a lead cannot be shortened to a limb at least one-third the diameter of the original lead, or if a cut removes more than 25% of the foliage, that limb should be either targeted for removal or not pruned. Removal may be gradual over the course of several pruning cycles.

6.1.5 Large Branches

Large branches (3 inches in diameter or greater) can seldom, if ever, be removed without harming the tree, particularly if they are codominant stems. Yet large branches must be prevented from growing toward the utility space and that nearly always means heading or removing them entirely. Either option can be harmful, but heading large branches not only injures the tree but fails to effectively clear the conductors.

Removal may take a measured approach. For example, one or two large limbs might be removed out of three that are growing toward the conductors, and the remaining limb(s) targeted for removal in subsequent cycles.

Large branches selected for later removal can be subordinated or removed gradually over subsequent pruning cycles (either interim or cycle). Subordination thins a portion of a limb's foliage. Reducing a fraction of the foliage in this way suppresses the stem's growth and allows the remaining tree parts to adjust and develop. In some cases, subordination can allow a codominant stem to develop into a branch over time, enabling a branch protection zone to form so a limb can be removed without unnecessarily subjecting a tree to disease (Gilman 2012). Using subordination over multiple cycles to remove large branches can reduce the effect of structural limb removal on tree health, while ultimately circumventing the permanent problems heading cuts can cause, even if that means temporarily heading the branch.

6.1.6 Old Heading Cuts

Removing large stems that have been headed often leaves wide gaps in the tree because shoots that proliferate from the old heading cuts often dominate the crown, and gaps result when branches containing these shoot clusters are removed. Moreover, previously headed branches usually lack natural targets. When such branches are growing toward the conductors, there is often no alternative but to remove them entirely.

Headed branches growing away from the facility space will not be pruned as a matter of standard practice; however, shoots growing from the old heading cuts will be inspected for structural integrity during subsequent visits. Corrective action, such as crown restoration (ANSI 2008), could be necessary if these sprouts are found to be structurally weak. In some cases, however, structural defects resulting from heading cuts are so severe that they cannot be corrected (Dahle et al. 2006). In these cases, the customer will be contacted about removing the entire tree, or at least the subject branch or branches. If tree or branch removal is not possible, there could be no choice but to remove the weak growth with a new heading cut. This will be done only when extensive decay or hollow exists in the remaining branch, with the approval of the forester or supervisor, for safety (not aesthetic) purposes.

6.1.7 Reduction

Reduction is selective pruning applied to reduce the top or side of a tree or individual limb (ANSI 2008). In a utility context, the goal of reduction is to promote future tree growth away from the conductors, at least on decurrent trees.

6.1.7.1 Deciduous Trees

The "V" in many crown-reduced deciduous trees quickly fills in with shoots. These shoots eventually require pruning to keep them from interfering with the lines. In subsequent cycles, it is important not to strip all these sprouts away, since that causes lion's tailing and can stimulate resurgent growth in many species. Rather, about half of the shoots will be removed, and the other half retained.

Shoots selected for removal will be the largest and most vigorous, leaving smaller sprouts behind. Growth selected for retention will be pencil thin at the point of attachment. If need be, these remaining shoots will be headed back to obtain specification clearances. In this way, a rotation can be established where the largest, most vigorous shoots are removed each cycle, but smaller, suppressed shoots are left to soften the negative visual effect that many customers find objectionable.

Moreover, leaving shoots in the interior of a "V" provides shade and retains auxin production, both of which suppress vigorous sprouting, and helps the trees hold. Eventually the sides of the tree will overtop

the wires, resulting in more of a "U" shape, and will shade the interior of the tree, suppressing shoot growth even more. In time, this top growth decreases the proportion of the crown occupied by the cleared utility space and softens the negative aesthetics.

6.1.7.2 Conifers

Many conifers, such as pine (*Pinus* spp.), spruce (*Picea* spp.) and Douglas-fir; have strong central leaders (excurrent form). When these types of trees grow directly under power lines, they will be reduced to the whorl or largest available lateral that provides specification clearance. Cuts made to conifer whorls are typically flat topped in order not to damage any branches in the whorl. Laterals will be tipped on a conifer, which prevents them from forming compression wood and bending up toward the conductor.

6.2 Helicopter and Mechanical Trimming

Helicopter and mechanical trimming can be cost effective in rural areas; however, it can be difficult or impossible to hit natural targets with a mechanical saw. Consequently, decay and sprouts may develop that can cause problems in the long run. Therefore, care will be taken where to employ machines, and in subsequent years, work needs to be monitored so that hazard trees do not develop. Prior to helicopter operations, coordination would occur with Clover Control at Hill Air Force Base, Utah Test and Training Range when helicopter use is planned near the Military Operating Area. In addition, the Nevada Department of Wildlife would also be contacted if helicopter use will occur during the fall and winter months in Nevada to coordinate with their annual aerial surveys.

6.3 Chemical Specifications

All herbicides proposed for use by the Construction Contractor(s) or the Company, as applicable, on the Project will require obtaining an approved Pesticide Use Plan (PUP) from the BLM and/or Forest Service (as appropriate based on land jurisdiction) prior to application as detailed in POD Appendix C2: Weed Management Plan.

Herbicides are an integral part of the Company's Vegetation Management Program. Chemical applications will be performed according to federal, state, and local regulations. Labels are the law, and chemical use will comply with labeling. The Company's director of Vegetation Management will approve all products and mixes. Property owners will be notified at least 5 days, but no more than 6 weeks, in advance, whenever chemicals are to be used on their property. Property owner objection to herbicide use will be honored.

The company making the application is responsible for chemical purchase and storage, record keeping, and container disposal. Crew leaders will hold a valid applicator's license for Utah/Nevada. Applicators will either hold that license or work under the direct supervision of a certified applicator, as required in Utah/Nevada. Tree crews found working without a crew leader or applicator without a valid applicator's license for Utah/Nevada will be shut down at the forester's discretion. Supervisors of qualified applicators will hold a certified applicator's license in Utah/Nevada in which they supervise crews.

6.3.1 Chemical Reports

All chemical applications will be documented in the daily report. The company making the application will be responsible for maintaining reports for review by Utah Department of Agriculture and Food and Nevada Department of Agriculture, as required. Herbicide use on BLM administered and National Forest System lands will be documented and reported as detailed in Appendix C2: Weed Management Plan.

6.3.2 Herbicide Applications

Herbicide applications will be pursued wherever possible as a vegetation management tool. Herbicides prevent stumps of deciduous trees from sprouting and will be used on saplings of tall-growing species to reduce future inventories. Herbicides are essential in establishing the wire zone-border zone method on transmission lines.

When properly used, herbicides are effective and efficient, minimize soil disturbance, and enhance plant and wildlife diversity. Herbicide application will benefit wildlife by improving forage as well as escape and nesting cover. In some instances, noxious weed control is a desirable objective on utility ROWs that will be satisfied through herbicide treatment.

Herbicide use will control individual plants that are prone to re-sprout or sucker after removal. When trees that re- sprout or sucker are removed without herbicide treatment, dense thickets develop, impeding access, swelling workloads, increasing costs, blocking lines of sight, and deteriorating wildlife habitat (Yanner and Hutnik 2004).

Treating suckering plants allows early successional, compatible species to dominate the ROW and outcompete incompatible species, ultimately reducing work. Herbicide application will be completed per Appendix C2: Weed Management Plan.

6.3.2.1 Selectivity

Herbicides will be selective or nonselective depending on their type. Selective herbicides only control specific kinds of plants when applied according to the label. For example, synthetic auxins are a class of selective herbicides that control broadleaved plants but do not harm grass species when applied according to the label. By contrast, nonselective herbicides work against both broadleaved plants and grasses. Nonselective herbicides can be effective when a wide variety of target plant species are present, such as those often found during initial clearing or reclaiming dense stands of invasive or other undesirable vegetation.

Application techniques can also be either selective or nonselective. Selective applications are used against specific plants or pockets of plants. Nonselective techniques target areas rather than individual plants. The nonselective use of nonselective herbicides eliminates all plants in the application area. The nonselective use of a selective herbicide controls treated plants that are sensitive to the herbicide, without differentiating between compatible or incompatible species. The selective use of either would only control targeted vegetation. Selective use is preferable unless target vegetation density is high.

6.3.2.2 Herbicide Best Management Practices

Herbicide applications will comply with POD Appendix C2: Weed Management Plan and all applicable best management practices.

6.3.2.3 Wetlands and Waterbodies

The effects of herbicides on wetland and water resources will be minimized by complying with the POD and all applicable POD appendices including POD Appendix C2: Weed Management Plan. Buffer zones reduce the movement of herbicides from the application site into adjoining waterbodies. Climate, geology, and soil types will be considered when selecting the herbicide mix with the lowest relative risk of migrating to water resources (Childs 2005).

6.3.2.4 Spills

Mixing, loading, and cleaning equipment are critical activities that present the greatest exposure to accidents or spills (Miller 1993). To avoid spills and adequately respond to spills in a timely manner, see measures identified in POD Appendix C2: Weed Management Plan and POD Appendix C11: Spill Prevention, Control, and Countermeasure Management Plan. To prepare for accidental spills, some kind of absorptive material will always be available when mixing and/or preparing chemicals. Buffer widths to minimize impacts on non-target resources will be identified during approval of the PUP and included as conditions of approval for each herbicide used. In the event of a spill or misapplication, the following steps will be taken:

- STOP, CONTAIN, ISOLATE
  - Stop the source of the spill
  - Contain the spill (it is especially important to prevent the spill from entering waterways)
  - Isolate the area – prevent people or vehicles from passing through the area
- Report the spill to the Company's spill hotline—800.94.SPILL—and provide the following:
  - Caller and manager's name
  - Date and time spill was discovered
  - Location (address or longitude and latitude)
  - Manufacturer name and serial number
  - Cause of spill
  - Amount of spill
  - Types of surfaces contaminated
  - Containment and/or clean-up activities performed so far
- All spills and locations (i.e., coordinates of the spill site) will be reported within 24 hours of the spill by the Construction Contractor(s) or the Company, as applicable, to the appropriate federal land management agency, State of Utah or Nevada land management agency, or private landowner, as appropriate, and in accordance with applicable federal and State of Utah or Nevada laws and requirements.
- On National Forest System lands, spills must be reported to the Hazmat OnScene Coordinator at 775-352-1223 or other Authorized Officer.
- Request the help of and notify the supervisor and the Company forester
- Remediate the spill
  - Clean up the spill or have it cleaned up, following directives from the spill hotline
  - Wash equipment and vehicles

  - Properly dispose of clean-up materials
  - Follow up with appropriate clean-up documentation
- Clean up at or near Company generating sites or substations will comply with site-specific spill prevention and remediation plans.

6.3.2.5 Inappropriate Applications

There are situations where herbicide applications are inappropriate. If application company representatives are uncertain whether or not applications are appropriate, they will consult the appropriate forester. Inappropriate situations include, but are not limited to, the following:

- Areas where the property owner expresses objections to herbicide use.
- Government lands where herbicides are prohibited.
- Conditions of heavy precipitation or strong winds. If these conditions exist, the treatment will be deferred until weather improves.
- High temperatures that would cause product volatility and damage off-target plants. This is particularly important for foliar applications. During high temperatures, treatment will be deferred until the weather cools.
- Trees that could be root grafted to desirable trees.
- Trees that are near desirable plants, where the herbicide could move into contact with off-target foliage or roots.
- Trees that are sufficiently close to contaminate agricultural crops or harvestable, edible plants.

If there is any uncertainty regarding whether or not an application is appropriate, contact the forester with responsibility for the area.

6.3.2.6 Application Methods

Herbicide application methods are categorized by the quantity of herbicide used, the character of the target, vegetation density, and site parameters. Dyes can be used in the herbicide mix to mark areas that have been treated. Treatments include individual stem, broadcast, and aerial treatments.

6.3.2.6.1 Individual Stem Treatment

Individual stem treatments are selective applications. They include stump, basal, injection, frill, selective foliar, and side pruning applications. Due to their specific nature, proper individual stem applications work well to avoid damage to sensitive or off-target plants; however, they are impractical against broad areas or sites dominated by undesirable species.

Stump applications are a common individual stem treatment, where herbicides are applied to the cut surface around the stump's cambium and the top side of the bark. Water-based formulations require immediate stump treatment, while oil-based herbicides can be applied hours, days, or even weeks after cutting.

Injections involve inserting herbicide into a tree. Frill (commonly called "hack and squirt") treatments consist of herbicide application into cuts in the trunk. Injections or frill treatments are especially useful against large, incompatible trees left standing for wildlife.

Basal applications often use an herbicide in an oil-based carrier at the base of the stems and root collar. The oil penetrates the bark, carrying the herbicide into the plant. Although basal applications can be made year-round, dormant treatment is often best on deciduous plants when they do not have foliage that can obstruct access to individual stems.

Selective foliar applications are done by spraying the foliage and shoots of specific target plants. They can be either low- or high-volume treatments. For low-volume applications, comparatively high concentrations of an herbicide's active ingredient are made in lower volumes of water than would be used with high-volume applications. Foliar applications are only made during the active growing season, normally late spring to early fall.

Side pruning is a technique where non-translocatable herbicides are applied to control specific branches growing toward the electric facility. Treating large branches could damage trees in the same way as removing them through pruning.

6.3.2.6.2 Broadcast Treatment

Broadcast treatments are nonselective because they control all plants sensitive to a particular herbicide in a treatment area and can provide a degree of selectivity with proper herbicides. Even then, broadcast treatments do not differentiate between the compatible and incompatible plants that the herbicide controls. Broadcasting is particularly useful to control large infestations of incompatible vegetation (including invasive species) in ROWs or along access roads.

Broadcast techniques include high-volume foliar, cut-stubble, and bare ground applications. High-volume foliar applications are similar to high-volume selective foliar applications. The difference is that broadcast high-volume foliar treatments target a broad area of incompatible species rather than individual plants or pockets of plants. Cut-stubble applications are made over areas that have just been mowed. Bare ground treatments are used for clearing all plant material in a prescribed area, such as around substations or poles to protect against fire. Bare ground applications are usually granular or liquid applications that follow the mechanical removal of vegetation or used as a pre-emergent in maintaining graveled areas, such as around substations.

6.3.2.6.3 Aerial Treatment

Aerial treatments are made by helicopter (rotary wing) or small airplane (fixed wing). Rotary-wing aircraft provide the most accuracy because helicopters can fly more slowly and are more maneuverable than airplanes.

Airplanes are less expensive to operate than helicopters. Aerial control methods are also nonselective but can provide a level of selectivity with the proper herbicides. Aerial applications will be useful in remote or difficult to access sites and will be cost effective and quick, especially if large areas need to be treated. Aerial treatment also will be used where incompatible vegetation dominates a ROW. The primary disadvantage of aerial application is that it carries the threat of off-target drift, so it will be performed under low-wind conditions with low-toxicity herbicides.

6.3.3 Approved Herbicides

A list of Company approved products appears in the sections that follow. The use of any other chemicals must be approved by the Company. Any herbicides must be approved for use on BLM administered and National Forest System lands from the respective federal land management agency as part of the PUP.

6.3.3.1 Stump Application

- 2, 4-D
- Glyphosate
- Picloram
- Triclopyr

6.3.3.2 Low-Volume Basal Application

- Imazapyr
- Triclopyr

6.3.3.3 Foliar Application

- 2, 4-D
- Aminopyralid
- Glyphosate
- Metsulfuron methyl
- Picloram
- Sulfometuron methyl
- Triclopyr

6.3.3.4 Soil Application

- Diuron
- Imazapyr
- Picloram
- Tebuthiuron

6.3.4 Tree Growth Regulators

The use of tree growth regulators is not permitted on BLM-administered lands and will not be used for vegetation management in any circumstance.

7 REPORTING WORK

After completing work, the crew leader will document tree work on daily and weekly reports. The crew leader will note the date the work was performed, the crew ID number, and initial the reports.

7.1 Daily and Weekly Vegetation Reporting

The daily report will be used by crew leaders to keep detailed records on their productivity. It is particularly important as a reference for locating trees during audits and tracking chemical use. Like the weekly report, the daily report provides instructions on a cell-by-cell basis. The daily report is the property of the Company, and when completed, supervisors will digitize it and send it to the appropriate forester.

Tree work will be reported on the weekly time and vegetation report. The report is a combination contractor time sheet and Company weekly production report. The back of the report provides instructions and definitions for each cell. Weekly reports, along with the corresponding invoice, will be submitted to the forester responsible for the area in which the report was completed.

7.2 PacifiCorp Vegetation Management

PacifiCorp Vegetation Management (PVM) is a PacifiCorp intranet-based program which organizes data downloaded from the weekly report. PVM offers a variety of reports, such as the Statistics Report, which enable program analysis.

Statistics Reports are designed to be flexible. They allow data examination on a program level (for example, data since 1996 for Pacific Power), down to a crew level for a specific week of work. They also provide cost and man-hours per tree, the percentage of various work types (tree removals, the size of trees removed, the number of side pruned trees, crown reduction, and others), and the percentage of time spent on travel, flagging, cleanup, and other activities. Other PVM reports compare the productivity of individual crews or break down production by district, state, and work code. The reports provide objective information upon which foresters and supervisors can make sound management decisions.

7.3 Monthly Reports

The Vegetation Management's monthly reports track distribution cycle and interim progress, distribution spray progress, tree crew deployment, cycle progress, and transmission progress. These reports can be found at PacifiCorp's Transmission and Distribution Support Services Website. A description of four prominent reports follows.

7.3.1 Distribution Progress Report

The Distribution Progress Report accounts for line miles achieved on systematic distribution work compared to goals for a given year. Systematic distribution work is cycle work throughout the six-state service territory, as well as interim work in the service territory. The goal is the recommended cycle (3 or 4 years depending on the state) prorated by the week of the year.

The report provides a summary of line miles achieved, breaks down progress by the Company's service territory and includes monthly miles ahead or behind goals, a chart depicting monthly line mile progress, and progress in each state by district and, where appropriate, by forester.

7.3.2 Cycle Distribution Progress Report

The Cycle Distribution Progress Report records line miles achieved over the course of the current recommended cycle compared to goals. Goals are prorated monthly and compared to actual progress.

7.3.3 Tree Crew Deployment Report

The tree crew deployment report lists tree crews, forest techs, and supervisors by forester and district as of the first of each month. In addition to providing information on tree crew locations, this report is used for budget projections.

7.3.4 Invoice Audit Report

Foresters will compare invoices to crew composition information obtained during the crew audits (see Section 4.3 of Attachment A: PacifiCorp Vegetation Management Protocols). Each month, results will be submitted to the director of Vegetation Management and a senior business specialist on the Invoice Audit Report. The senior business specialist will ensure that discrepancies are reconciled with the appropriate contractor.

7.4 Monthly Progress Tracking

Progress on the annual work plan will be tracked on the PacifiCorp Main Grid Transmission MASTER under the auspices of NERC Standard FAC-003-4.

7.5 Quarterly Western Electricity Coordinating Council Audit Report

The Company is required to report outages on transmission lines subject to FAC-003-4.

8 MERCHANTABLE TIMBER AND COST RECOVERY

Merchantable timber on BLM-administered and National Forest System lands is defined as a tree with at least 6-inch diameter at breast height (alternatively, diameter at root collar or diameter at stump height may be used for multi-stemmed trees) that is recoverable and has a market in the local area and this resource is property of the public, unless the easement, ROW grant, or SUP states otherwise. The BLM or Forest Service may determine merchantability based on markets outside of the local area, for example craft wood, fuelwood and other special forest products based on appraisal methods. If the Project ROW contains merchantable timber, and according to BLM Form 5450-1, prior to initiation of on-the-ground construction activities, a Contract for the Sale of Vegetative Resources (BLM Form 5450-1) will need to be obtained from the BLM for the removal of vegetative resources on BLM-administered lands that intersect the Project ROW. In accordance with the 2018 Consolidated Appropriations Act, the Company will not be responsible for compensation under the Materials Act for emergency removal of hazard trees, however, this does not apply to normal maintenance operations. See Section 3.3 for the definition of an "emergency action."

In the event merchantable timber is felled and/or salvaged, the BLM or Forest Service Authorized Officer(s) will be contacted regarding timber recovery. After merchantable timber is felled, it will be delimbed and left in total tree length on the ROW for recovery by the BLM or Forest Service. In limited cases, the Company may decide to purchase merchantable timber from the BLM or Forest Service and retain or transfer ownership to another party. Where feasible, felled merchantable timber shall be transported and stacked at the most convenient publicly accessible area (i.e., roadway). This area must not impede traffic or present a danger to persons, property or present a potential fire hazard. An additional forest practice permit from the Utah Division of Forestry, Fire and State Lands or Nevada Division of

Forestry may be required for timber recovery and will be determined in the event merchantable timber occurs and is felled within the ROW.

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Attachment A. PacifiCorp Vegetation Management Protocols

1 INTRODUCTION

This Vegetation Management Protocol (Plan) is intended for implementation by the Construction Contractor(s) on private and state lands during construction and by the Company during operation and maintenance to assure the Company that the Cross-Tie 500-kV Transmission Project (Project) will be compliant with Companywide vegetative management requirements.

As PacifiCorp has partnered with the Company for the Project, the Plan included here will be used for vegetation guidance. This Plan is a document that applies to all existing PacifiCorp transmission and distribution lines as well as to all new Company projects. Therefore, this document cannot be revised specifically for the Project. Some of the environments, vegetative types, and associated vegetative management requirements in this Plan are not applicable to this Project. This document is primarily intended for implementation by the Construction Contractor(s) during construction on private and state lands to assure the Company that the Project will be compliant with the overall companywide vegetative management requirements and standards.

This Plan also identifies Companywide standards that are intended for use during operations and maintenance. POD Appendix B7: Operation and Maintenance Plan includes additional Company requirements for vegetative management during that phase of the Project. In the event the requirements of this Plan conflict with the requirements of Appendix B7: Operation and Maintenance Plan, the Company will comply with the vegetative management requirements included in Appendix B7: Operation and Maintenance Plan.

PACIFICORP

A BERKSHIRE HATHAWAY ENERGY COMPANY

Transmission & Distribution
Vegetation Management Program
Standard Operating Procedures

Mission Statement:

Manage trees and vegetation around PacifiCorp's transmission and distribution facilities in a professional, cost effective and environmentally conscientious manner to provide safe, reliable and outstanding service to our customers.

Approval: Chris Spencer, Managing Director, T&D Support Services Date: 06/19/2019

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1. PROGRAM OVERVIEW

PacifiCorp has an extensive vegetation management program, for both its transmission and distribution systems. Trees growing into or near power lines can create safety and service reliability risks, and PacifiCorp's vegetation management program seeks to minimize such risks, primarily by pruning trees, Scientifically-based arboricultural practice of removing tree parts, or removing trees which could grow into power lines.

The risks of unchecked vegetation growth are well known. Close growing branches can provide access for children and others to high-voltage lines, exposing them to the potential danger of serious injury or death due to electric contact. Branches touching power lines can spark and start fires and cause interruptions in electric supply. Trees whipped by winds or weighed down by rain or snow can interrupt power, which disrupts businesses, homes, and compromises critical community infrastructure, such as hospitals and emergency services. Three major electric grid failures, including the catastrophic blackout on August 14, 2003, were initiated by tree-caused outages on transmission lines (Cieslewicz and Novembri 2004). For these reasons and others, the National Electrical Safety Code (American National Standards Institute 2016). Section 2l8-A-l, states:

Trees which may damage ungrounded supply conductors should be pruned or removed. Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage and sagging of conductors at elevated temperatures are among the factors considered in determining clearance specifications.

Particularly in the case of transmission lines, PacifiCorp favors the removal of tall-growing trees in favor of low-growing species that will never interfere with the high-voltage lines. In giving consideration to the interests of property owners and other land use objectives, however, it is not always possible to remove conflicting trees. Thus, tall-growing trees that cannot be removed must be pruned to keep power lines clear. To this end, PacifiCorp uses modern, arboriculturally-sound pruning practices.

PacifiCorp's vegetation management program is modeled on the industry's best practices, including systematic maintenance, scientifically-based pruning, tree removal, tree replacement, cover type conversion, herbicide use and tree growth regulator applications, and the use of specialized tools and equipment. PacifiCorp is progressive in trying innovative methods, products, and equipment to improve safety and productivity. These standard operating procedures cover the vegetation management program for both distribution and transmission facilities. These procedures also include program descriptions, specifications and protocols for customer relations. In addition to providing direction for PacifiCorp's professional Foresters, these standard operating procedures are binding on all contractors performing vegetation management on PacifiCorp's system.

1.1 Applicable References

The following standards and best practices should be followed:

- *American National Standard for Tree Care Operations: ANSI A300 (Part 1) Pruning*
- *American National Standard for Tree Care Operations: ANSI A300 (Part 7) Integrated Vegetation Management*
- *American National Standard for Tree Care Operations: ANSI A300 (Part 9) Tree Risk Assessment.*
- *American National Standard for Arboricultural Operations ANSI Z133 Safety Requirements*

The following best practices should be followed:

- International Society of Arboriculture: *Best Management Practices, Utility Pruning of Trees*
- International Society of Arboriculture: *Best Management Practices, Integrated Vegetation Management*
- International Society of Arboriculture: *Best Management Practices, Tree Risk Assessment*
- Utility Arborist Association Best Management Practices: *Field Guide to Closed Chain of Custody for Herbicides in the Utility*

1.2 Professionalism

PacifiCorp employs a staff of professional Foresters ("Foresters") to manage its vegetation program. All Foresters on PacifiCorp's system are to be International Society of Arboriculture (ISA). Certified Arborists and Certified Utility Specialists. PacifiCorp also encourages ISA Board Certified Master Arborist credentials among its staff Foresters.

1.2.1 Required Qualifications for Independent Contractors

PacifiCorp also has required certifications for the independent contractors who perform vegetation management services for PacifiCorp.

Front line managers for the independent contractors retained by PacifiCorp must be ISA Certified Arborists and ISA Certified Utility Specialists. These front line managers are often called supervisors or general foremen in the field and are referred to as "Supervisors" in these standard operating procedures.

Forest technicians working on PacifiCorp projects are required to have certain levels of experience, certifications, and professional qualifications. On a temporary basis for no more than 90 days, PacifiCorp will allow a forest technician with Forest Technician I classification. In all other circumstances, a forest technician must have a Forest Technician II classification or higher.

- Forest Technician I —No certifications, qualifications or experience required.
- Forest Technician II—Minimum of 3 years arboriculture-related experience. ISA Arborist certification and certified pesticide applicator license required.
- Forest Technician III—Minimum of 5 years arborculture-related experience or 3 years plus an associate's degree in a related field. ISA Arborist and Utility Specialist certifications and certified pesticide applicator license required.

- Forest Technician IV—Minimum of 8 years arboriculture related experience or 4 years plus a Bachelor of Science degree in a related field. ISA Arborist and Utility Specialist certifications, certified pesticide applicator license, and ISA Tree Risk Qualification required.

For additional certifications related to safety, for all personnel including forest technicians see Section 2.1 below.

1.3 Tree Line USA

PacifiCorp has been a Tree Line USA recipient utility every year since 2002. Tree Line USA is an award from the National Arbor Day Foundation, which recognizes utilities for utilizing practices that protect America's urban forests. To qualify, utilities must apply scientifically-based tree care, conduct annual worker training, plant trees, and conduct public education, including participating in Arbor Day celebrations. Contract employees should participate in annual worker training to cooperate with and help PacifiCorp continue to merit this award.

2. GENERAL PROCEDURES

This chapter sets forth many general procedures for vegetation management work, whether on distribution lines (see Chapter 5) or on transmission lines (see Chapter 6).

2.1 Safety

Federal and state OSHA requirements governing vegetation management activities shall be followed at all times. ANSI Z133 (American National Standards Institute 2017) and OSHA 1910.269, are examples of these requirements. Activities shall be conducted in a manner that minimizes both tree crew and public safety risks. Crews shall have functional radio or telephone communication on the job site at all times.

PacifiCorp's electrical system will continue in normal operations during routine vegetation management work. Contract employees shall be aware of the potential dangers and qualified to work in the vicinity of energized facilities. Contract personnel performing line clearance work shall hold one of the following designations as defined by ANSI Z133:

- Qualified Line Clearance Arborist
- Qualified Line Clearance Arborist Trainee

2.1.1 Holds and Clearances

Minimum approach distances for qualified line clearance arborists specified in ANSI Z133 or PacifiCorp's Accident Prevention Manual (Joint APM Safety Committee 2017) should not be compromised. If there is a difference in the distances required in the two standards, the greater of the two is operative. If work requires violating minimum approach distances, or if a crew leader determines conditions to be unsafe, crew leaders should contact their Supervisor before proceeding. The Supervisor should determine whether or not a clearance or Hold is necessary at that work site.

A "**Hold**" means deactivating automatic line reclosers on a circuit. A Hold is intended to protect PacifiCorp facilities and should not be considered a safety measure. If, in the judgment of the crew leader, an energized line cannot be worked safely, the Supervisor should arrange a Clearance. A "**Clearance**" is de-energizing a line for safety purposes. (Note: a Clearance, as defined here and capitalized as a defined term should not be confused with the use of the word clearance in describing vegetation management work designed to maintain clearances between vegetation and conductors.)

PacifiCorp does not issue Holds or Clearances to tree crews. Rather, if warranted, PacifiCorp will issue Holds or Clearances to a journeyman lineman, who shall be present at the site during work. Holds require at least 48 hours' notice to the Control Center, vegetation management and the district operations manager. Customers who will be affected by planned power outages associated with Clearances must also receive 48 hours notice, except during emergency situations such as storm restoration work. In some cases, a Clearances on transmission lines must

be requested weeks or even months in advance. Customers do not need to be notified if a Clearances is necessary to safely work trees from lines in an emergency.

De-energized lines, whether due to a planned outage, wind or storm damage, or some other reason, must be worked as if they are energized. If an energized line cannot be worked safely, it must be grounded. Linemen must set the grounds and be present during work and give approval prior to tree crew members breaching minimum approach distances to ensure safety.

Unless a lineman has given approval to tree crew members to breach minimum approach distances, the following minimum approach distances much be maintained by qualified line-clearance arborists and line-clearance arborist trainees at all time.

Table 2.1. Minimum approach distances for qualified line-clearance arborists and line-clearance arborist trainees.

Voltage (kV)	Minimum Approach Distance			
(Phase-to-Phase)	Sea Level to 5000 ft.	5000 to 10000 ft	10000 to 14000	Source
0.05-0.300	Avoid contact	Avoid contact	Avoid contact	APM/Z133
0.301-0.750	1’ 6”	1’ 7”	1’ 7”	APM/Z133
0.751-15.0	2’ 6”	2’ 7”	2’ 10	APM/Z133
15.1-46	3’ 6”	3’ 7”	3’ 8”	APM/Z133
46.1-72.5	3’ 6”	4’ 0”	4’ 4”	Z133
72-121.0	3’ 11”	4’ 6”	4’ 10”	Z133
121.1-145.0	4’ 6”	5’ 2”	5’ 7”	Z133
145.1-169.0	5’ 1”	5’ 9”	6’ 3”	Z133
169.1-242.0	7’ 0”	7’ 11”	8’ 7”	Z133
242.1-362.0	11’ 9”	13’ 6”	14’ 7”	Z133
362.1-420.0	14’ 8”	16’ 9”	18” 2”	Z133
420.1-550.0	17’ 6”	20’ 0”	21’ 8”	Z133
550.1-800.0	23’ 9”	27’ 2”	29’ 5”	Z133

APM is Pacificorp’s Accident Prevention Manual (Joint APM Safety Committee 2017).
ANSI Z133 is the American National Standard for Tree Care Operations.

2.1.2 Emergencies

An emergency is major storm (as declared by PacifiCorp), or situation where vegetation has either caused or presents a clear, imminent threat of causing an outage, fire or public electric contact.

2.1.2.1 Whistles

Every crew member, Supervisor and Forester shall carry a whistle at all times while on work sites. A whistle shall be used as an alarm, commanding all crew members to immediately stop work and respond to the emergency. Whistle blasts should also be used to initiate aerial rescue drills. Whistles are not to be used for non-emergency situations, such as getting another crew member’s attention.

2.1.2.2 Tree on Line

If a tree or tree part accidentally falls onto an energized line, work shall stop immediately. If emergency services are required, 911 should be called. The incident should also be reported to the applicable PacifiCorp Control Center (Table 2.2).

Table 2.2. Control center numbers

Control Center	Phone Number	Service Areas
PP North	(503) 408-3623	Astoria/Clatsop, OR; Bend, OR; Hood River, OR; Pendleton, OR; Portland, OR; Walla Walla, WA; Yakima, WA
PP Central	(503) 408-3626	Albany, OR; Lincoln City, OR; Casper, WY; Cody, WY; Douglas, WY; Laramie, WY; Rawlins, WY; Riverton, WY; Rock Springs, WY; Worland, WY
PP South	(503) 408-3629	Coos Bay, OR; Crescent City, OR; Grants Pass, OR; Kalamath Falls, OR; Medford, OR; Mount Shasta, CA; Roseburg, OR; Yreka, CA
RMP North	(801)220-6930	Entire service territory

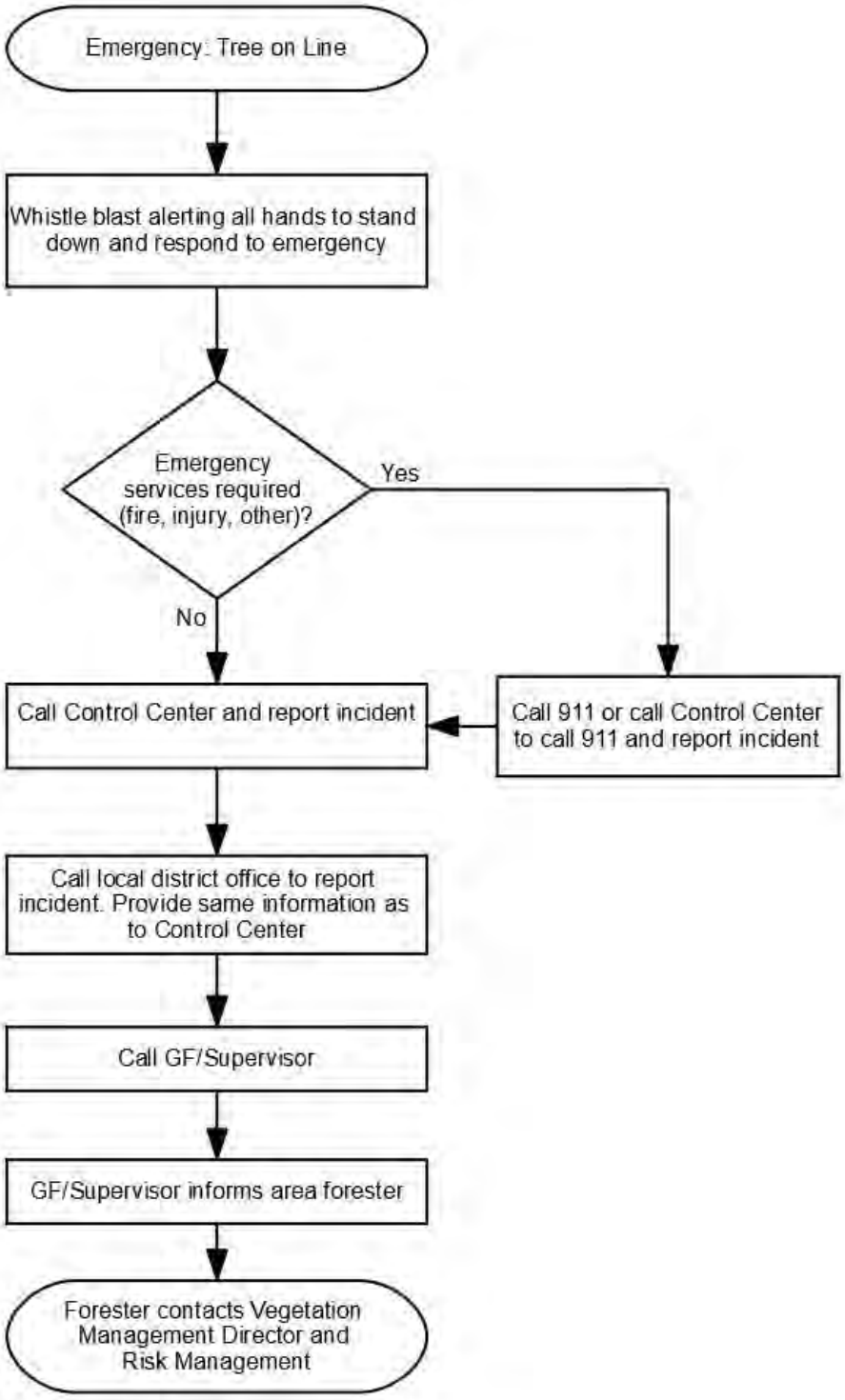

Figure 2.1. Emergency procedure for tree-on-line incident.

2.1.3 Readily Climbable Trees

Readily climbable trees have low limbs that are accessible from the ground and sufficiently strong and close together to support a child or average person and can be accessed by climbing from the ground (without using a ladder, vehicle, or special equipment). Readily climbable trees are typically located near homes, schools, parks, businesses or other locations where people (particularly children) frequent.

Readily climbable trees pose an extremely high risk when a trunk or main stem would allow a child or average person to climb within arm's reach of an uninsulated, energized electric line. If a readily climbable tree has grown within such an area, the tree shall be immediately removed or pruned consistent with the process set forth in Chapter 8. If possible, branches should also be removed to at least 8 feet above the ground (to discourage climbing on the tree generally).

2.1.4 Tree Houses

Tree houses built in trees growing near power lines present possible electric safety risks. Children or others may contact the line, either directly or indirectly, if a tree house is built too close to conductors. Indirect contact may occur through any conductive object, including a tree or tree parts that are contacting power lines. Minimum tree house distances are set at twice the minimum approach distance to energized conductors for arborists not qualified by training and experience to work within 10 feet of electrical conductors (ANSI Z133, Table 1).

Tree houses built in trees growing in proximity to power lines must meet two criteria in order to remain where they are located. First, no part of the structure may be any closer than the distance specified in Table 2.3. Second, the tree must be pruned sufficiently to maintain the clearance distances specified in Table 2.3 throughout the time period prior to the next scheduled work. Maximum line sag and sway must also be taken into consideration. If these conditions cannot be met, tree houses shall be removed promptly, consistent with the process set forth in Chapter 8. As an alternative to removal, facility reconfiguration may be done at a property owner's request and expense.

2.1.5 Fire Protection

Federal, state and local fire protection laws and regulations shall be followed, and the contractor performing the work must obtain necessary work permits. Crews shall have all firefighting tools and equipment required by the responsible governmental agency. Contractors shall also adhere to fire restrictions concerning work hours, fire watch following work and other policies of the pertinent jurisdiction. Contractors with crews working in fire-prone rural areas are expected to provide basic fire prevention and suppression training to their crews.

Table 2.3. Tree house clearances

Voltage Phase to Phase (kV)	Minimum Tree House Distance From Conductors (Ft-In)	Tree Clearance (Ft-In)
≤ 50	20-00	10-00
50.1-72.5	22-00	11-00
72.6-121.0	25-04	12-08
138.0-145.0	26-08	13-04
161.0-169.0	28-00	14-00
230.0-242.0	33-04	16-08
345.0-362.0	41-04	20-08
500.0-550.0	53-04	26-08
785.0-800.0	70-00	35-00

2.1.6 At-Fault Tree Crew Caused Outages

Primary distribution and transmission outages caused by tree crews shall be assessed by a committee made up of the managing director of distribution and transmission support, director of vegetation management, business analyst and two contract representatives. The conduct of the subject crew during the incident will be compared to requirements in ANSI Z133, OSHA 1610.269, contractor safety rules and the PacifiCorp Accident Prevention Manual. Outages determined to be "at fault" by the majority of committee members will result in a credit to PacifiCorp from the contractor in an amount specified contractually.

2.2 Environment

Environmental respect is a core value of PacifiCorp, as well as Berkshire Hathaway Energy, the parent company of PacifiCorp. Contractors are required to strictly adhere to all environmental rules and regulations. Moreover, contractors are also required to conform to the additional environmental protections contained in these standard operating procedures.

2.2.1 Species of Concern

Tree work should not disturb or harm any rare, threatened, endangered, or protected plant or animal species. Nesting season work restrictions are examples of important scheduling considerations necessary to accommodate protected species. Prior to beginning projects on

federal and state lands, PacifiCorp Foresters will contact the responsible agency to determine whether or not such species are present on the right-of-way. If there are such species present, Foresters should contact PacifiCorp environmental services for support.

All tree and brush work shall conform to guidelines of the responsible governing agency. Field data inventories of threatened or endangered species may be on file in PacifiCorp district offices. PacifiCorp environmental services should be contacted whenever threatened and endangered species are identified.

2.2.2 Wetlands

Wetlands are lands where water saturation is the dominant factor determining the nature of soil development and the types of plant and animal communities present living in and on the soil (US EPA 2015). Wetlands shall be worked by hand. Federal, State and local laws and regulations concerning wetlands shall be followed.

2.2.3 Stream Protection

Work shall not pollute water. Trees shall not be felled into streams or drainage ditches in a way that could obstruct or impair the flow of water, unless instructed otherwise by the responsible governing agency. Machine work shall not be performed within fifty feet of a stream. Soil or debris shall not be placed below the high water mark of streams, unless instructed otherwise by a responsible authority. Equipment shall use existing or designated stream crossings. State forestry or fish and wildlife agencies shall be contacted if tree removal in and around streams could cause erosion or if resulting exposure could increase water temperature. Federal and state laws and regulations shall be followed concerning stream protection.

2.2.4 Bird Protection

Migratory birds are protected by the Migratory Bird Treaty Act of 1918 (16 USC 703-712). Most bird species are protected under the Act; therefore, in an abundance of caution, all bird species should be considered subject to the law's provisions. Contractors are expected to provide whatever training is necessary to ensure that their crews comply with the Act and adhere to these standard operating procedures.

The Migratory Bird Treaty Act prohibits removal of bird nests that have eggs or chicks and killing any birds which are members of any protected species. Active nests may be disturbed only in rare cases of urgent fire or electrical safety risk (in the judgment of the responsible Forester). If tree crews identify a possible immediate risk, they should contact the regional Forester for authorization. Foresters should consult PacifiCorp environmental services regarding whether or not work may be approved. If it may not, work should be postponed until after young have left the nest.

The nests of eagles, threatened and endangered species, and colonial water bird nests (such as those of cormorants and herons) may not be disturbed regardless of whether or not they are active. Eagles are subject to additional protection insofar as it is illegal to disturb them near their nests or winter roosting sites.

Raptors (birds of prey) and herons require buffers (Table 2.4) around active nests to prevent them from being disturbed, unless instructed otherwise by competent environmental or fish and wildlife authorities.

Table 2.4. Work buffers around active nests of eagles, hawks, and herons.

Species	Work Buffer
Herons	1000 feet
Owls	¼-mile
Hawks, ospreys, golden eagles	½-mile
Bald eagles	1 mile

In general, if a bird leaves a nest and does not return within an hour, it is being disturbed and the buffer should be increased. In these cases, environmental services should be contacted within 24 hours to monitor the nest and respond appropriately if the adults fail to return.

Active bird nests and inactive eagle nests should be reported to the appropriate Forester and environmental services using the procedure outlined in Figure 2.2.

Anyone working in vegetation management encountering a dead bird should report it to environmental services

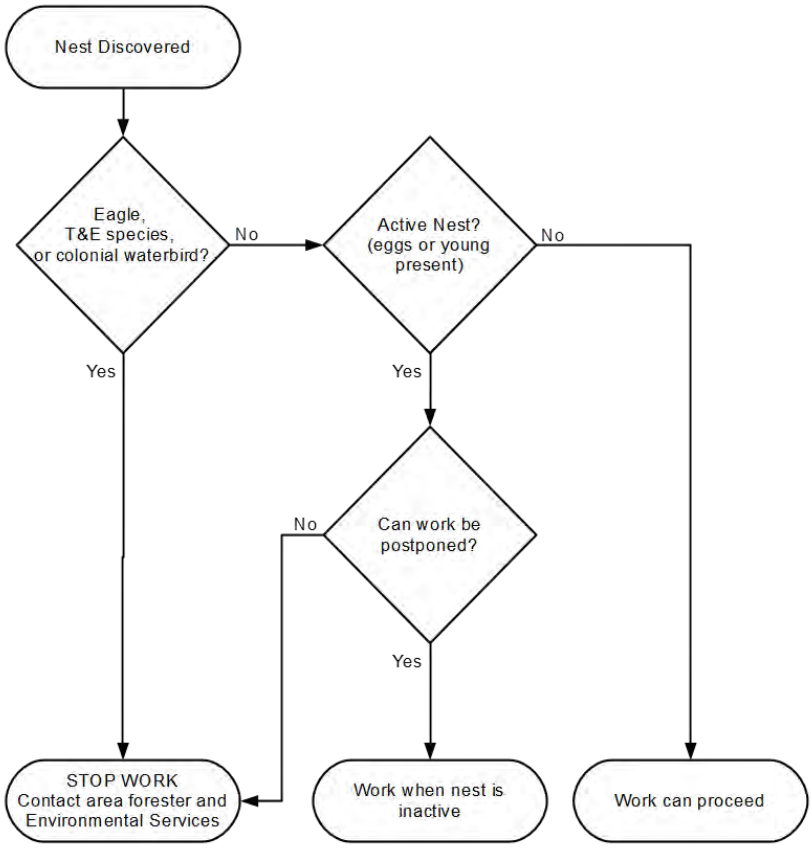

Figure 2.2. Bird nest procedure

2.2.5 Spills

To prepare for accidental spills, absorptive material shall be available. Mixing, loading and cleaning equipment are critical activities that present the greatest exposure to accidents or spills.

In the event of a spill or herbicide misapplication:

- STOP, CONTAIN, ISOLATE
  - Stop the source of the spill
  - Contain the spill (it is especially important to prevent the spill from entering waterways)
  - Isolate the area – prevent people or vehicles from passing through the area.
- Report the spill to the Spill Hotline: 800.94.SPILL and provide:
  - Caller and manager's name
  - Date and time spill was discovered
  - Location (address or longitude and latitude)
  - Manufacturer name and serial number
  - Cause of spill
  - Amount of spill
  - Types of surfaces contaminated

    - Containment and/or clean-up activities performed so far
- Request the help of and notify Supervisor and PacifiCorp Forester and environmental services.
- Remediate the spill
    - Clean up the spill or have it cleaned up, following directives from the Spill Hotline
    - Wash equipment and vehicles.
    - Properly dispose of cleanup materials
    - Follow up with appropriate cleanup documentation.
- Clean-up at or near PacifiCorp generating sites or substations must comply with site specific spill prevention and remediation plans.

2.3 Archaeological Sites

Vegetation management activities shall not disturb archeological sites. Known archaeological sites shall be identified on the process checklist described in Chapter 4. If a forest technician or tree crew identifies something that might have archeological significance, they should move off site and contact the appropriate Forester. The Forester should contact environmental services for advice on whether or not to continue. Work should not proceed without authorization from environmental services.

2.4 Communication

Communication should be open and interactive. It should include everyone involved: management, planners, vegetation management crews, property owners, public land managers, appropriate governmental officials, members of organizations dedicated to related causes and others.

2.4.1 Internal Communication

Communication within the vegetation management department needs to be clear and concise to ensure everyone involved understands the desired outcome. Decision making authority should be delegated throughout the organization, as appropriate.

2.4.1.1 Communication of Vegetation Conditions That Are Imminently Likely to Cause an Outage

Members of the vegetation management team must comply with *Transmission Grid Operations Operating Procedure PCC-215,* which is designed to meet Requirement 4 of the *NERC Transmission Vegetation Management Program* standard FAC-003-4. Requirement 4 instructs utilities to notify Control center with switching authority for the applicable line of vegetation conditions that is likely to cause a fault at any moment. PacifiCorp may implement temporary action, such as rating reductions or taking transmission lines out of service until vegetation can be cleared. Inspectors should report the exact location of the subject trees (providing longitude and latitude if possible) as part of the process.

2.4.1.2 Media

Requests from media (print, electronic, radio or television) shall be referred to PacifiCorp Media Relations and the community relations manager responsible for the area in which the request was made. Media Relations can be reached for each business unit at:

- Pacific Power: 800.570.5838
- Rocky Mountain Power: 800.775.7950

Vegetation management personnel and contractors shall not speak to media representatives without prior authorization from PacifiCorp Media Relations.

2.4.1.3 Legal

No response shall be made to an attorney unless through PacifiCorp's General Counsel's office.

2.4.2 Communication with External Stakeholders

Public land managers, property owners, regulators, and civic organizations have interests in utility vegetation management activities. Educating potentially affected parties about the need for, benefits of and science behind vegetation management can clarify expectations. Members of the vegetation management team, including crewmembers, should know the facts about the program, be prepared to answer basic questions and refer more complex issues through to their Supervisor.

Communication should begin well in advance of work and involve listening to and understanding people's concerns. Work on governmentally-managed property can involve administrative procedures that take months of advance work, including navigating through permit processes and the concerns of specialists who have responsibility for stewardship over public lands. It is not always clear to lands specialists how vegetation management helps balance their (the land manager's) responsibilities against the public's need for a safe and reliable electric grid. A memorandum of understanding among Edison Electric Institute (EEI) member utilities and federal land management agencies (Edison Electric Institute et al. 2016) established a framework for developing cooperative rights-of-way integrated vegetation management (IVM) practices among EEI shareholder-owned electric companies, federal land management agencies and the Environmental protection agencies.

2.5 Tree Growth Rate Definitions

Slow-growing trees grow vertically less than one-foot a year. Moderate growing trees grow vertically between one and three feet a year. Fast-growing trees grow vertically more than three feet a year. While trees exhibit species-specific growth rates, they can also be affected by short term weather events and local site conditions. Professional judgement and experience should be exercised when classifying tree growth by species.

2.6 Tree Removal

In certain circumstances, it is necessary or appropriate to remove trees. Recognizing the special interests of property owners in maintaining trees on their properties, PacifiCorp goes to great lengths to make sure these interests are balanced against the need to maintain safe and reliable service. When a tree is removed, the stumps shall be cut to within six inches of the ground or as close to it as practical (for example, at the top of a barbed wire fence that has become imbedded in the trunk). Stumps of all deciduous trees, brush and vines that are removed shall be treated with an approved herbicide, where permitted. When trees are removed, work shall be performed in a manner that neither damages trunks nor disturbs root systems of adjacent trees. Federal and state agencies sometimes request that trees subject to removal be topped to create "wildlife trees." PacifiCorp may honor such requests, provided the safety of the tree workers or the integrity of facilities are not compromised. Any trees which are removed along these lines should be topped at a height so that the topped tree would never contact any PacifiCorp facilities should it fall.

High Risk Trees. High risk trees are structurally unsound and could strike electric facilities when they fail. "High Risk Trees" are defined as dead, dying, diseased, deformed, or unstable trees which have a high probability of falling and contacting a substation, distribution conductor, transmission conductor, structure, guys, or other electric facility. High Risk Trees pose a safety and reliability risk and must be removed.

Discretionary Tree Removal. Discretionary tree removal is also an important component of PacifiCorp's vegetation management program. Tree removal can reduce safety risks; improve access to facilities, clear lines of sight, and moderate future workloads. Tree conditions are site and tree specific. In general, removals are encouraged in a distribution right of way when trees are not part of landscaping. On a transmission right of way, removal is encouraged and often mandated for all trees which could grow tall enough to strike the subject transmission line. The specific scope of discretionary tree removals is discussed in Chapter 5 (Distribution) and Chapter 6 (Transmission) and may be further defined in a particular work release.

2.7 Mechanized Vegetation Control

Slashbusters, mowers, jarraffs, helicopter cutters, etc. have the potential to increase productivity and reduce costs in rural, densely vegetated areas and should be used wherever practical.

Mowers and Slashbusters. Mowers and slashbusters are often more cost effective than manual methods of tree removal and should be used where terrain and vegetation conditions warrant. Mowing should be limited to fifteen feet either side of distribution primary wires, within transmission rights-of-way and along access roads serving PacifiCorp facilities.

Helicopter and Other Mechanized Cutters. Helicopter and other mechanized cutters can improve productivity in rural, densely vegetated areas. Mechanical cutting shall comply with ANSI A300 (Part 1) section 8.5. Mechanical cutting is typically limited to rural or

remote locations, and contractors may use mechanical cutting only upon specific written instruction from PacifiCorp. When mechanical cutting is employed, cuts should be made close to the main stem, outside of the Branch Bark Ridge and branch collar. Precautions are taken to avoid stripping or tearing of bark or excessive wounding.

2.8 Slash Disposal

Tree stems and tree limbs greater than six-inches in diameter should be left on site. Other materials require disposal. "**Slash**" is brush, and tree limbs or shrubs less than six inches in diameter, removed during tree operations. At the end of the work day or upon leaving a particular worksite all Slash must be brought to ground and no severed limbs are to be left in the tree canopy (hangers). Work locations shall be left in a safe and orderly condition.

Developed Areas. In developed areas, Slash should be chipped and removed from the site unless an agreement has been reached with the property owner to leave it. Slash may be left temporarily, provided the crew has notified the property owner or tenant, and arrangements made to clean it up to the property owner's reasonable satisfaction within two business days.

Rural Areas. In rural, off-road areas, Slash can be disposed of on-site. All Slash should be lopped into maximum lengths of three feet and scattered in piles no more than two-feet high. Limbs greater than six-inches in diameter and brush should be piled separately. Piles should be made at the sides of distribution rights-of-way and outside the wire zone of transmission rights-of-way, unless specified otherwise by the regional Forester. If brush is chipped, it may be broadcast on site, provided that resulting chip piles are no higher than two-feet. Debris piles should not limit or block access to the right-of-way or create fire risk.

2.9 Emergency Response

Tree work will be required from time to time on emergency storm restoration. Crews shall be properly equipped to perform the work. PacifiCorp will be the sole determiner of equipment appropriateness. Travel and lodging during the storm is billable. Double occupancy is expected for crew members.

Contractor should provide a designated contact person for each region. Requests for crews should be routed through that contact. Contractor shall be responsible for dispatching crews whenever emergency restoration services are needed.

Crew rosters shall be provided by the contractor and maintained during restoration efforts. At a minimum, rosters shall include: crew member names and position, location, contact information, equipment and identification number.

Debris from storm work is left on site and not chipped or cleaned up, so chippers should not be taken into the field during restoration work. Notification is not required during emergency restoration work, but crews should conduct themselves respectfully.

Emergency work shall be reported on a *Weekly Time and Vegetation Report* (Figure A.1). Emergency work is done under the authority of the district operations managers in cooperation with PacifiCorp Foresters. Tree crews and forest technicians assigned to storms should work under the direction of circuit captains assigned by operations. Tree crews should report their progress at least daily to both the circuit captain and their Supervisor. The supervisor should report crew progress to the appropriate Forester. All storm work must be conducted as if the line is energized. If the line cannot be worked safely under the assumption it is energized, it must be grounded in accordance with section 2.1.1. In general, PacifiCorp does not dispose of Slash or debris resulting from storm damage. Trees that fall during storms would do so regardless of whether or not the lines are present. It should not be PacifiCorp's responsibility to clear the debris simply because the tree or trees from which it originated damaged PacifiCorp facilities on the way down. However, if an outage is preventable, Slash may be cleaned-up and removed from a property at the Forester's discretion.

2.10 Pronounced Facility Conditions

While tree crew members are not facility inspectors, they can be helpful in identifying pronounced conditions, such as cracked poles, broken cross arms or insulators, loose guy wires, and other problems. Tree crew members should report the condition on the *Maintenance Condition Report Form*, (Figure A.2) and the Supervisor or forest technician should promptly forward the completed Maintenance Condition Report Form.

2.11 Property Damage

Contractor shall be responsible for property damage arising out of or related to work. Restoration of surfaces and repair of property damage in the execution of the Contract shall be part of the work. Such restoration shall include, but is not limited to, ruts, disturbed drainage ditches, broken drain tiles, cut fences and damaged fence posts.

Contractor shall inform PacifiCorp of claims within 24 hours of damaging the property. Contractor has 15 business days to resolve any damages or PacifiCorp will settle the claim and bill the contractor. Contractor must inform PacifiCorp personnel and get permission for an extension if the time frame cannot be met.

Contractor shall be responsible for any damage or claims against PacifiCorp resulting in violations of conservation measures as a consequence of Contractors actions.

2.12 Freelance Work

No one employed in PacifiCorp's vegetation management department may solicit or perform arboricultural-consulting or tree work (pruning, removal, insect or disease control, fertilization etc.) for interests outside of officially authorized PacifiCorp projects on open feeders, grids, transmission projects, tickets, storm orders, work orders or other PacifiCorp assigned project. Outside projects may include side jobs for cash, work for private arboricultural firms (whether or not they are owned by the tree crew members doing the work), consulting or any other enterprise engaged arboricultural work.

2.13 Fences and Gates

Gates should be left open or closed as they were found, or as the property owner instructs. Damage to fences or gates shall be reported to the property owner and repaired as soon as possible.

2.14 Climbing Spurs

Climbing spurs shall not be used when climbing to prune trees.

Exceptions:

- when limbs are more than throw line distance apart and there is no other safe means of climbing the tree.
- when the bark is sufficiently thick to prevent spur damage to the Cambium.
- when working High Risk Trees that are to be reduced in height and left for wildlife.

2.15 Winching Vehicles

Winch cables or ropes should not be wrapped directly around anchor trees. Doing so damages a tree's bark and Cambium and cannot only reduce its health and value, but also eventually create high risk to overhead lines. If the need arises to winch a vehicle (including an all-terrain vehicle), a nylon strap (or equivalent) at least 2-inches wide shall be used around the tree, and cables or ropes attached to the strap. Utility poles or towers shall not be used as winch anchors.

3. TREE BIOLOGY AND PRUNING

Understanding fundamental tree biology is essential to understanding the impacts of pruning on tree health and growth (Gilman 2012). Trees in proximity to electrical conductors should be pruned for clearance in a manner that minimizes residual harm to the tree and directs future growth away from the conductors.

3.1 Tree Biology

Understanding fundamental tree biology is essential to understanding the impacts of pruning on tree health and growth (Gilman 2012; Lilly 2010). Trees in proximity to electrical conductors should be pruned for clearance in a manner that minimizes residual harm to the tree and directs future growth away from the conductors.

3.1.1 Foliage

Tree survival depends on an adequate supply of carbohydrates produced by the leaves. If a tree abruptly loses a large portion of its foliage, as can happen with over-pruning, it could lack the energy resources to meet its needs. Trees with insufficient foliage could be weakened to the point where they become subject to attack by opportunistic insect and disease pests and sun damage (Shigo 1986; Gilman 2012).

3.1.2 Stems

Trunks and branches are tree stems. Stems make up the bulk of the mass of a tree. Their function is support, energy storage, and water, mineral, carbohydrate and growth regulator transport. A developmental process unique to tree stems is their ability to compartmentalize or "wall off" injury and decay (Harris, Clark, and Matheny 2004). Understanding the anatomy of tree stems is critical in achieving the pruning objective while minimizing damage to the tree.

3.1.2.1 Xylem

Xylem is wood tissue. Sapwood is young, living xylem that stores carbohydrates, provides support, and conducts water and essential elements. Heartwood is older, dead xylem that provides support, and often contains anti-microbial compounds.

Long, hollow conducting cells (trachieds or vessels) predominate xylem structure. While trees need this vascular structure to conduct water and essential elements, it can be exploited by pathogens to spread up and down the stem. Trees attempt to block or "wall" off disease spread by plugging cells in the xylem in a process known as tylosis (Shigo 1986).

3.1.2.2 Cambium

The tree's "**Cambium**" consists of a thin layer of rapidly dividing cells around the outside of the sapwood. Its primary function is to produce wood to its inside, creating diameter growth. This is

the only source of wood production in the tree system, and the tree has no ability to replace damaged or decayed wood.

Pathogens gain access to wood through wounds. In response to wounding, the Cambium generates a "barrier zone" containing antimicrobial compounds. It protects new wood by separating it from potentially infected wood that existed at the time of wounding (Figure 3.1).

Figure 3.1. The Cambium creates a barrier zone that contains discoloration and decay in the old wood.

3.1.2.3 Branch Collars

Branch collars are a combination of parent stem and branch tissue generated through coordinated growth around the branch attachment (Figure 3.2). In the spring of the year, diameter growth begins at branch tips, and works toward the base. When new branch wood meets the branch base, it grows around the juncture. Later in the growing season, wood from the parent stem envelops branch wood laid down earlier. The "**Branch Bark Ridge**" is area of raised bark where branch wood meets stem wood, pushing the bark outward, forming a layer of raised bark which is often a sign of a strong branch attachment. The abundance of metabolically active tissue at the branch collar can be made to produce antimicrobial compounds in response to infection. (Shigo1986). This area is known as the "**Branch Protection Zone**," which is an area of chemically and physically modified tissue within the base of the branch that retards the spread of decay from the branch to the parent stem.

Figure 3.2. Branch collars form at the base of branches.

3.1.2.4 Codominant Stems

Codominant stems are stems that are at least half the diameter of their parent stem and compete for dominance in the tree crown (Gilman 2012). They are similar to branches but have no branch collars or Branch Protection Zones making them more prone to decay if one of the stems is removed. Codominant stems are often problematic because as the two crowded branches grow in diameter, they push against each other and undermine the structural integrity of the union, making them prone to stem failure (Lilly 2010).

3.2 Utility Line Clearance Pruning

The primary purpose of utility line clearance work is to minimize safety and service reliability risks caused by tree-power line conflicts. Pruning is primarily performed on distribution facilities, although it can have application to transmission lines in some cases.

Pruning to clear conductors shall adhere to the principles of modern arboriculture. The *American National Standard for Tree Care Operations* A300 (American National Standards Institute 2006, 2008), International Society of Arboriculture (ISA) *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002), *Best Management Practices: Utility Pruning of Trees* (Kempter 2004) and *An Illustrated Guide to Pruning* (Gilman 2012), among other references, convey those principles.

While proper utility line clearance work should be consistent with practices that promote tree health, utilities cannot place tree health over public welfare. Sometimes, there is no way to obtain proper clearance in a manner that ensures the health of a tree (Lilly 2010). This is particularly true regarding foliage retention. In cases were the tree cannot be pruned without harming its health, tree removal is often best for the tree, tree owner and utility. If a property owner does not allow tree removal, the tree should be pruned to specification clearances in all circumstances, even if that pruning work is against a customer's wishes or could harm the tree.

3.2.1. Natural Target Pruning

Natural targets are proper final pruning cut locations at strong points in the tree's disease defense system. Natural targets are branch collars and proper laterals. Removing branches at natural targets rarely damages the joining trunk or limb (Gilman 2012). The ISA *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002) and *ANSI A300* (American National Standards Institute 2008) describe the technique. Targets vary depending on whether a branch is removed or reduced.

3.2.2 Directional Pruning

Directional pruning is natural target pruning applied to redirect tree growth away from utility lines (Gilman 2012). ANSI A300 and ISA's Best Management Practices (Kempter 2004) instruct that pruning to clear the utility space involves thinning cuts: removing at natural targets entire branches that are growing toward (or once cut will produce sprouts that will grow toward) the power lines.

While Heading Cuts produce sprouts that grow quickly back into the power lines, branch removal and reduction promotes growth away from conductors. Since the point of utility pruning is to train trees away from power lines wherever practical, branches growing away from the electric facility should not be pruned. Instead, these stems should be allowed to develop to their natural height or length, provided that growth does not create unreasonable safety risks. This cannot be accomplished with strongly excurrent trees trapped directly beneath conductors.

Topping, round-overs, flush cuts, branch tipping and rip cuts are improper because they damage trees. Directional pruning is consistent with natural tree structure. Remaining branches retain their taper, strong attachments, growth regulators and spacing. They continue to grow and function normally, allowing the tree to reach to its natural height.

"V" shapes often result on properly pruned trees growing under power lines particularly on decurrent, deciduous trees (Gilman 2012; Kempter 2004; Miller 1998; Shigo 1990). Limbs growing upward and toward the facility should be cut back to the trunk or to limbs growing away from the conductors (Figure 3.3). Remaining branches should have sufficient clearance so they do not damage the conductors in inclement weather common for the locality (high wind, freezing rain, snow or other conditions). Excurrent trees (such as many conifers) are more problematic but should be reduced to appropriate laterals or whorls. "L" or one-sided shapes often result on properly pruned trees to the side of conductors (Shigo 1990; Gilman 2012). Limbs on the wire

side of trees located adjacent to facilities should be cut back to the trunk; or to limbs growing vertically, sideways or downward; depending on the distance to the line or available natural target.

Figure 3.3 "V" or "L" shapes can develop from crown reductions on trees growing in close proximity to power lines. The ultimate objective is to train the tree up and away from the conductor whenever possible, so the facility is cleared while minimizing health risks to the tree.

3.2.3 Collar Cuts

Branches should be removed at the collar (Figure 3.4). Cutting into the collar, known as flush cutting, compromises the Branch Protection Zone and creates a direct port of disease entry into the parent stem. Flush cuts are damaging and inappropriate.

Disease can weaken stems, potentially creating safety risks. On the other hand, proper branch removal does not leave stubs that pathogens can use as an energy source to overcome the tree's defense system and spread into the trunk. If the branch is removed correctly, only the Branch Protection Zone is exposed, giving an advantage to trees in keeping out disease. As a result, collar cuts virtually prevent decay from entering the parent stem (Gilman 2012).

Occasionally, branch collars are not readily evident and the collar must be approximated using the Branch Bark Ridge. The cut should start in the branch crotch, just outside the Branch Bark

Ridge, and follow an outward angle that mirrors the inward angle the Branch Bark Ridge makes with the trunk or parent stem. The cut should end roughly opposite the bottom of the Branch Bark Ridge (Figure 3.4).

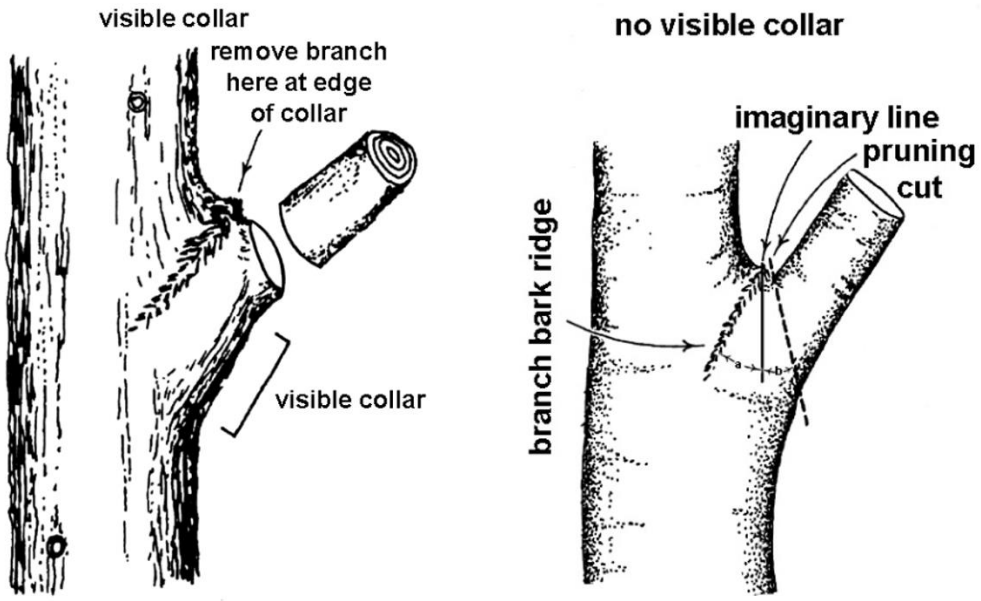

Figure 3.4. A proper collar cut, on a tree with and without a visible branch collar (Gillman 2015)

3.2.4 Reduction Cuts

Reduction is selective pruning applied to reduce the top or side of a tree or individual limb (American National Standards Institute 2008). In a utility context, the goal of reduction is to promote future tree growth away from the conductors, at least on decurrent trees. Reduction cuts shorten leads to appropriate laterals (Figure 3.5). An appropriate lateral is no less than one-third the diameter of the original limb and retains at least three-quarters of the lead's foliage (American National Standards Institute 2008). Individual branches are autonomous in their energy requirements. Removing too much foliage from a limb could deprive it of sufficient energy to establish apical dominance, maintain its taper, close the wound, and compartmentalize disease which will enter the wound.

A lateral that is too small will not develop into a structurally viable leader. Moreover, shortening a lead removes apical meristems and other points of growth regulator production, which can disrupt orderly growth. If, for example, auxin concentrations are insufficient, on some species a crowded mass of upright, rapidly growing, poorly attached shoots can sprout from the cut and grow directly back into the lines.

Removing more than 25% of foliage from a limb has the same damaging result as internodal topping cut, regardless of whether or not the cut is made to a proper-sized lateral. Even under the best circumstances, reduction cuts are potentially harmful, acting more like a heading than a thinning cut (Gilman 2012). Consequently, if a lead cannot be shortened to a limb at least one-third the diameter of the original lead, or if a cut removes more than 25% of the foliage, that limb should be either targeted for removal, or not pruned.

Figure 3.5. A proper crown reduction cut.

3.2.5 Large Branches

Large branches (those 3-inches in diameter or greater) can seldom, if ever, be removed without harming the tree, particularly if they are codominant stems. Yet, large branches must be prevented from growing toward the utility space, and that can mean heading or removing them entirely. Both options can be harmful to the tree, and heading large branches often fails in effectively clearing the conductors (Figure 3.6).

Removal of large branches should be done based on a measured approach. For example, one or two large limbs might be removed out of three that are growing toward the conductors, and the remaining limb(s) subordinated and targeted for removal on subsequent cycles, so long as the required specification clearances are accomplished.

Figure 3.6. Old Heading Cut. Shoots that proliferate from these cuts often dominate the tree's crown, and gaps result when branches containing these shoot clusters are removed.

Large branches selected for later removal can be subordinated or removed gradually over subsequent cycles (either interim or cycle). Subordination thins a portion of a limb's foliage. Reducing a fraction of the foliage in this way suppresses the stem's growth and allows the remaining tree parts to adjust and develop. In some cases, subordination can allow a codominant stem to develop into a branch over time, enabling a Branch Protection Zone to form so a limb can be removed without unnecessarily subjecting a tree to disease (Gilman 2012). Using subordination over multiple cycles to remove large branches can reduce the effect of structural limb removal on tree health, while ultimately circumventing the permanent problems Heading Cuts can cause, even if that means temporarily heading the branch.

3.2.6 Heading Cuts

A heading cut is an internodal cut on a stem, or a cut made to a lateral too small to assume dominance and should be considered a “cut of last resort”. Removing large stems that have been headed often leaves wide gaps in the tree, because shoots that proliferate from the old Heading Cuts often dominate the crown, and gaps result when branches containing these shoot clusters are removed. Moreover, previously headed branches usually lack natural targets. When such branches are growing toward the conductors, there might be no alternative but to remove them entirely. However, in some cases, headed limbs may be left as a temporary measure. Such headed branches should be removed on subsequent cycles.

Headed branches growing away from the facility space should not be pruned as a matter of standard practice. However, shoots growing from the old Heading Cuts should be inspected for structural integrity during subsequent visits. Corrective action, such as crown restoration (Gilman 2012), could be necessary if these sprouts are found to be structurally weak. Crown restoration involves restoring a previously headed stem’s natural structure by thinning sprouts emanating from the old wound. Crown restoration should be done incrementally over the course of several cycles. In some cases, structural defects resulting from heading cuts are so severe that

they cannot be corrected (Dahle et al. 2006). In these cases, the customer should be contacted about removing the entire tree, or at least the subject branch or branches. If tree or branch removal is not possible, there could be no choice but to remove the weak growth with a new Heading Cut. This should be done only when extensive decay or hollow exists in the remaining branch, with the approval of the Forester or Supervisor, for safety (not aesthetic) purposes.

3.2.7 Deciduous Trees

The "V" in many crown-reduced deciduous trees quickly fills in with shoots. These shoots eventually require pruning to prevent them from interfering with the lines. In subsequent cycles, it is important not to strip all these sprouts away, since that practice contributes to lion's tailing and can stimulate resurgent growth in many species. Rather, about half of the shoots should be removed, and the other half retained providing adequate clearance is maintained (Figure 3.7).

Figure 3.7. On return visits to "V-Outs", under pruning should leave the smaller, suppressed shoots to retain foliage and soften the visual effect of crown reduction.

Shoots selected for removal should be the largest and most vigorous, leaving smaller sprouts behind. Growth selected for retention should be pencil-thin at the point of attachment. If need be, these remaining shoots may be headed back to obtain specification clearances. In this way, a rotation can be established where the largest, most vigorous shoots are removed each cycle, but smaller, suppressed shoots are left to soften the negative visual effect that many customers find objectionable.

Leaving shoots in the interior of a "V" provides shade and retains auxin production, both of which suppress vigorous sprouting, and helps the trees hold clearance. Eventually the sides of the tree will exceed wire height, resulting in more of a "U," and shade the interior of the tree,

suppressing shoot growth even more. In time, this top growth decreases the proportion of the crown occupied by the cleared utility space and softens the negative aesthetics.

Figure 3.8. Crown reduction on a conifer.

3.2.8 Conifers

Many conifers; such as pine (*Pinus spp.*), spruce (*Picea spp.*) and Douglas-fir (*Pseudotsuga menziesii*) have strong central leaders (excurrent form). When these types of trees grow directly under the lines, they should be reduced to the whorl or largest available lateral that provides specification clearance. Cuts made to conifer whorls are typically flat-topped in order not to damage any branches in the whorl (Figure 3.8). Laterals should be tipped on conifers, which prevents them from bending up toward the conductor.

4. PLANNING, SCHEDULING AND REPORTING WORK

Scheduled work involves systematic cycle or interim projects on both distribution and transmission lines. Transmission overbuilt on distribution lines should be worked in conjunction with distribution feeder or grid projects. Schedules should be based on the time elapsed since the last scheduled work, compliance, voltage (particularly for transmission lines), the frequency of tree-caused outages, customer count, the existence of important accounts (hospitals, factories, mines or other high demand facilities), tree conditions, the number of customer complaints, the growth rate of predominant tree species, geography, customer density, rainfall and other environmental factors.

4.1 Process Checklist

For all scheduled distribution and transmission work, Foresters and Supervisors utilize the *PacifiCorp Vegetation Management Process Checklist* (Figure A.3) to facilitate systematic project management.

4.1.1 Authorize Project Work

No work may begin on any project until a Forester has authorized such work in writing. The contract with an independent contractor specifies the specific manner by which work is authorized; typically work is authorized through issuance of a *Work Release* (Figure A.4). A work release authorizes a contractor to proceed with a specific project and provides additional written instructions for the completion of the work. Contractors will not be compensated for any work performed on projects that have not been authorized through a work release or similar written instruction, if contemplated in the contract.

For internal tracking purposes, the Forester should also forward a copy of any issued work release to the PacifiCorp business specialist and director of vegetation management. The Forester should also notify internal stakeholders of a project prior to beginning work. Internal stakeholders include operations managers, customer-community managers, line patrolmen, hydro facility site managers and other personnel. PacifiCorp tariff policy should be notified if work will be conducted in a location where either past or current state public utility commission complaints have been received. PacifiCorp communications department should be informed if work will be conducted in the vicinity where public relations issues have surfaced in the past or could be reasonably expected to arise during currently planned work.

The work release specifies the project type and provides instructions on discretionary tree removals, tree replacements, use of chemical treatments, and other particulars. It also assigns required completion dates. Before work begins, the Supervisor shall distribute copies of the work release to each crew assigned to the project, and review instructions for proceeding.

After the project is finished, the Supervisor shall sign the work release to certify the project is completed and closed. The signed work release shall specify the actual starting and completion dates and any pertinent comments, including notation of any work that is either incomplete or has been excused from meeting specifications by the Forester. By signing off on a project, the contractor guarantees that the work required under the work release has been completed to

PacifiCorp's specifications, and assumes responsibility for any failures to meet PacifiCorp requirements, outside of exceptions noted in the comments.

PacifiCorp maintains a database of historic data on work performed by vegetation management contractors, including information on the type of work performed, and the person-hours charged to complete these tasks. Historic information about a location may be provided to independent contractors released to perform work at such a location.

4.1.2 Project Planning

The contractor performing the work is responsible for developing the project plan and deciding how work will be completed. In developing the project plan, the supervisor and forest technician typically coordinate with each other and should factor certain issues that may be implicated in the project plan and performance of work.

- *Federal Lands*. PacifiCorp facilities that cross federally-managed lands are in place under the authority of special use permits. Supervisors and forest technicians must ensure the conditions in the pertinent special use permits are satisfied. Any concerns about the potential of not complying with provisions in special use permits shall be communicated to the Forester.

- *Chemical Permits*. Herbicide or pesticide use permits are required in certain jurisdictions, particularly on federally-managed land. If a permit is required, Supervisors and forest technicians must confirm that the permit has been acquired before herbicide application may proceed.

- *Other Permits*. Other permits may also be required. Examples may include projects along state road rights-of-way, in some communities, county or state forests or riparian areas. All required permits shall be obtained by the contractor before work may proceed.

- *Ticket Work*. PacifiCorp will provide a contractor with past ticket work requests associated with a feeder or grid, representing instances that customers had called in work requests which were not an immediate threat to safety or electric service and could wait until regularly scheduled work. Forest technicians shall ensure that such work is performed or explain to the customer the reasons why the work does not need be done.

- *Flagging*. Many areas require flaggers and traffic control. Supervisors and forest technicians shall identify areas where flagging support is necessary, on both the *Activity Report* and a map.

- *Uniground Construction*. The overwhelming majority of PacifiCorp distribution circuits are built with wye configuration, which includes a neutral wire. However, uniground construction, which does not have a neutral wire, is found in some areas. The difference is of little consequence on wires attached to cross arms, as all cross arm-mounted wires should be cleared to primary specifications (see section 5.6.5). However, there is a

significant distinction on lines without cross arms. Wye construction has a low neutral, while the low wire on uniground construction carries primary voltage. This could lead to safety and clearance risks if the low primary is mistakenly identified as a neutral. Contractors are responsible to protect the safety of their employees. If a circuit is uniground construction, Supervisors and forest technicians are responsible to alert tree crews of the potential of a low-mounted primary, so safe work practices can be conducted and proper clearances obtained.

- *Special Request Property Owners*. PacifiCorp provides contractors with notes identifying customers who previously requested that the contractor (i) make personal contact prior to performing work , (ii) comply with special access restrictions (i.e., property owners who have requested tree crews not use a particular gate or drive), or perform work consistent with time sensitive instructions (i.e. to refrain from work prior to a hay harvest).

- *Hostile Property Owners*. Certain property owners may be hostile to vegetation work on or near their property. PacifiCorp often provides contractors with some historical notes related to property owners who have exhibited opposition to work in the past, but PacifiCorp cannot guarantee that every hostile property is identified in such notes. Forest technicians are responsible to be proactive in working with all property owners, especially those who have been identified as hostile in the past. Supervisor and forest technicians should develop a strategy for working with hostile customers which minimizes any direct adversarial exchanges.

- *Hydroelectric Facilities*. PacifiCorp hydroelectric facilities and adjacent rights-of-way could have restrictions on vegetation management activities. PacifiCorp's hydro operations and implementation (compliance group), PacifiCorp right-of-way services, or PacifiCorp environmental services shall be contacted before activities on or adjacent to hydroelectric facilities begin. Herbicide use on or adjacent to PacifiCorp hydroelectric facilities shall be reported to the plant manager weekly. Tree crews working on property that is part of a hydroelectric project site should check in with the plant office before beginning work and check out after work each day.

- *Schools*. School main or administrative offices should be notified of work to be done within school grounds or on property adjacent to schools. An effort should be made to schedule work without children present or specific accommodations made for pupils' safety. Particular effort should be made to identify targets within drop zones, climbable trees, access issues and other safety matters on site.

- *Mobile Home Parks and Apartment Complexes*. Mobile home park and apartment complex managers should be notified in advance of planned work. Managers could be aware of tenants with specific concerns. Mobile home park and apartment managers should be encouraged to communicate with affected renters. Individual units may still need notification of impending work.

- *Archeological Sites*. Archeological sites should be located and marked. Work must conform to guidelines of the responsible governing agency. If archaeological artifacts are located on private lands, the finding shall be reported to PacifiCorp environmental services. Field data inventories of sites known to PacifiCorp are on file in PacifiCorp district offices.

- *Environmentally or Culturally Sensitive Areas.* Governmental, tribal and environmentally sensitive lands present particular demands. Lands under governmental or tribal management and environmentally sensitive areas should be identified early to allow time to work through the required processes. The contractor will identify federal, state, county, city and pertinent non-governmental organizations potentially affected by the project. The appropriate entity should be notified of the impending project and asked whether or not they have any concerns.

  Before any field work begins, a meeting should be conducted with appropriate governmental agencies that have interest in the project. This is especially important for federal land managers and tribal leaders. In particular, no work may begin on Bureau of Land Management or Forest Service managed lands without a pre-work coordination among federal officials and vegetation management. Multiple projects and multiple agencies may be covered by a single meeting. The meeting(s) should be organized by the Forester, and PacifiCorp's environmental services should be notified and invited to attend. The meeting may be held either in person or through a conference call. Work shall not begin until vegetation management receives written notice to proceed from the appropriate agency.

  If environmentally or culturally sensitive areas are identified on governmentally-managed lands, a contractor with appropriate expertise should be retained to delineate subject sites or areas. Target locations should be marked on maps and on site. Care should be taken with field marking to ensure it is sufficiently clear to alert crews, while at the same time being sufficiently discreet to avoid casual detection.

  Foresters maintain the single master version of any PacifiCorp mapping resources. Effort should be made to work off of digitized maps wherever possible. Forest technicians should work with the GIS department to secure digital maps and communicate with the PacifiCorp Forester responsible for the region. Foresters should ensure that there is a digital master with all pertinent information. If paper map copies are necessary, the Forester will check out copies of the master version, which should include sensitive environmental or cultural sites.

4.1.3 Work Identification

Prior to any tree crew work, forest technicians should attempt to contact the property owner or tenant on whose property the work will occur, consistent with the procedures outlined in Section 8.2. Forest technicians shall document their contact with property owners or land managers, and organize work for tree crews on an *Activity Report* (Figure A.5).

The Activity Report should identify the district in which work is to be conducted, the project number (the discrete number assigned to the district), the contractor assigned to the job and the feeder or grid number for distribution or plant locality number for transmission.

4.1.4 Work Assignments to Project Crews

Work assignments are the responsibility of the contractor performing the work. Tree crew members should be supplied with copies of work releases and permits, so that crew members are able to produce required documentation to the appropriate authorities on demand.

4.2 Reporting Work

After completing work, the contractor (i.e., the crew leader) shall document tree work on weekly and daily reports.

4.2.1 Daily Report

The *Vegetation Management Daily Report* (Figure A.6) shall be used by an independent contractor to keep detailed records of productivity, tree location, and chemical use.

4.2.2 Weekly Report

Tree work shall be reported accurately on the *Weekly Time & Vegetation Report* (Figure A.1). The back of the report provides instructions and definitions for each cell. Weekly Reports, along with the corresponding invoice should be submitted to the Forester responsible for the area in which the report was completed.

Most of the items on the Weekly Report are self-explanatory. A few cells warrant clarification:

- **Item 27**. General Work Location: The general location should be the approximate address. For example, the 4000 block of Dead Elm Memorial Road. Note that for audit purposes, crew leaders will be responsible to find and identify all the trees they worked over the course of a week. Consequently, more detailed information should be kept in the daily report (Figure A.6).
- **Items 32, 33**. Woody plants (including vines) less than 6-inches in diameter at breast height are classified as saplings. The actual square footage occupied by the above ground portion of the plant should be measured and recorded, with a 100 ft^2 maximum per plant for both pruned and removed vegetation. Note that multi-stemmed woody plants where no single stem is over 6-inches in diameter are classified as saplings, with a maximum of 100 square feet per plant.

- **Item 37**. Stump Spraying: Document the time spent treating stumps of trees and Brush feet that have been removed during the day. Use quarter-hour increments.
- **Items 43-45**. To obtain the diameters of multi-stemmed trees, add the diameters at breast height of individual stems. For example, if a tree has three stems of 8, 4 and 3- inches in diameter, the tree would be 15 inches in diameter and reported as a 12 to 24-inch removal. An exception would be if no stems on the plant are over 6 inches in diameter at breast height, in which case the plant should be classified as a sapling.
- **Item 47 and 48**. Saplings pruned and removed. Saplings are trees under six-inches in diameter at breast height. Report area covered by the crown of the plant, with a 100 ft2 maximum for each plant. There must be six inches of soil between stems of the same species to count as multiple plants.
- **Items 54 and 55**. For transmission cycle work, capture the number of acres cleared or sprayed respectively using linear feet.

4.3 Tree Crew Audits

A PacifiCorp will occasionally perform a tree crew audit. The primary purpose is to provide a quick assessment of quality assurance. Crew audits benefit both PacifiCorp and the Contractor and are considered a best management practice (American National Standards Institute 2006). Completion of an audit does not constitute acceptance of work, which must still be validated by the submission of a complete work release. But catching exceptions and identifying the crew behaviors that produce such exceptions early will very likely reduce the number of exceptions found on post-audit. Exceptions found during post-audits after crews have left the area can be costly for the contractor to remedy and can incur additional PacifiCorp staff time to follow-up and ensure their correction.

Crew audits will be done at the Forester's discretion. All work including work identification, transmission, TGR, post-inspection, and pole-clearing will be subject to audit at any time.

Each audit should include the Forester, the crew-leader, and optionally, the Supervisor. The tree crew shall be allowed to bill their time at time & equipment (T&E) rates for the duration of the audit.

During an audit when an exception is noted it will be recorded on the *Tree Crew Field Audit Form* **(**Figure A.7**)** along with the location, comments on the nature of the exception, and if correction is required. Contractor shall remedy any exceptions noted on the Tree Crew Audit Form.

4.3.1 Extreme Exceptions

If during the course of an audit the Forester identifies an exception that is in violation of federal or state law, or witnesses an egregious safety violation, the crew may be shut down (at the Forester's discretion) until the exception is corrected.

4.4 Worksite Inspection

PacifiCorp Foresters will also conduct worksite inspections, at the Forester's discretion. The Forester should use the *Worksite Inspection Form* (Figure A.8), to record the findings of these inspections. The form provides a general checklist of inspection items like use of personal protective equipment, tailboard, equipment condition, vehicle set up, herbicide labeling, and other safety items.

4.5 Contractor Project Completion

Contractors performing work are always responsible for ensuring that all work on a project is completed to PacifiCorp specifications, consistent with these standard operating procedures. Supervisors (or a delegate) should inspect all work for compliance with these specifications and any additional instructions provided in the work release. Any exceptions to specifications, for any reason, must be noted on the work release.

Contractors are responsible to collect and submit to the Forester:

- PDF copies of all maps that have been marked by tree crews;
- PDF copies of *Vegetation Management Daily Reports* (Figure A.6);
- PDF copies of *Weekly Time & Vegetation Reports* (Figure A.1);
- PDF copies of any signed *Property Owner Refusal Complaint* forms (Figure A.9)
- customer information that might require follow-up the next time a project is worked, including customers who refuse to allow work or access, customers who express concerns about work, or customers or property owners who threaten vegetation management employees;
- PDF copies of tree replacement vouchers issued
- a PDF copy of the signed work release.

4.6 Project Closure

Foresters should inventory maps and collect daily logs, tree replacement vouchers, hazard forms as well as concerned customer, dangerous customer and refusal information received from the Supervisor. Foresters should file this information digitally, so it can be retrieved when work is conducted the next time through.

Foresters must confirm receipt and filing of a signed work release from the contractor for each job. Foresters must examine the comment section for any work that was not completed to specification, and if necessary, make provisions to correct those outstanding conditions.

The Forester should close the work release and inform the business specialist and director of vegetation management of the closure by electronic mail.

5. DISTRIBUTION PROCEDURES

Distribution lines are overhead facilities that are energized less at below 46 kV (except that there are some legacy 34.5 kV transmission lines in certain areas). Distribution primary voltage ranges from 600 to 45,000 volts, while lines energized below 600 volts are secondary.

5.1 Distribution New Construction Clearing

Every effort should be made by the PacifiCorp not to build new line over or through trees that will need to be cleared from the facilities in the future. New distribution rights-of-way should be cleared to specification before the lines are energized. Initial clearing is important because it reduces the need for future planned outages to clear the line after conductors are installed and sets customer expectations for future work.

5.2 Distribution Cycle Maintenance

Trees and vegetation shall be cleared from distribution facilities on scheduled cycles. Facilities shall be worked systematically, either by feeder or grid map. The duration of a cycle is dependent on local conditions, as determined by PacifiCorp. Cycles at PacifiCorp are typically 4 years in California, Oregon, and Wyoming, and 3 years in Idaho, Utah, and Washington.

In performing vegetation management distribution cycle work, contractors are required to:

- Systematically clear trees and other vegetation a specified distance from all primary conductors, consistent with Sections 5.2 through 5.5 depending on the type of project specified in any particular work release;
- Remove dead wood from crowns at risk of falling or being blown into the conductors; Identify and correct readily climbable trees which are too close to power lines, consistent with Section 2.1.3;
- Identify and remedy or remove tree houses violating the criteria specified in Section 2.1.4;
- Identify and remove High Risk Trees, consistent with Section 2.6;
- Remove or apply herbicide (presuming the property owner has not expressed objection to herbicide application) to all volunteer trees (naturally seeded non-landscaped trees) which are 6-inch or less diameter at breast height (**DBH**) and have potential to grow into the conductors;
- Maintain compliance with state regulatory rules, laws or regulations.

Other work requirements may be specified in a work release for a particular project. For example, a work release may have specific instructions regarding the application of tree growth regulator ("**TGR**") to fast-growing tree species.

5.2.1 Specified Vegetation Clearance Distances – Primary

Each work cycle, trees and other vegetation are cleared to a specified clearance distance from conductors, as set forth in Table 5.1 and

. Specified clearance distances are absolute minimums which dictate when pruning work must be performed. Because of the application of natural target pruning techniques described in Section 3.2.1, the actual distances achieved after work is performed will almost always exceed the distances specified. Specified vegetation clearance distances from primary conductors in the distribution system are designed to allow sufficient space to prevent any contact with primary conductors throughout the entire pruning cycle. Any trees or vegetation identified within the specified clearance distance to a primary distribution conductor must be pruned (if not otherwise removed). Neutral conductors in a raised (primary) position are treated as primary conductors for purposes of this section.

Table 5.1. Normal primary specified vegetation clearance distances.

	Three-year Cycle			Four-year Cycle		
	Slow Growing (< 1ft./yr.)	**Moderate Growing (1-3 ft./yr.)**	**Fast Growing (>3ft./yr.)**	**Slow Growing (< 1ft./yr.)**	**Moderate Growing (1-3 ft./yr.)**	**Fast Growing (>3ft./yr.)**
Side Clearance	8 ft.	10 ft.	12 ft.	8 ft.	10 ft.	14 ft.
Under Clearance	10 ft.	12 ft.	14 ft.	10 ft.	14 ft.	16 ft.
Overhang Clearance	12 ft.	12 ft.	12 ft.	12 ft.	14 ft.	14 ft.

Table 5.2. Primary specified vegetation clearance distances for work in California and areas of elevated risk, as specifically designated on a particular Release or Scope of Work.

	Slow Growing (< 1ft./yr.)	**Moderate Growing (1-3 ft./yr.)**	**Fast Growing (>3ft./yr.)**
Side Clearance	12 ft.	12 ft.	14 ft.
Under Clearance	12 ft.	14 ft.	16 ft.
Overhang Clearance	12 ft.	14 ft.	14 ft.

5.2.2 Specified Vegetation Clearance Distances – Secondary

A secondary line is a line energized to less than 600 volts. A service line is a secondary line that runs between the electric supply and the customer. Specified distances from secondary conductors in the distribution system are designed to allow sufficient space to prevent limbs deflecting secondary or service conductors through the entire pruning cycle. Any trees or vegetation within the specified distance (Table 5.3) to a secondary or service conductor must be pruned (if not otherwise removed); provided, however, that if a work threshold is specified, then pruning need not be completed unless the work threshold requirement is met.

Table 5.3 Non-primary wire vegetation clearance distances

Line Type	Work Threshold	Specification Clearance
Non-insulated wire pole-to-pole secondary		3 ft.
Neutral low position		2 ft.
Neutral on cross arm		Treated as Primary – see Section 5.3.1
Insulated pole-to-pole secondary		2 ft.
Non-insulated wire service/street light		1 ft.
Insulated service/streetlight	Deflection/abrasion	1 ft.
Guy wire	2-inch or greater diameter limb applying pressure	Relieve pressure

In addition to the specification clearances (Table 5.3), the following requirements also apply.

- **Non-Insulated Wire Pole-to-Pole Secondary**: any tree limbs between a primary conductor and a non-insulated wire pole-to-pole secondary conductor shall be removed or pruned. Side clearances may be reduced to one foot for structurally sound limbs greater than 6-inches in diameter at wire height.

- **Any Neutral**: any tree limbs between a primary conductor and a neutral or insulated secondary conductor should be removed or pruned.

- **Insulated Pole-to-Pole Secondary Clearance**: any tree limbs between a primary conductor and an insulated pole-to-pole secondary conductor should be removed or pruned.

- **Non-Insulated Service or Street Light**: If the customer desires to remove other limbs or trees around these lines, in addition to the minimum one foot clearance, forest technicians or crew leaders should inform the customer to call the customer service line to arrange for a temporary disconnection of the facilities to allow safe completion of the desired tree work, as required by law.

- **Insulated Service Streetlight**: Limbs that are causing strain to the point of deflection or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle should be pruned to relieve the pressure. If pruning or removal is not practical, arrangements should be made with operations to have the facility re-routed or have suitable material or devices installed to avoid insulation damage by abrasion. If the customer desires to remove other limbs or trees around these lines, they must arrange for a temporary disconnection to allow the desired work to be done safely. PacifiCorp does not clear trees for street light illumination, unless required to by specific language in a franchise agreement.

5.2.3 Other Facility Clearances

Trees or branches two-inches or more in diameter applying direct pressure to or threatening to fall on or through poles or guy wires shall be removed or pruned on cycle (Table 5.3).

One-third of the circumference around poles shall be cleared of vegetation to a distance of 5-feet to allow linemen a climbing path. The remaining two-thirds of the pole circumference should be cleared of all vegetation to a distance of one foot from the pole.

Vines shall be removed on cycle from poles and guys, cut at ground level, and treated with an approved herbicide. They shall be reported as brush (< 6-in. dbh) or tree (>6-in. dbh) removed. Vines clearly part of a landscape and rooted well away from the pole may be pruned and reported as saplings pruned. Vines shall be pulled off the bottom 5-ft. of poles after they have been cut. The facility point shall be documented by the tree crew and given to their supervisor, who shall report it to operations to clear the remainder of the pole.

Trees should not be pruned or removed expressly to provide clearance for television cable, telephone lines or private electrical facilities unless authorized in advance by the appropriate forester.

5.3 Distribution Interim Maintenance

In certain locations, where and when circumstances warrant, interim work may be performed half way through a four-year cycle period, to address any trees which are likely to exceed minimum clearance requirements prior to the next scheduled work. Interim work is focused on the fastest growing trees, referred to as "cycle-busters", which may not hold for an entire cycle. When an interim project is performed, the distances in Table 5.4 and dictate if a tree must be pruned. Whenever a tree is pruned, pruning should always accomplish the specified vegetation clearance distances set forth in Section 5.2 (using Table 5.1 or Table 5.2 as applicable.

Table 5.4. Normal distribution interim work thresholds.

	Slow Growing (< 1ft./yr.)	**Moderate Growing (1-3 ft./yr.)**	**Fast Growing (>3ft./yr.)**
Side Clearance	3 ft.	3 ft.	8 ft.
Under Clearance	3 ft.	5 ft.	9 ft.
Overhang Clearance	3 ft.	3 ft.	8 ft.

Table 5.5. Distribution interim work thresholds for work in

	Slow Growing (< 1ft./yr.)	**Moderate Growing (1-3 ft./yr.)**	**Fast Growing (>3ft./yr.)**
Side Clearance	6 ft.	10 ft.	12 ft.
Under Clearance	6 ft.	10 ft.	13 ft.
Overhang Clearance	10 ft.	10 ft.	10 ft.

5.4 Distribution Annual Maintenance

In certain locations, where and when circumstances warrant, annual work may be performed. All general provisions of these standard operating procedures apply for distribution annual maintenance, including the identification and removal of High Risk Trees under Section 2.6. Similar to an interim project, annual work is designed to address clearances on any trees which

are likely to exceed minimum clearance requirements prior to the next scheduled work. Annual maintenance focuses not only on extremely fast growing trees but also on identifying and remediating rapidly developing hazard situations like storm, fire, and construction damage to trees near the line. Trees reaching the threshold distances outlined in Table 5.5 will be removed or pruned to specification clearances as set forth in Section 5.3.

5.5 Distribution Ticket Maintenance

Customers, district operations staff, governmental bodies, regulatory agencies or others alert vegetation management to real or perceived conflicts between trees and power lines from time to time. All regular work is performed as part of the scheduled cycle maintenance (including interim and annual) described above. The intent of ticket maintenance is to correct immediate and unreasonable safety or electrical service risks. Foresters are responsible to determine whether a reported condition presents an immediate and unreasonable safety or electrical service risk.

Condition which present an immediate and unreasonable safety or electrical service risk include:

- Trees representing an unreasonable safety risk as determined by the responsible forest technician;
- Trees that have caused an outage;
- Trees violating specific state regulatory regulations;
- Limbs that are deflecting secondary conductors to the extent they present a high probability of tearing down the wire before the next scheduled cycle work;
- Trees that are likely to start a fire;
- Readily climbable trees;
- Trees where the property owner requires clearance so non-utility line clearance workers may work the tree (which complies with various state line safety laws and may be billed to the requesting party).

If a report of a vegetation condition is readily discernable as an emergency situation, the Forester should arrange for correction within 24 hours. Critical conditions reported by regulatory agencies and other urgent situations should be inspected within 48 hours and corrected within 7 days. Other tickets should be inspected within 10 business days from the date of request, and a determination made regarding whether or not the reported condition warrants work.

All ticket maintenance work should be completed consistent with these standard operating procedures. Non-critical conditions should be monitored and corrected on the next scheduled maintenance work. The concerned party shall be contacted regarding the inspection determination. This contact may be face to face if the customer is present, or by door hanger, letter, or telephone if they are not present.

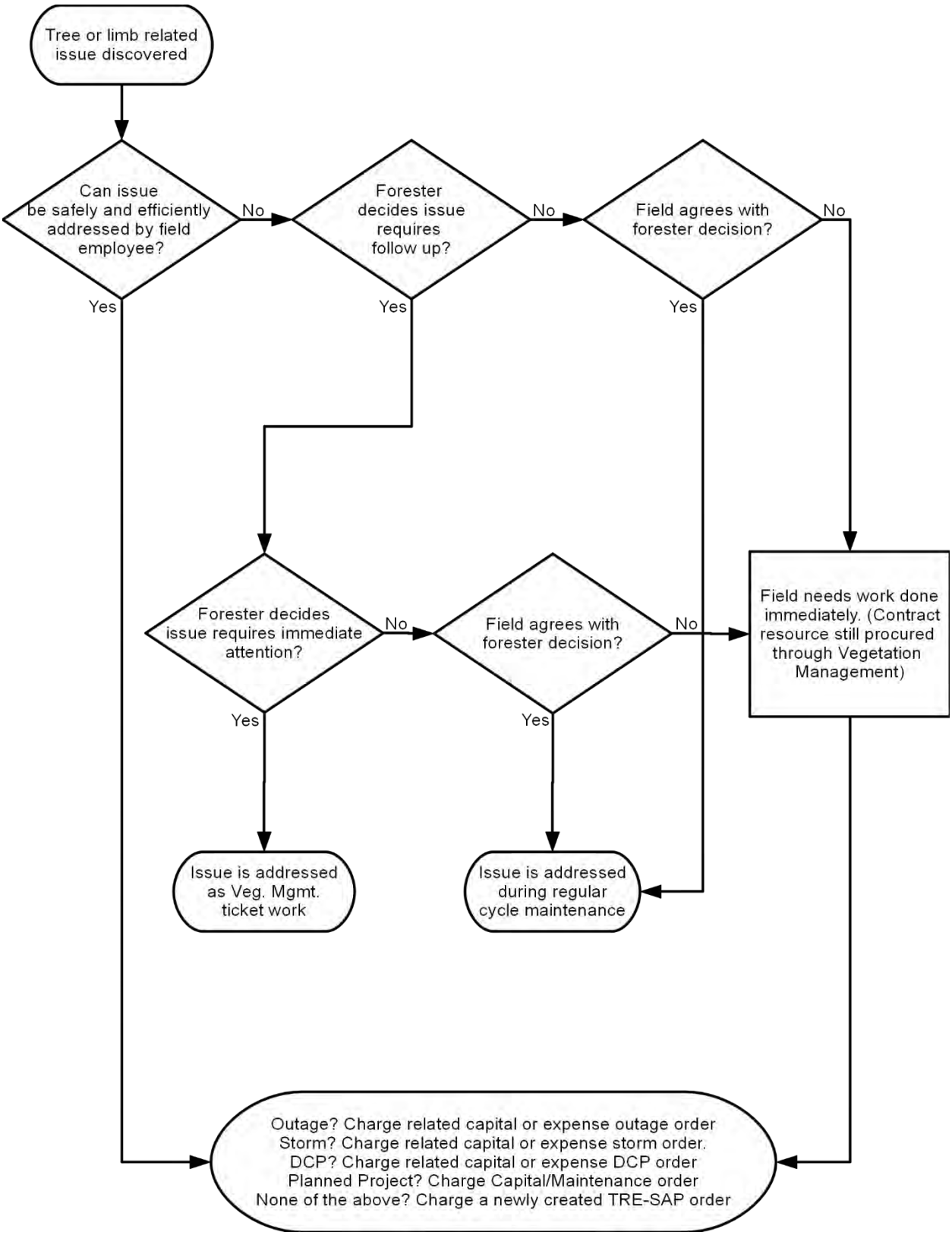

Figure 5.1. Distribution ticket maintenance procedure.

5.6 Side Clearance Exception

Side clearances from conductors may be reduced to 18-inches for structurally sound limbs greater than 6-inches in diameter at wire height, provided the tree is not readily climbable and the tree shows no evidence of conductor contact due to wire or tree sway. High Risk Trees should be removed or pruned to reduce the potential threat they pose.

5.7 Increased Overhang Clearance Alternative

Increased overhang clearance, in excess of the minimum distances specified in Table 5.1 and Table 5.2, may be implemented by the contract supervisor or may be required by the responsible forester. Increased overhang clearance should be considered by the forester or supervisor under the following types of circumstances: three-phase lines (particularly to the first protective device), rural or difficult to access areas, weak-wooded or fast-growing tree species, poorly-structured trees, and/or foreseeable weather conditions, such as frequent high wind, heavy rains, ice and snow. In some cases, such as three phase lines or remote areas, all overhanging branches may be removed. Overhang may be tapered, with the greatest side clearance at minimum clearance height, with gradually more overhang higher in the tree.

5.8 Pole-Clearing

PacifiCorp performs pole clearing in areas of elevated wildfire risk. (Figure 5.2). After removing herbaceous and volunteer woody vegetation to bare ground for a 10-foot radius around subject poles, herbicides, including soil sterilants, should be applied, unless expressly prohibited or it is against the customer's wishes. When pole-clearing is performed, trees or saplings with trunks within the clearance zone should have eight feet of vertical clearance from the ground to the highest limb. In California and consistent with California Resource Code 4292, Pole Clearing is performed around subject poles in delineated resource areas during designated fire season. Subject poles have fuses, air switches, clamps or other devices that could create sparks and start fires (Nichols et al. 1995). This cleared space should be established and maintained by pruning and removing above ground branches and plant parts. In other states, PacifiCorp performs pole clearing on identified equipment poles in areas of elevated wildfire risk.

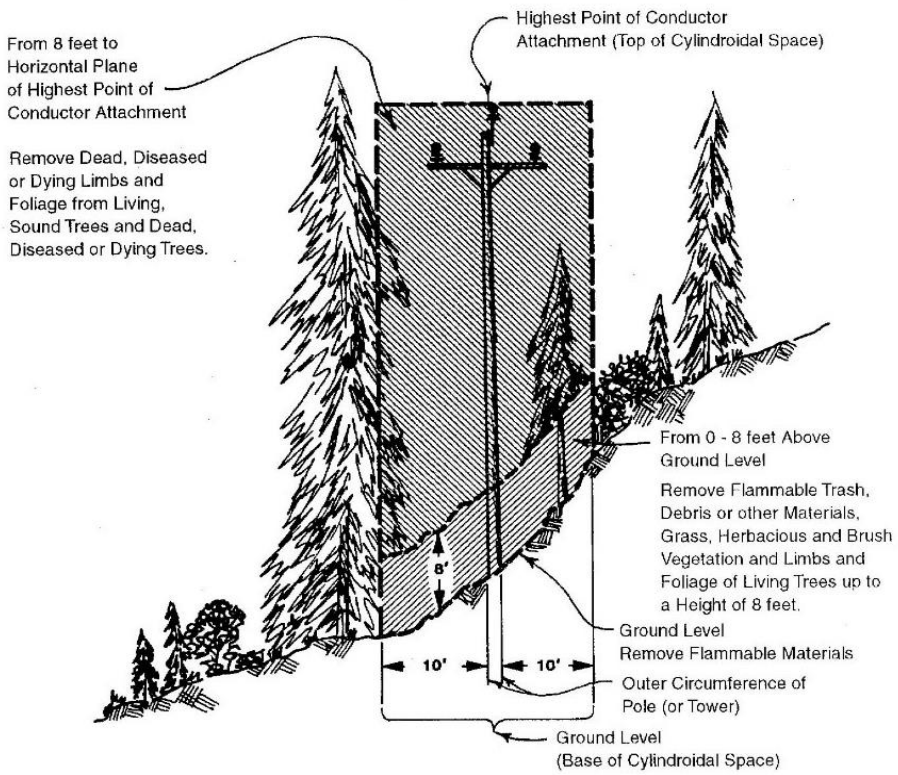

Figure 5.2. Illustration of pole-clearing requirements (California Department of Forestry & Fire Protection 2008, Figure 3, PRC 4292, 14 CCR 1254, Fire Break Clearance Requirement Around Poles and Towers)

5.9 Padmount Transformers

Padmount transformers should not be cleared as part of normal distribution cycle or interim maintenance. They may be cleared in response to facility point inspection requests should operations require access and a work order is provided. Qualified line clearance tree workers are not required to clear padmount transformers, so contractors responsible for landscape maintenance around substations may be assigned to remove shrubs and other low-growing vegetation that is interfering with padmount transformers.

6. TRANSMISSION PROCEDURES

Transmission facilities are overhead lines energized to greater than 34.5kV. Typical transmission voltages on PacifiCorp's system are 46kV, 69kV, 115kV, 138kV, 161kV, 230kV, 345kV and 500kV. Facility voltage and type determine the amount of transmission clearance needed. Table 6.1 provides specification clearances for transmission rights-of-way.

Transmission work shall comply with the ANSI A300 American National Standard for Tree Care Operations (American National Standards Institute 2006, 2011) and should follow Best Management Practices (Miller 2014; Smiley, Matheny, and Lilly 2011)

Transmission work on lines at or above 200 kV and those designated by the Western Electricity Coordinating Council as an element of the major transfer path in the bulk electric system, including those that extend greater than one mile beyond the fenced area of the generating station switchyard to the point of interconnection with a PacifiCorp facility or do not have a clear line of site form the generating station switchyard fence to the point of interconnection with a PacifiCorp facility shall also conform to the North American Electric Reliability Corporation's (NERC) Reliability Standard FAC-003(North American Electric Reliability Corporation 2009).

PacifiCorp's vegetation management philosophy for transmission lines is to utilize integrated vegetation management best practices wherever possible to conduct cover type conversion and to cultivate stable, low-growing plant communities comprised of plants that will never interfere with transmission lines in their lifetime. Reliability and safety are most effectively protected through establishing and maintaining a right-of-way consistent with the wire-border zone concept (W C Bramble et al. 1991). When the line is less than 50 feet off the ground, the wire-border zone should be cleared of all incompatible vegetation unless an easement fails to provide appropriate authority or there are legal impediments preventing it.

6.1 Initial Clearing and Construction

Newly constructed transmission lines should be cleared to full specifications prior to being energized. In densely vegetated areas, rights-of-way usually have to be completely cleared, (ground to sky) to the full width of the right-of-way as the initial stage in establishing a wire-border zone (Figure 6.1).

6.2 Transmission Clearances

The objective of systematic transmission work is to safeguard the reliability of PacifiCorp's transmission system by preventing outages from contact with vegetation. Clearance work on a transmission line is guided by three concepts: Minimum Vegetation Clearance Distances, Action Thresholds, and Minimum Clearances Following Work (Table 6.1)

Figure 6.1. In densely vegetated areas, rights-of-way usually have to be completely cleared initially to establish a wire-border zone.

Minimum Vegetation Clearance Distance (MVCD) represent radial distances from the conductors inside of which trees shall not encroach. These distances are established in FAC-003-4 (National Electric Reliability Corporation 2016) and must be maintained at all times.

Action Thresholds are designed to trigger vegetation management action and provide roughly a ten-foot buffer from the MVCD. Clearance work is performed, anytime vegetation is located within the Action Threshold distance from the conductor.

Minimum Clearances Following Work are designed to maintain the MVCD at all times. Trees are removed or pruned so as to establish clearance distances well in excess of Action Thresholds. Consistent with the general approach to maximize clearances on all transmission rights-of-way, however, a PacifiCorp Forester may also increase the Minimum Clearances Following Work, depending upon local conditions and the legal parameters of the right-of-way. Local conditions may include appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, worker approach distance requirements and other factors.

Table 6.1. Transmission clearance requirements (in feet).

	Line Voltage							
	500 kV	345 kV	230 kV	161 kV	138 kV	115 kV	69 kV	45 kV
Minimum Vegetation Clearance Distance (MVCD)	8.5	5.3	5.0	3.4	2.9	2.4	1.4	N/A
Action Thresholds	18.5	15.5	15.0	13.5	13.0	12.5	10.5	5
Minimum Clearances Following Work	50	40	30	30	30	30	25	20

6.2.1 MVCD Violations

Because of the buffers built into the Actions Thresholds and the Minimum Clearances Following Work, a violation of MVCD is extremely rare. If a violation is ever identified, trees that violate MVCD shall be corrected within 24 hrs., consistent with PacifiCorp Transmission Grid Operations Operating Procedure No. PCC-215 *Guidelines for Communication of Vegetation Conditions that Present an Imminent Threat of Transmission Line Outage*.

6.2.1.1 MVCD Calculation

The Minimum Vegetation Clearance Distance represents minimum clearances that should be maintained from conductors at all times, considering the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. MVCDs in Table 6.1 are for 10,000-11,000 feet above sea level (Table 2 of FAC-003-04) and apply across PacifiCorp's service territory regardless of elevation.

6.2.2 Structure Clearances

Trees and Brush should be cleared within a twenty-five-foot radius of transmission "H" or metal structures, a ten-foot radius of single pole construction and a five-foot radius of guy anchors. Clearing activities shall not damage poles, structures, guys or anchors. Grasses, forbs, ferns and other herbaceous species may be left around structures and guys.

6.2.3 Guy Wires

Trees or branches two-inches or more in diameter applying direct pressure to or threatening to fall on or through poles or guy wires shall be removed or pruned.

6.3 Inspections

Vegetation management work on transmission lines is scheduled as needed, depending on the results of regular inspections.

6.3.1 Inspection Frequency

Main Grid Transmission. Transmission lines defined as "applicable lines" in FAC-003 are inspected at least annually, by ground or air, by Line Patrolmen who have responsibility for inspecting transmission lines subject to FAC-003 and reporting conditions to vegetation management. PacifiCorp Foresters coordinate with Line Patrolman to discuss vegetation conditions.

Local Transmission. Local transmission (non-FAC-003 lines) shall be inspected by the contractor in conjunction with distribution cycle work.

6.3.2 Line Patrolmen Responsibilities Under FAC-003

Line Patrolmen are responsible to comply with Requirement R4 of NERC Standard FAC-003 and shall do so by following the procedures set forth in PacifiCorp Transmission Grid Operations Operating Procedure No. PCC-215 *Guidelines for Communication of Vegetation Conditions that Present an Imminent Threat of Transmission Line Outage*. Line Patrolmen encountering a tree that poses a threat of causing a transmission outage at any moment must:

- Immediately notify the grid operator by phone and describe the nature and extent of the threat.
- Complete and process the Emergency Tree Action Form.
- Communicate the vegetation conditions to vegetation management for urgent attention.

Examples of tree conditions that pose a threat of causing a transmission outage at any moment include (but are not limited to) trees that violate or pose a risk within 72 hours of violating NERC Minimum Vegetation Clearance Distance (MVCD), uprooted trees that are leaning toward the line and pose a risk of immediate failure, and trees with structural failures that may cause them to break in part or whole onto the transmission facilities (Smiley, Matheny, and Lilly 2011).

6.3.3 Additional Inspection

In addition to the inspection performed by Line Patrolmen, Foresters may select lines among those subject to FAC-003 for additional inspection. These inspections supplement, rather than substitute for, those conducted by line patrolmen. Foresters should assign contract representatives to complete these inspections, using Level 1 assessments (American National Standards Institute 2011).

Such inspection should identify trees that pose a threat of causing an outage at any moment, and trees that could possibly violate work thresholds within the next year. PacifiCorp plan and profiles should be used in the field itemizing maximize sag and sway along with range finders to confirm the MVCD has not been violated. Locations should be noted on an activity report, and assigned to a tree crew for work, with the appropriate Forester's approval.

If the inspections discover a tree that poses a high likelihood of causing an outage at any moment, the inspector shall contact the appropriate Forester within three hours. Foresters shall

immediately request the appropriate line patrolman to inspect the line, consistent with the procedures set forth in Section 6.3.2.

6.4 Work Planning

The Vegetation Management A300 standard (American National Standards Institute 2006) and best management practice (Miller 2014) recommend against cycle-based transmission work thresholds. Rather, such standards recommend that work be scheduled based on a number of factors, including line voltage, line importance, vegetation conditions that violate the action thresholds in Table 6.1, location, predominant species' growth rates, threatened and endangered species, archeological sites, topography and other factors. Accordingly, PacifiCorp Foresters may consider any or all of these factors in scheduling work on transmission lines. A comprehensive approach that exercises the full extent of legal rights is superior to incremental management in the long term because it reduces overall encroachments, and it ensures that future planned work is sufficient at all locations on the right-of-way. In planning work, Foresters should consult with PacifiCorp Right-of-Way Services to determine the width of a right-of-way and the scope of the easement rights associated with a right-of-way. Foresters should generally plan work for the full extent of the easement; in all cases, except as otherwise directed by Right-of-Way Services, the width of planned work should be at least as wide as the typical widths for transmission rights-of-way, which are listed in Table 6.2.

Table 6.2. Typical transmission right-of-way widths.

Facility	Distance From Center (ft.)	Urban Width (ft.)	Rural Width (ft.)
46 kV Single Pole	25	50	50
69 kV Single Pole	25	50	50
115 kV Single Pole	30	60	60
138 kV Single Pole	30	60	60
161 kV Single Pole	40	80	80
230 kV Single Pole	40	80	80
69 H-Frame	40/50	80	100
115 H-Frame	40/50	80	100
138 H-Frame	40/50	80	100
161 H-Frame	40/50	80	100
230 H-Frame	62.5	125	125
345 H-Frame	75	150	150
345 Steel Tower	75	150	150
500 Steel Tower	87.5	175	175

6.4.1 Annual Work Plan

PacifiCorp performs vegetation management work in accordance with annual work plans prepared by a Forester, which details the circuits and facilities to be managed during a calendar year. Plans should include:

- a list of facilities subject to scheduled work (if only a portion of a line is scheduled, the line segment must be identified)
- dates when work is anticipated to start and end on each project (Gantt charts are recommended)
- a description of the type of control methods (cycle, herbicide, mowing, aerial, etc.).

The annual work plan may be adjusted during the year to account for changes in conditions that require a circuit, line segment or project to be moved into or out of the work plan. Examples of reasons for adjustments include, but are not limited to, vegetation growth in excess of anticipated levels, vegetation inspection results, new construction projects or removal of existing facilities. Adjustments to the annual work plan shall be documented as they occur and shall be authorized by the director of vegetation management.

6.5 Integrated Vegetation Management

Integrated vegetation management is a system of managing vegetation in which undesirable vegetation is identified, action thresholds are considered, all possible control options are evaluated, and selected control(s) are implemented (American National Standards Institute 2006). The purpose of vegetation management on utility rights-of-way is to establish sustainable plant communities that are compatible with the electric facilities, wherever possible. These communities are stable, low-growing, compatible with conductors, diverse, and establish a sustainable supply of forage, escape and nesting cover, movement corridors for wildlife, reduced fire risk, and more open access to the line (Yanner and Hutnik 2004). Ground disturbance shall also be minimized on all rights-of-way during vegetation management activities. By establishing and maintaining native vegetation the invasion of noxious weeds into the corridor will be minimized (Bonneville Power Administration 2000).

6.5.1 IVM Control Methods

Control methods are the processes used to achieve objectives. Control methods selection should be based on pre-control evaluations, expected growth rates, line priority, economics, regulations and specified objectives. Control method types include manual, mechanical, chemical, biological, and cultural.

Manual Control Methods. Manual methods involve workers using hand-carried tools, such as chainsaws, handsaws, pruning shears. Manual techniques are selective and can be used where others may not be appropriate, including urban or developed areas, environmentally sensitive locations (such as wetlands or places inhabited by sensitive species), in the vicinity of archeological sites and on steep terrain.

Mechanical Control Methods. Mechanical control may be efficient and cost effective, particularly for clearing dense vegetation during initial establishment, or reclaiming neglected or overgrown rights-of-way. Mechanical control methods, however, can also be non-selective and disturb sensitive sites, such as wetlands and culturally sensitive sites. Many machines are also not suitable for use on steep terrain.

Chemical Control Methods. Chemical control methods like herbicides are key to the success of IVM because they provide for cost-efficient cover type conversion (Yahner and Hutnik 2004). Herbicides must be used according to directives on their labels. Applicators are not only required to comply with label instructions, but also all other laws and regulations pertaining to their use (see Chapter 7).

Biological Control Methods. Biological control methods use plants, animals, insects or pathogens to control undesirable vegetation. Some plants, including certain grasses, release chemicals that suppress other species growing around them. Known as allelopathy, this characteristic can serve as a type of biological control against incompatible species. Promoting wildlife populations is also a form of biological control. Birds, rodents and other animals can encourage compatible plant communities by eating seeds or shoots of undesirable plants.

Cultural Control Methods. Cultural controls employ establishment of compatible stable plant communities or agricultural crops, pastures, mulching, or other managed landscapes to control undesirable vegetation. The wire zone—border zone concept is an example of a cultural control (Miller 2014).

6.5.2 Wire Zone—Border Zone

Properly managed, wire zone—border zone linear corridors not only effectively protect the electric facilities, but also can become an asset for forest ecology and forest management. (W C Bramble et al. 1991; Yahner and Hutnik 2004)

Flat Terrain. On flat terrain, the wire zone is the right-of-way portion directly under the wires and including roughly ten additional feet to the field side of the outside phases. (W C Bramble et al. 1991) The border zone is the area, on both sides of the line, from the edge of the wire zone to the edge of the right-of-way (Figure 6.2). Species of trees that could grow into the wires at any time in their lives should not be allowed in either the wire zone or the border zone.

Sloped Terrain. On slopes and adjacent to slopes, the wire zone and border must be adjusted according to the degree of the slope(s). The wire zone should be extended on the up-slope (and the border zone to the up-slope side should be reduced or eliminated), because of wire sag and sway. Consequently, the border zone on the down-slope side may be extended proportionately (Figure 6.3).

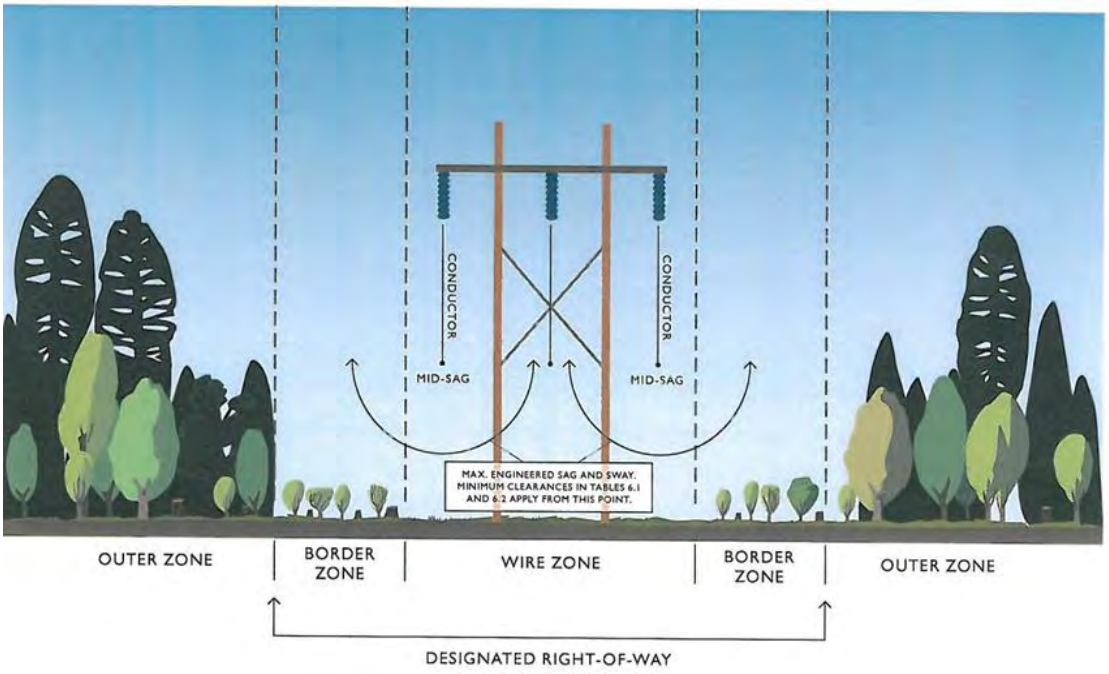

Figure 6.2. Bramble and Byrnes Wire Zone-Border Zone (adapted from Yahner, Bramble, and Byrnes 2001)

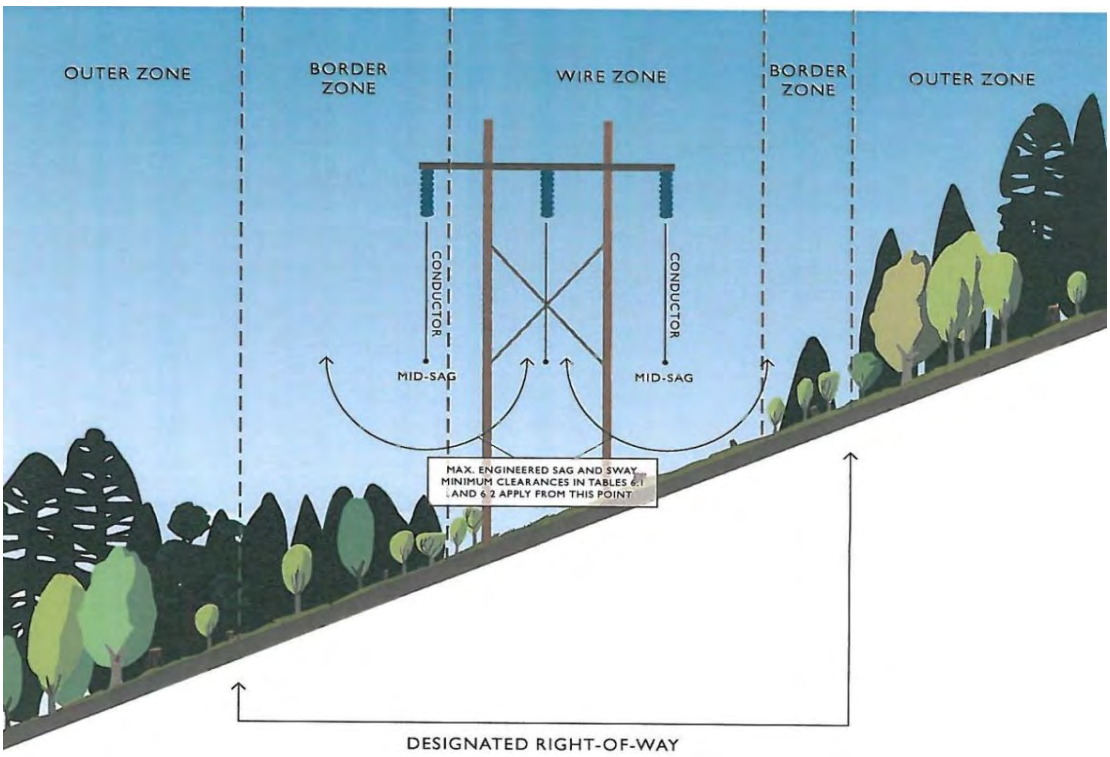

Figure 6.3. The border zone is condensed on up-slopes, where wire sag and sway could bring it into contact with trees, and is extended on down-slopes.

Varying Terrain. When the terrain varies, the wire zone—border zone concept adapts to the changes in elevation. The type of vegetation allowed in either the wire zone or the border zone is dependent on the height of the conductors, at maximum engineered sag and sway, relative to the ground, with attention to side slope. When a transmission line crosses areas of variable elevation between structures, there are additional clearance considerations. The right-of-way in each of Region A, B, and C, (Figure 6.4) should be cleared as follows:

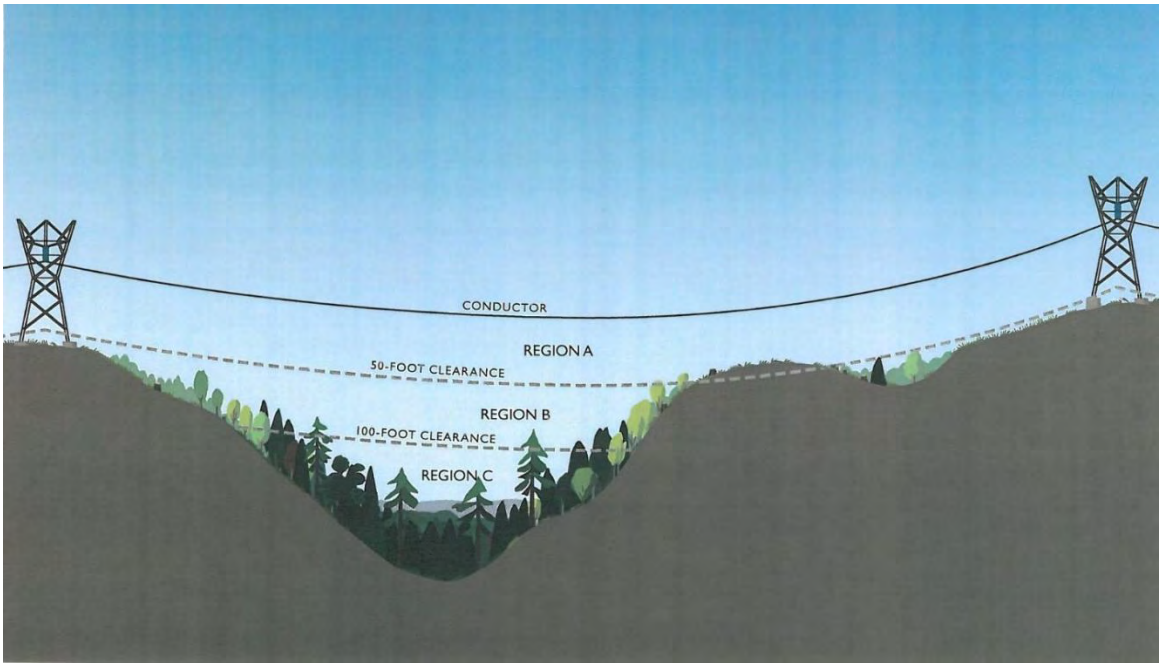

Figure 6.4. Transmission under-clearance regions

- Region A (Under 50 Feet). Region A is the area where lines are less than 50 feet off the ground. The 50-foot height should be from maximum engineered sag and sway. After clearing, the Region A wire zone should consist only of grasses, legumes, herbs, ferns and low-growing shrubs (under 5-feet at maturity). The Region A border zone should consist of tall shrubs or short trees (up to 25 feet in height at maturity), grasses and forbs. These cover types benefit the right-of-way by competing with and excluding undesirable woody species.

- Region B (50-100 Feet). Region B occurs where the lines are between 50 and 100 feet off the ground from maximum engineered sag and sway. In Region B, tall shrubs or short trees (up to 25 feet in height at maturity), grasses and forbs may be established throughout the right-of-way, including the Region B wire zone. Note that many transmission structures are tall enough that conductors are at over 50 feet high on and near the structures. In such cases, a border zone community may be maintained near structures, but care should be taken to maintain access to the structure as specified in Section 6.1.5.

- Region C (Over 100 Feet). Region C is where the lines are 100 feet or more off the ground. Tall-growing trees may be allowed in any zone in Region C, provided they have at least 50 feet of clearance. Trees with less than 50 feet of clearance in the Region C wire zone should be removed.

6.6 Tree Removals in Transmission Rights-of-Way

In performing vegetation management on transmission rights-of-way, removal of trees is generally superior to pruning. Removal minimizes the possibility of conflicts between energized conductors and vegetation. Contractors performing work in a transmission right-of-way must obtain specific permission from the responsible Forester to leave a tree within the widths described in the work plan, as follows: (i) all trees in Regions A wire zones should be removed; (ii) any trees species which would grow into the MVCD, in any border zone and in Region B wire zone, should be removed; and (iii) any tall-growing trees which have grown within 50 feet of the line in Region C should be removed.

Foresters may establish generalized exceptions to the requirement for tree removal in a work plan. For example, transmission lines may be constructed on the edge of dedicated road right-of-way where there may or may not be an easement or permit on the adjoining property allowing full tree removal.

6.7 Tree Removals Outside Transmission Rights-of-Way

Whenever vegetation management work is scheduled on transmission lines, High Risk Trees shall be identified and removed, consistent with Section 2.6.

6.8 Post-Work Assessment

Foresters should audit transmission work following procedures outlined in Section 4.3. The audits should document adherence to specifications. Moreover, audits should provide the tree crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on an Audit Report (Figure A.7). Following systematic work, the entire length of completed line should be inspected to verify work complies with PacifiCorp specifications.

6.9 Mitigation Measures

NERC Requirement R5 directs transmission owners to develop mitigation measures to achieve sufficient clearances for protection of the transmission facilities when it identifies locations on the right-of-way where the transmission owner is restricted from performing work that may lead to a vegetation encroachment into the MVCD. Prior to the implementation of the next annual work plan, the owner shall take corrective action to ensure continued vegetation management to prevent encroachments.

Whenever the restriction is caused by a landowner, the refusal process in Chapter 8 shall be followed. If the refusal process has been completed without attaining clearances that would prevent encroachment into the MVCD before the next scheduled work, such locations must be

documented on the *Work Release* (Figure A.4). These sites should be reported in writing to the appropriate line patrolmen within 30 days. The line patrolmen should report annually on these site's status. In addition, Foresters shall arrange to have the site inspected at least biannually.

6.10 Vegetation Screens

Vegetation screens may be required by federal or local authorities in some locations at high visibility areas such as major road crossings. Where these mandates exist, vegetation screens should consist of border zone communities and be located near structures (where the line is unlikely to sag), if possible. If no border zone species are present, tall-growing trees may be left provided they have at least the minimum clearances in Table 6.1 following scheduled work.

Leaving tall-growing trees in transmission rights-of-way should be discouraged because they impede cover type conversion. Vegetation screens should be no more than twenty-five feet from frequented vantage points into the right-of-way. Areas where tall-growing species are retained as screens shall be documented and monitored annually by line patrolmen. If remaining trees violate work thresholds specified in Table 6.1, line patrolmen should report them to Vegetation Management within 30 days for correction.

6.11 Merchantable Timber

Rights-of-way could contain merchantable timber. Merchantable timber is defined as trees with at least six-inch diameter at breast height (DBH) that are recoverable and have a market in the local area. Merchantable timber belongs to the property owner unless the easement or permit states otherwise. If merchantable timber needs to be felled, the property owner should be contacted regarding timber recovery.

After the merchantable timber is felled, it should be de-limbed and left in total tree length on the right-of-way for recovery by the owner. In limited cases, PacifiCorp may decide to purchase merchantable timber from the property owner and retain or transfer ownership to another party. A forest practice permit from the appropriate state department of forestry may be required for timber recovery.

6.12 Transmission Safety Procedures

The following safety procedures shall be followed by all tree crews on PacifiCorp transmission facilities.

6.12.1 Pre-work Communication with Control Center

Operative communication capability is mandatory at all times on transmission rights-of-way Communication with the Control Center is critical for tree crew safety. Every morning before starting transmission work, tree crews shall call the Control Center from the right-of-way by radio or telephone and provide the following information to comply with Power Delivery System Operations System policy SOP-152:

- Name of crew leader
- Name of company

- Contact information (radio or cell number)
- Name of transmission line
- Line section (substation names between which work is to occur, such as "Alvey to Dixonville," or "Ben Lomond to Terminal")
- Location of work (structure number, address or both)
- How long the crew will be working at that location
- Radio or cellular telephone number of the crew
- Name of Supervisor and their cellular telephone number

If radio or telephone contact cannot be made with the Control Center from the right-of-way, non-emergency work shall not be performed at that site. The crew should relocate to work where they can communicate with the Control Center. Satellite phones might be necessary in remote locations to provide the required communication.

6.12.2 Post-Work Communication with the Control Center

Each afternoon after completing transmission work for the day, tree crews shall call the Control Center and provide the following information:

- Name of crew foreman
- Name of company
- Contact information (radio or cell number)
- Name of transmission line
- Line section (substation names between which work occurred, such as "Alvey to Dixonville," or Ben Lomond to Terminal")
- Location where work was performed
- Notice that crew members and equipment are off the right-of-way or in the clear.

6.12.3 Safe Working Procedure

If a tree cannot be felled or pruned safely, work shall not proceed. If a tree or limb falls into the conductors, work shall stop immediately and emergency procedures followed (Figure 2.1). Minimum approach distances (Table 2.1) shall not be violated. Transmission conductors can sag considerably at mid-span during hot weather, ice buildup and heavy electrical loads. Trees that have safe clearance in the morning may not have safe clearance in the afternoon. Conditions could require a Hold or Clearances. Clearances on some transmission lines can take weeks or months to schedule. See Section 2.1.1 for Hold and Clearances instructions.

6.13 Monthly Progress Tracking

Progress on the annual work plan for NERC Transmission Lines shall be tracked on the *PacifiCorp Main Grid Transmission Progress Report* (Figure A.10) for lines under the auspices of NERC Standard FAC-003. Progress on the annual work plan for other transmission lines shall be tracked on the monthly *Local Transmission Progress Report*. Both reports track miles achieved against plan on a monthly basis (Figure A.11).

6.14 Quarterly WECC Audit Report

PacifiCorp is required to report outages on transmission lines subject to FAC-003.

7. CHEMICAL PROCEDURES

Herbicides and tree growth regulators are an integral part of PacifiCorp's Vegetation Management program. Tree Growth Regulators ("**TGR**") refers to chemicals that slow growth of some tree species. Chemical applications shall be performed according to federal, state and local regulations. Chemical use must comply with labeling. PacifiCorp's director of vegetation management shall approve all products and mixes.

7.1 Notification

Property owners shall be notified at least five days, but no more than six weeks in advance, whenever chemicals are to be used on their property. Property owner objection to herbicide use shall be honored.

7.2 Licensed Applicators

Crew leaders in all states except California shall hold a valid applicator's license. Applicators shall either hold that license, or work under the direct supervision of a certified applicator as required in the state in which they are working. Tree crews found working without a crew leader or applicator without a valid applicators license for the state in which they are working may be shut down at the Forester's discretion. Supervisors of qualified applicators shall hold a certified applicator's license in the state or states in which they supervise crews.

7.3 Closed Chain of Custody

The company making the application is responsible for chemical purchase and storage, record keeping as well as container disposal. Closed chain of custody best practices are encouraged (Goodfellow and Holt 2011). Closed chain of custody is a concept in which ready-to-use, diluted concentrate formulations are utilized in closed delivery systems. Closed chain of custody includes herbicide shipping, distribution, storage, and mixing, which includes returning empty containers for refilling and reuse.

7.4 Chemical Reporting

All chemical applications shall be documented in the *Daily Report* (Figure A.6), unless a different method is specifically approved in writing by the regional Forester. The company making the application shall be responsible for maintaining reports for review by the state departments of agriculture.

When chemical work is done on or adjacent to PacifiCorp Hydro properties, copies of chemical reports shall be provided to the plant manager weekly.

7.5 Herbicide Applications

Herbicides prevent sprouting from stumps of deciduous trees and should be used on saplings of tall-growing species to reduce future inventories. Herbicides are essential in cover type conversion necessary in establishing the wire zone-border zone method on transmission lines.

When properly used, herbicides are effective and efficient, minimize soil disturbance, and enhance plant and wildlife diversity. Herbicide application can benefit wildlife by improving forage as well as escape and nesting cover. In some instances, noxious weed control is a desirable objective on utility rights-of-way that can be accomplished through herbicide treatment.

Herbicide use can control individual plants that are prone to re-sprout or sucker after removal. When trees that re-sprout or sucker are removed without herbicide treatment, dense thickets develop, impeding access, swelling workloads, increasing costs, blocking lines-of-site, and deteriorating wildlife habitat (Yahner and Hutnik 2004). Treating suckering plants allows early successional, compatible species to dominate the right-of-way and out-compete incompatible species, ultimately reducing work.

Treatments include individual stem, broadcast and aerial treatments. Ninety-five percent control shall be assumed on all herbicide applications to be considered effective. Treatments exhibiting less than 95% control may need to be retreated at the contractor's expense.

7.5.1 Herbicide Best Management Practices

PacifiCorp is dedicated to ensuring proper application of approved herbicides to minimize the effects on non-target vegetation, human health, fish and wildlife species, and water quality (Childs 2005).

Herbicide applications shall:

- follow all product label mandatory provisions such as registered uses, maximum use rates, application restrictions, worker safety standards, restricted entry levels, environmental hazards, weather restrictions, and equipment cleansing.
- follow all product label advisory provisions such as mixing instructions, protective clothing and others matters.
- have on site a copy of the label and Safety Data Sheets (SDS); and
- be made in the presence of a licensed applicator valid for the state in which work is performed.

7.5.2 Wetlands and Waterbodies

Climate, geology and soil types should be considered when selecting the herbicide mix with the lowest relative risk of migrating to water resources (Childs 2005). The effects of herbicides on wetland and water resources should be minimized by utilizing buffer zones. Buffer zones reduce the movement of herbicides from the application site into adjoining water bodies. Buffer zones must be followed unless instructed otherwise by competent authorities.

7.5.3 Spills

Mixing, loading and cleaning equipment are critical activities that present the greatest exposure to accidents or spills. Spills can be avoided by using closed chain of custody best management practices. If any spill occurs, the procedures in Section 2.2.5 must be followed.

Table 7.1. Buffer widths to minimize impacts on non-target resources (adapted from Childs 2005).

Herbicide Ecological Toxicities and Characteristics	Buffer Width From Water Resource per Application Method			
	Spot	**Localized**	**Broadcast**	**Mixing, Loading, Cleaning**
Practically Non-toxic to Slightly Toxic	Up to the Edge	Up to the Edge	50 ft.	100 ft.
Moderately Toxic, or Label Advisory for Ground/Surface Water	25 ft.	35 ft.	300 ft.	250 ft.
Highly Toxic to Very Highly Toxic	35 ft.	100 ft.	Noxious weed control only. Buffers shall comply with local regulations	250 ft.

7.5.4 Inappropriate Applications

There are situations where herbicide applications are inappropriate. If any applicator is uncertain whether or not an application is appropriate, the applicator shall consult the regional Forester. Inappropriate applications include (but are not limited to) situations involving:

- areas where the property owner expresses objections to herbicide use
- areas where herbicide could drift or leach into organic farms
- governmental lands where herbicides are prohibited
- conditions of heavy precipitation or strong winds
- periods of high temperatures, which can cause product volatility and damage off-target plants
- trees that could be root grafted to desirable trees
- trees that are near desirable plants where the herbicide could move into contact with off target foliage or roots
- trees close to agricultural crops or harvestable, edible plants

Note that caution during periods of high temperatures can be particularly important for foliar applications and that vineyards can be especially sensitive to synthetic auxins. During periods of high temperatures, treatment can be deferred until weather cools. If there is any uncertainty regarding whether or not an application is appropriate, contact the regional Forester.

7.6 Approved Herbicides

A list of approved products appears in the following sections. PacifiCorp's director of vegetation management must authorize other chemicals.

- Stump Application
  - 2, 4-D
  - Glyphosate
  - Picloram
  - Triclopyr

- Low Volume Basal Application
  - Imazapyr
  - Triclopyr

- Foliar Application
  - 2, 4-D
  - Aminopyralid
  - Fosamine ammonium
  - Glyphosate
  - Imazapyr
  - Metasulfuron methyl
  - Picloram
  - Sulfometuron methyl
  - Triclopyr

- Soil Application
  - Diuron
  - Imazapyr
  - Picloram
  - Sulfentrazone
  - Tebuthiuron

7.7 Approved Tree Growth Regulators (TGR)

Tree Growth Regulator applications are intended to retard fast-growing trees so that they will not interfere with facilities or violate state regulatory agency tree policy before the next scheduled maintenance.

- Fluprimidol
- Paclobutrazol

8. CUSTOMER RELATIONS

Representatives of vegetation management interact with a significant number of customers. As a result, customers often develop an impression of PacifiCorp based on their experience with vegetation management. Particularly because vegetation management work is often controversial, excellent customer service is imperative for a successful program. PacifiCorp personnel must be professional, prompt, fair and courteous to customers. Contractor personnel are also required to be professional, prompt, fair and courteous to the property owners with whom they interact while performing work for PacifiCorp.

Independent contractors are responsible for managing communications with property owners in a manner consistent with this Chapter 8. Communications with customers should accurately describe the work to be performed, and any jargon should be avoided in the conversation.

8.1 Educational Information

PacifiCorp has a variety of educational materials about tree-power line conflicts and planting the right tree in the right place.

The *Trees and Power Lines* brochure explains the need for line clearance work, as well as natural target pruning. It also provides color pictures of how properly pruned trees could look following line clearance. (This brochure is used a companion to the "yellow door card" described in Section 8.2.1 below.)

The *Small Trees for Small Places* is a publication in PDF format available at www.PacificPower.net or www.RockyMountainPower.net. It provides tree selection tree planting and electrical safety information. It offers an easy-to-use chart on ornamental and adaptive characteristics of 100 different species that can be used adjacent to power lines. Not all these trees can be used everywhere in PacifiCorp's service territory. By providing a choice of 100 small-statured trees, however, there are several options appropriate for use in any given location around PacifiCorp's system.

The *Right Tree in the Right Place* poster provides illustrations and descriptions of small trees that are suitable across PacifiCorp's service territory. It also relates information about proper utility tree pruning and tree planting.

8.2 Notification for Tree Work

As a customer courtesy, prior to vegetation management work a reasonable attempt shall be made using the techniques specified in this Section 8.2, to notify the property owners (or tenants) of residential properties occupied year-round and occupied business properties. Forester authorization is required prior to performing work on such properties without such notice to owners and tenants. Some circumstances, such as work on historic, unique or unusual trees, could warrant personal contact with the customer.

School main or administrative offices should be notified of work to be done within school grounds or on property adjacent to schools. An effort should be made to schedule work without children present or specific accommodations made for pupils' safety. Particular effort should be

made to identify targets within drop zones, climbable trees, access issues and other safety matters on site.

In cases of municipal, county, state or federal properties, the proper agency representative shall be notified by the Forester or the contractor. The appropriate customer and community relations manager should be notified prior to meeting with governmental officials.

Notification should be given at least five business days, but no more than six weeks, prior to the crew arriving. Notification shall be documented on an *Activity Report* (Figure A.5).

8.2.1 Door Hangers

PacifiCorp employs a variety of door hangers. Pacific Power door hangers shall be used in California, Oregon and Washington, and Rocky Mountain Power door hangers shall be used in Idaho, Utah and Wyoming. Door hangers shall not be placed in U.S. Mail boxes but shall be placed at the entry way of a dwelling or business structure.

8.2.2 Personal Notification

When crews arrive for work at a residential site, a member of the crew should make a courtesy knock on the door to let the homeowner or tenant know that work is about to begin. So long as the homeowner or tenant does not articulate a protest or otherwise indicate that the owner refuses to allow work, the crew may proceed with the planned work. If no one is home, the crew may proceed with the planned work. On business property sites, prior notification is all that is necessary for crews to begin work.

8.3 Affirmative Customer Consent

As a courtesy and to avoid unnecessary disputes, PacifiCorp sometimes requires that an independent contractor make reasonable attempts to obtain and document "Affirmative Customer Consent" for:

- tree removal
- tree and Brush disposal
- mowing
- herbicide application
- TGR application

Affirmative Customer Consent is documented with a property owner's signature on the *Property Owner Permission Form* (Figure A.12)

8.4 Property Owner Refusal Procedure

If a property owner refuses to allow work, the crew may not proceed with work, except as expressly allowed under the "Property Owner Refusal Process" described in this section. Detailed records should be kept of every conversation, including the date and time it occurred, and summary of the matters discussed.

Initial Refusal Stage. If a property owner refuses to give Affirmative Customer Consent and/or sign a *Property Owner Permission Form*, the contractor shall complete a *Property Owner Refusal/Complaint Report* and notify the Forester within two working days.

Intermediate Refusal Stage. After notifying the Forester, the contract Forest Technician shall research PacifiCorp's property rights for that location, in consultation with PacifiCorp right-of-way services. After researching PacifiCorp's property rights in the right-of-way, a representative of the contractor other than the Supervisor (e.g. the Forest Technician) will then contact the property owner, either by telephone or in-person, and re-attempt to obtain Affirmative Customer Consent for the work referring to the property rights at issue, as appropriate. If the property owner continues to refuse to allow the work to proceed, the Supervisor shall attempt to obtain Affirmative Customer Consent. After at least 24 hours have passed since the prior attempt to obtain consent, the Supervisor will contact the property owner, either by telephone or in-person, and re-attempt to obtain Affirmative Customer Consent. If the property owner continues to refuse to allow work to proceed, the Supervisor shall inform the Forester.

Final Refusal Stage. Within two weeks of being notified by the Supervisor that a property owner continues to refuse to allow work to proceed, the Forester shall attempt to obtain Affirmative Customer Consent for the work. If the Forester is unable to obtain Affirmative Customer Consent, the Forester shall determine whether to (i) instruct contractor to proceed with the work without affirmative consent or (ii) excuse contractor from performing the work to the specifications required under these standard operating procedures.

8.5 Work Completed Without Property Owner Consent

If PacifiCorp holds property interests entitling it maintain its facilities, work may proceed over a property owner's unfounded refusal. If the Forester decides to proceed with work, the Forester shall send the customer a letter by certified mail, notifying the property owner of (i) the work which be performed and summary of reasons for the work and (ii) the date and time that the tree(s) will be worked. If appropriate because of the nature of the property owner's refusal, an enclosure provided by PacifiCorp Right-of-Way Services (i.e. describing the legal authority under which the PacifiCorp is acting) may also be included. The date of work shall be at least five business days from the time the letter is postmarked. The Forester shall alert the director of vegetation management, as well as the appropriate operations manager, customer and community manager, wires director, and regulatory analyst about any work scheduled for completion after a property owner refusal. The regulatory analyst will inform the proper regulatory agency about the action. If it appears the media could become involved, the Media Hotline should be notified. Once the letter to the property owner is sent, tree crews shall be dispatched to work the site to specifications at the assigned date and time. The Forester or Supervisor should be on site during work. Before and after photos of the site should be taken. The scheduled work should be completed, regardless of any additional objection from the property owner, unless the property owner threatens the safety of the crew or bystanders. As always, safety is the highest priority. The Forester may contact local law enforcement to request a presence on the property while

work is performed. The Forester may seek assistance from PacifiCorp's legal department. If absolutely necessary to complete the work, PacifiCorp may obtain appropriate relief from a court of law.

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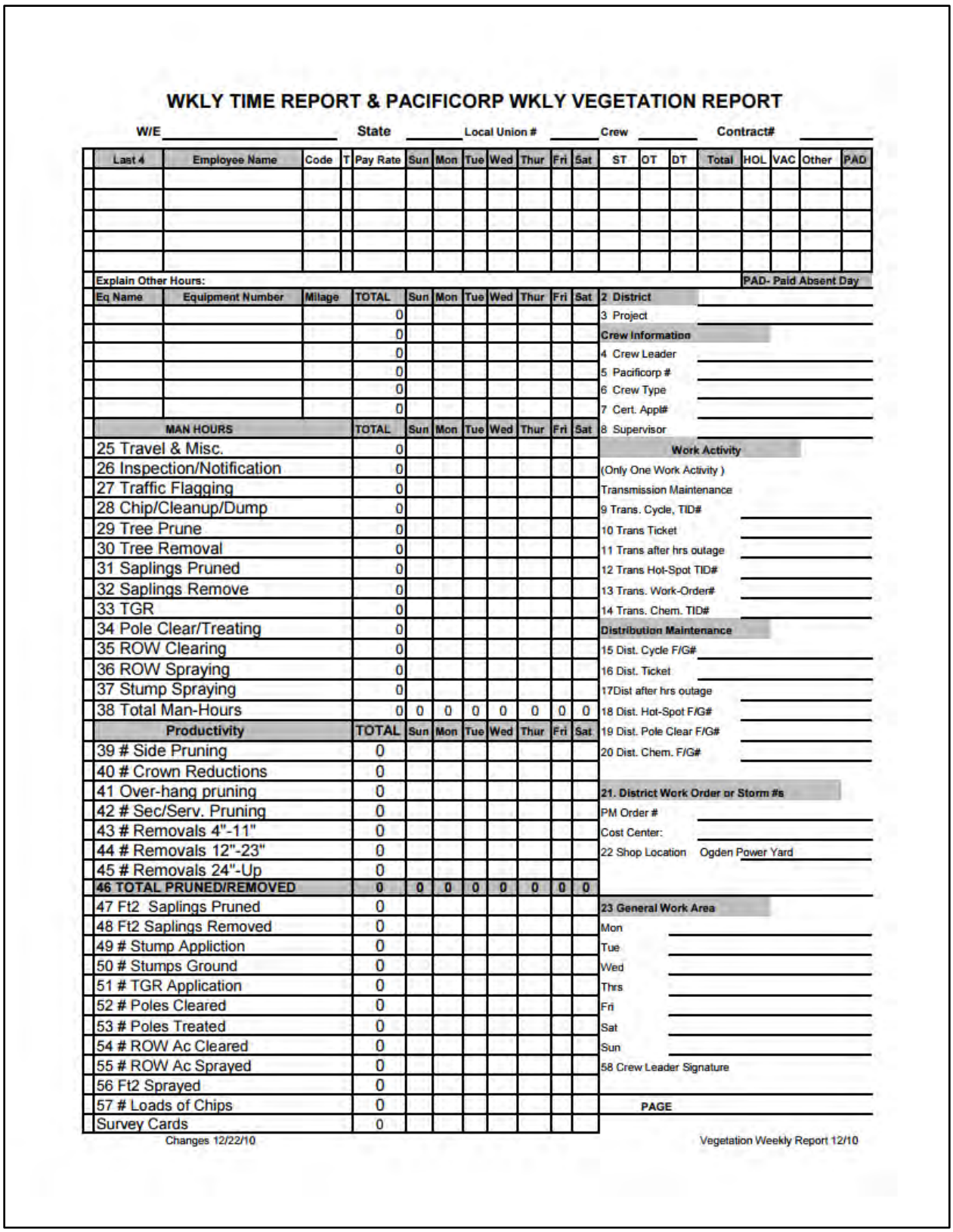
APPENDIX A
Vegetation Management work scheduling and reporting forms.



WKLY TIME REPORT & PACIFICORP WKLY VEGETATION REPORT

W/E _____ State _____ Local Union # _____ Crew _____ Contract# _____

Last 4	Employee Name	Code	T	Pay Rate	Sun	Mon	Tue	Wed	Thur	Fri	Sat	ST	OT	DT	Total	HOL	VAC	Other	PAD

Explain Other Hours: PAD- Paid Absent Day

Eq Name	Equipment Number	Milage	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
			0							
			0							
			0							
			0							
			0							
			0							

MAN HOURS	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
25 Travel & Misc.	0							
26 Inspection/Notification	0							
27 Traffic Flagging	0							
28 Chip/Cleanup/Dump	0							
29 Tree Prune	0							
30 Tree Removal	0							
31 Saplings Pruned	0							
32 Saplings Remove	0							
33 TGR	0							
34 Pole Clear/Treating	0							
35 ROW Clearing	0							
36 ROW Spraying	0							
37 Stump Spraying	0							
38 Total Man-Hours	0	0	0	0	0	0	0	0

Productivity	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
39 # Side Pruning	0							
40 # Crown Reductions	0							
41 Over-hang pruning	0							
42 # Sec/Serv. Pruning	0							
43 # Removals 4"-11"	0							
44 # Removals 12"-23"	0							
45 # Removals 24"-Up	0							
46 TOTAL PRUNED/REMOVED	0	0	0	0	0	0	0	0
47 Ft2 Saplings Pruned	0							
48 Ft2 Saplings Removed	0							
49 # Stump Appliction	0							
50 # Stumps Ground	0							
51 # TGR Application	0							
52 # Poles Cleared	0							
53 # Poles Treated	0							
54 # ROW Ac Cleared	0							
55 # ROW Ac Sprayed	0							
56 Ft2 Sprayed	0							
57 # Loads of Chips	0							
Survey Cards	0							

2 District _____
3 Project _____

Crew Information
4 Crew Leader _____
5 Pacificorp # _____
6 Crew Type _____
7 Cert. Appl# _____
8 Supervisor _____

Work Activity
(Only One Work Activity)
Transmission Maintenance
9 Trans. Cycle, TID# _____
10 Trans Ticket _____
11 Trans after hrs outage _____
12 Trans Hot-Spot TID# _____
13 Trans. Work-Order# _____
14 Trans. Chem. TID# _____

Distribution Maintenance
15 Dist. Cycle F/G# _____
16 Dist. Ticket _____
17Dist after hrs outage _____
18 Dist. Hot-Spot F/G# _____
19 Dist. Pole Clear F/G# _____
20 Dist. Chem. F/G# _____

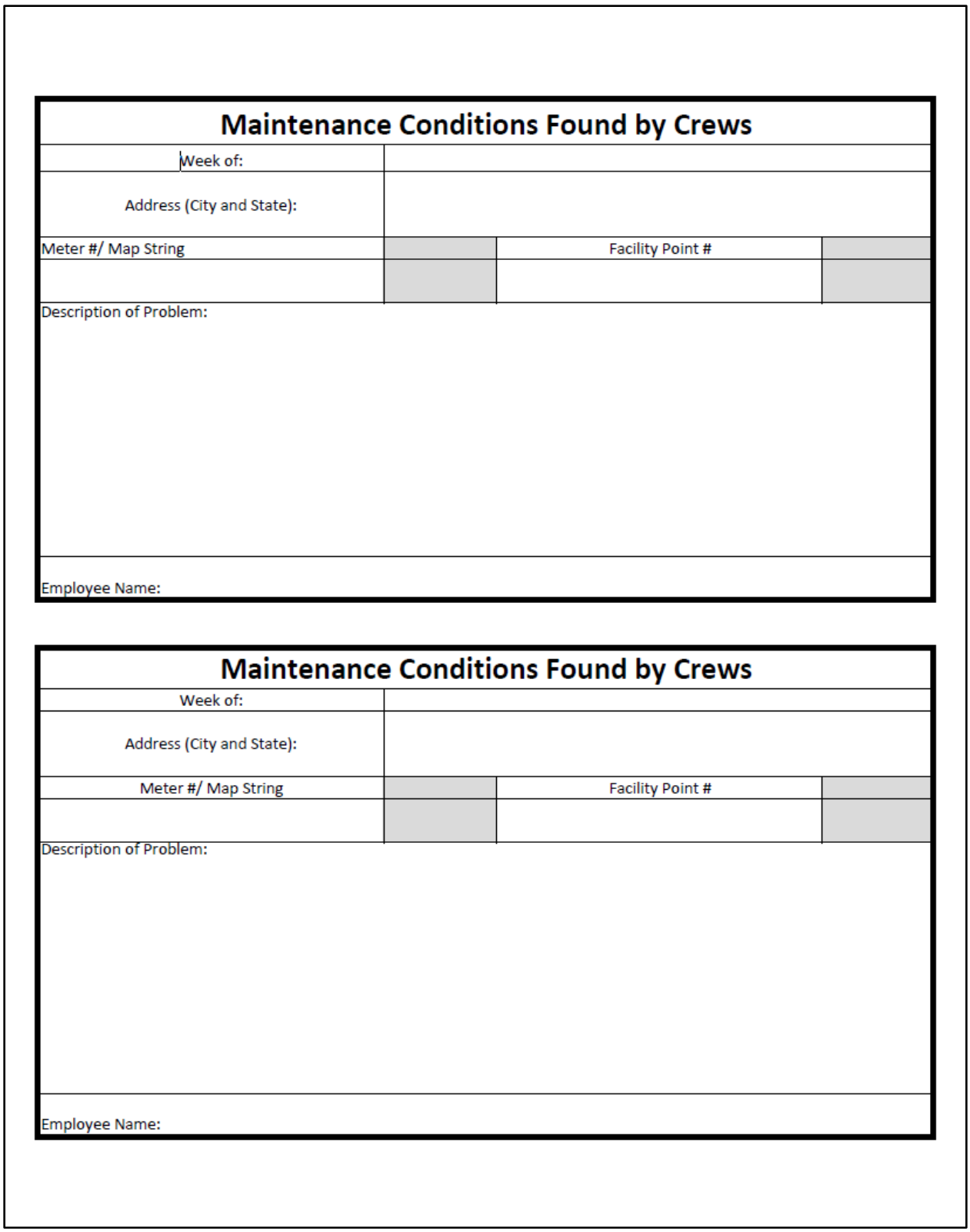
21. District Work Order or Storm #s
PM Order # _____
Cost Center: _____
22 Shop Location Ogden Power Yard

23 General Work Area
Mon _____
Tue _____
Wed _____
Thrs _____
Fri _____
Sat _____
Sun _____
58 Crew Leader Signature _____

PAGE

Changes 12/22/10 Vegetation Weekly Report 12/10

Figure A.1. Weekly Time and Vegetation Report form



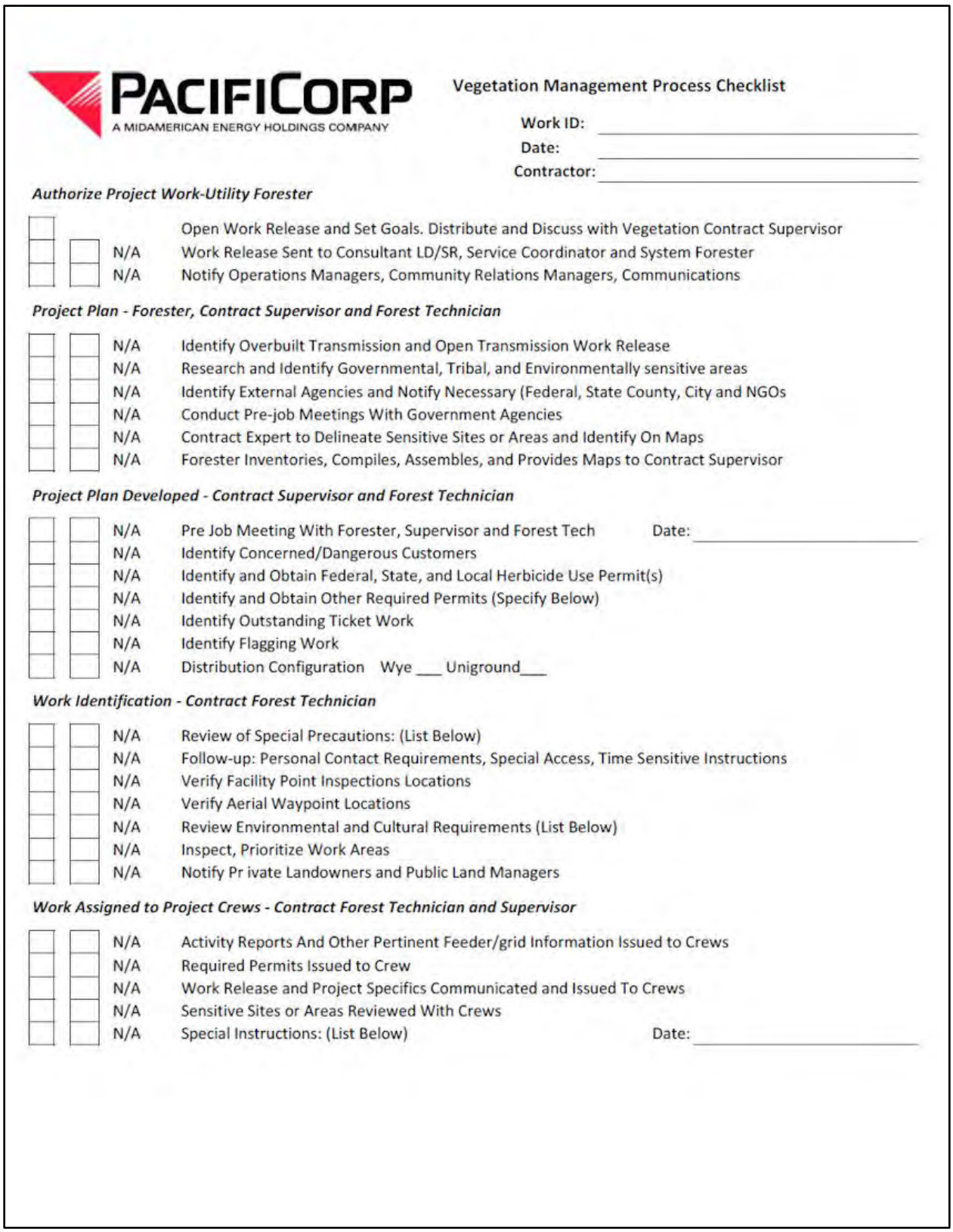
Maintenance Conditions Found by Crews

Week of:			
Address (City and State):			
Meter #/ Map String		Facility Point #	
Description of Problem:			
Employee Name:			

Maintenance Conditions Found by Crews

Week of:			
Address (City and State):			
Meter #/ Map String		Facility Point #	
Description of Problem:			
Employee Name:			

Figure A.2. Maintenance Condition Report form



PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Vegetation Management Process Checklist

Work ID: _____
Date: _____
Contractor: _____

Authorize Project Work-Utility Forester

- ☐ Open Work Release and Set Goals. Distribute and Discuss with Vegetation Contract Supervisor
- ☐ ☐ N/A Work Release Sent to Consultant LD/SR, Service Coordinator and System Forester
- ☐ ☐ N/A Notify Operations Managers, Community Relations Managers, Communications

Project Plan - Forester, Contract Supervisor and Forest Technician

- ☐ ☐ N/A Identify Overbuilt Transmission and Open Transmission Work Release
- ☐ ☐ N/A Research and Identify Governmental, Tribal, and Environmentally sensitive areas
- ☐ ☐ N/A Identify External Agencies and Notify Necessary (Federal, State County, City and NGOs
- ☐ ☐ N/A Conduct Pre-job Meetings With Government Agencies
- ☐ ☐ N/A Contract Expert to Delineate Sensitive Sites or Areas and Identify On Maps
- ☐ ☐ N/A Forester Inventories, Compiles, Assembles, and Provides Maps to Contract Supervisor

Project Plan Developed - Contract Supervisor and Forest Technician

- ☐ ☐ N/A Pre Job Meeting With Forester, Supervisor and Forest Tech Date: _____
- ☐ ☐ N/A Identify Concerned/Dangerous Customers
- ☐ ☐ N/A Identify and Obtain Federal, State, and Local Herbicide Use Permit(s)
- ☐ ☐ N/A Identify and Obtain Other Required Permits (Specify Below)
- ☐ ☐ N/A Identify Outstanding Ticket Work
- ☐ ☐ N/A Identify Flagging Work
- ☐ ☐ N/A Distribution Configuration Wye ___ Uniground___

Work Identification - Contract Forest Technician

- ☐ ☐ N/A Review of Special Precautions: (List Below)
- ☐ ☐ N/A Follow-up: Personal Contact Requirements, Special Access, Time Sensitive Instructions
- ☐ ☐ N/A Verify Facility Point Inspections Locations
- ☐ ☐ N/A Verify Aerial Waypoint Locations
- ☐ ☐ N/A Review Environmental and Cultural Requirements (List Below)
- ☐ ☐ N/A Inspect, Prioritize Work Areas
- ☐ ☐ N/A Notify Pr ivate Landowners and Public Land Managers

Work Assigned to Project Crews - Contract Forest Technician and Supervisor

- ☐ ☐ N/A Activity Reports And Other Pertinent Feeder/grid Information Issued to Crews
- ☐ ☐ N/A Required Permits Issued to Crew
- ☐ ☐ N/A Work Release and Project Specifics Communicated and Issued To Crews
- ☐ ☐ N/A Sensitive Sites or Areas Reviewed With Crews
- ☐ ☐ N/A Special Instructions: (List Below) Date: _____

Figure A.3. Vegetation Management Process Checklist form (page 1of 2)

Project Completion - Contract Supervisor and Forest Technician

☐	☐	N/A	Post Inspection of Work to Verify Completion
☐	☐	N/A	Inventory and Check In Maps
☐	☐	N/A	Maps and Documentation Submitted
☐	☐	N/A	Concerned Customer Forms Submitted
☐	☐	N/A	Refusal Information Submitted
☐	☐	N/A	Dangerous Customer Information Submitted
☐	☐	N/A	Tree Replacement Voucher Copies Submitted
☐	☐	N/A	Hazard Forms - Copy in File and Copy to Utility General Foreman
☐	☐	N/A	Daily Logs for Project Sent to Utility Area Forester

Project Closure - Forester

☐	☐	N/A	Verify Receipt of Maps, Daily Logs, Activity Reports, Replacement Vouchers, and Hazard Forms
☐	☐	N/A	Verify Receipt of Refusal and Concerned/Dangerous Customer Information
☐	☐	N/A	Verify Receipt of Signed Work Release
☐	☐	N/A	Close Work Release (Send to Consultant LD/SR, Service Coordinator and System Forester)

X _____ **X** _____

Comments:

Figure A.3 (Continued)

PacifiCorp Vegetation Management
Contractor Work Release

This work release authorizes Washington Forestry Consultants, Inc. to proceed with the specified inspection project. All work shall conform to PacifiCorp's Vegetation Management Specifications. Following project completion, a Washington Forestry Consultants, Inc. representative shall sign this work release, and return it to PacifiCorp. Any work inspected that does not conform to PacifiCorp Specifications shall be noted.

District: METRO **Project: DST NE10**

Project #: 32654 **Miles: 49.30**

Contractor: Washington Forestry Consultants, Inc. **Supervisor/GF: Galen Wright**

Work Activity: (X) Vegetation Inspection Project (VIP)

Inspect all work within defined project area to ensure adherance with requirements outlined in PacifiCorp Vegetation Management Standard Operating Procedures. Document all non-compliant locations and provide report to forester with an accompanying map.

(X) Tree Removals: Note missed opportunities for removal, including cycle busters or trees that won't hold until next scheduled cycle and saplings/brush.

(X) Transmission: Inspect all transmission lines that have distribution underbuild within grid or defined geographic boundary. Consult with forester on transmission lines without underbuild as this work may be completed under a different work release.

(X) Misc: Do not access government land or restricted areas without written approval, keep vehicles to approved roads, be aware of any constraints (winter range, active nesting season etc.).

(X) Misc: Submit a Maintenance Order to forester for any adverse hardware conditions identified that may warrant a follow up inspection from the line side.

Desired Starting Date: 04-02-2018 **Desired Completion Date: 06-22-2018**

Area Forester Approval: T Jones **Date 04-02-2018**

****

To be completed by Contractor:

Date Started: _____ *Date Completed:* _____

Comments and Sections Worked: _____

_____

_____

_____

Supervisor/ GF Signature: _____ *Date:* _____

Figure A.4. Vegetation Management Work Release

District: ____________	**Cycle Maintenance**	**Interim Maintenance**	**Ticket Maintenance**	**Work Order**
Project #: ____________	Trans. PL#: ____________	Trans. PL#: ____________	Trans. Ticket ____________	W.O. #: ____________ &
Inspected By: ____________	Dist. F/G#: ____________	Dist. F/G#: ____________	Dist. Ticket ____________	District CC #: ____________

Date Inspect.	Detailed Location	Property Owner	Phone Number	Type of *Contact	^TGR s	Crew Type	Description of Work / Comments	Date Comp.	^Cst. Survey	Crew ID No.	Forem. Initials

*Type of Contact Legend: D-Door Hanger, L-Letter, N-None, P-Personal, T-Telephone

^TGRs and Customer Surveys: Check = yes, Blank = no

Figure A.5. Vegetation Management Activity Report

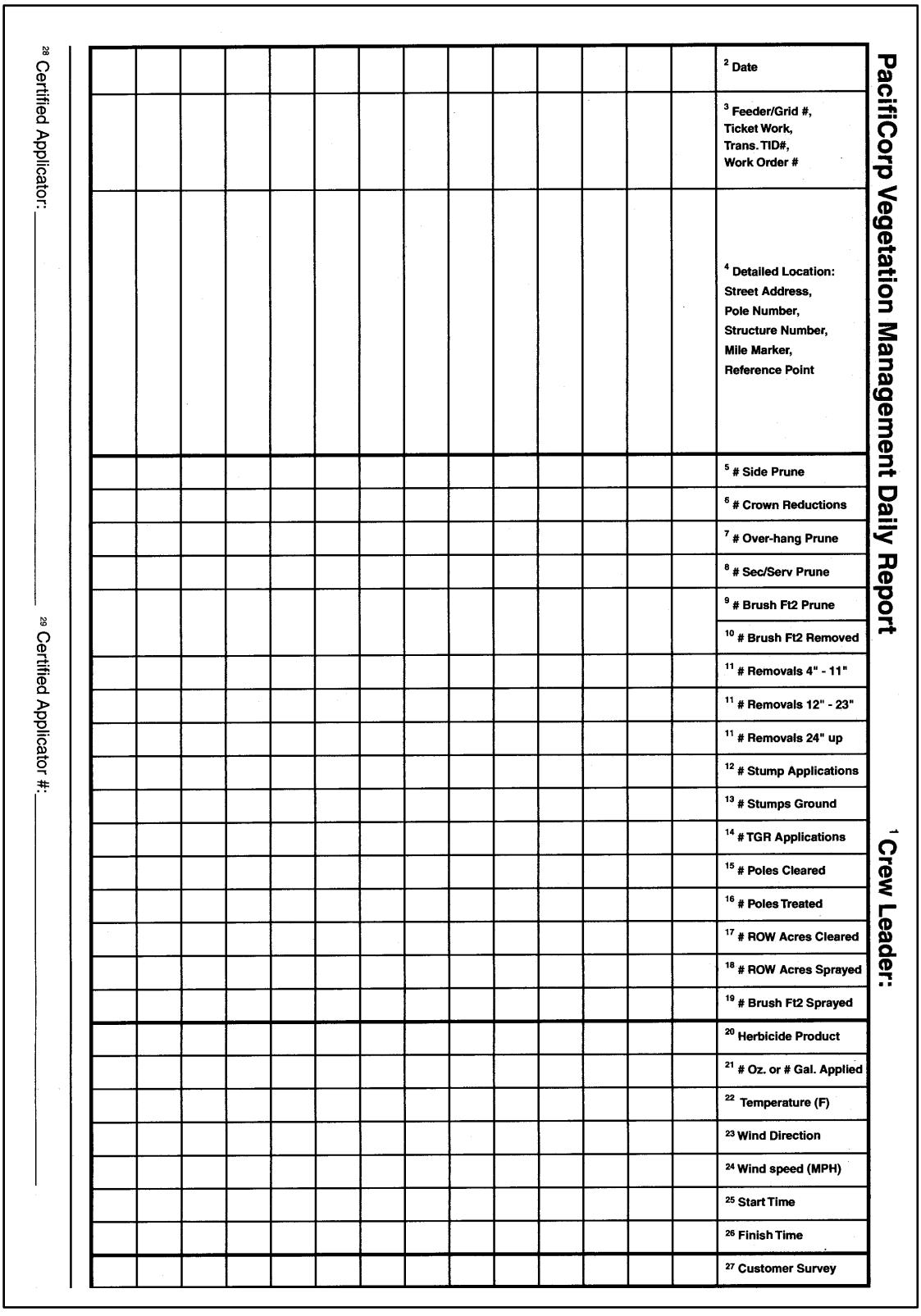
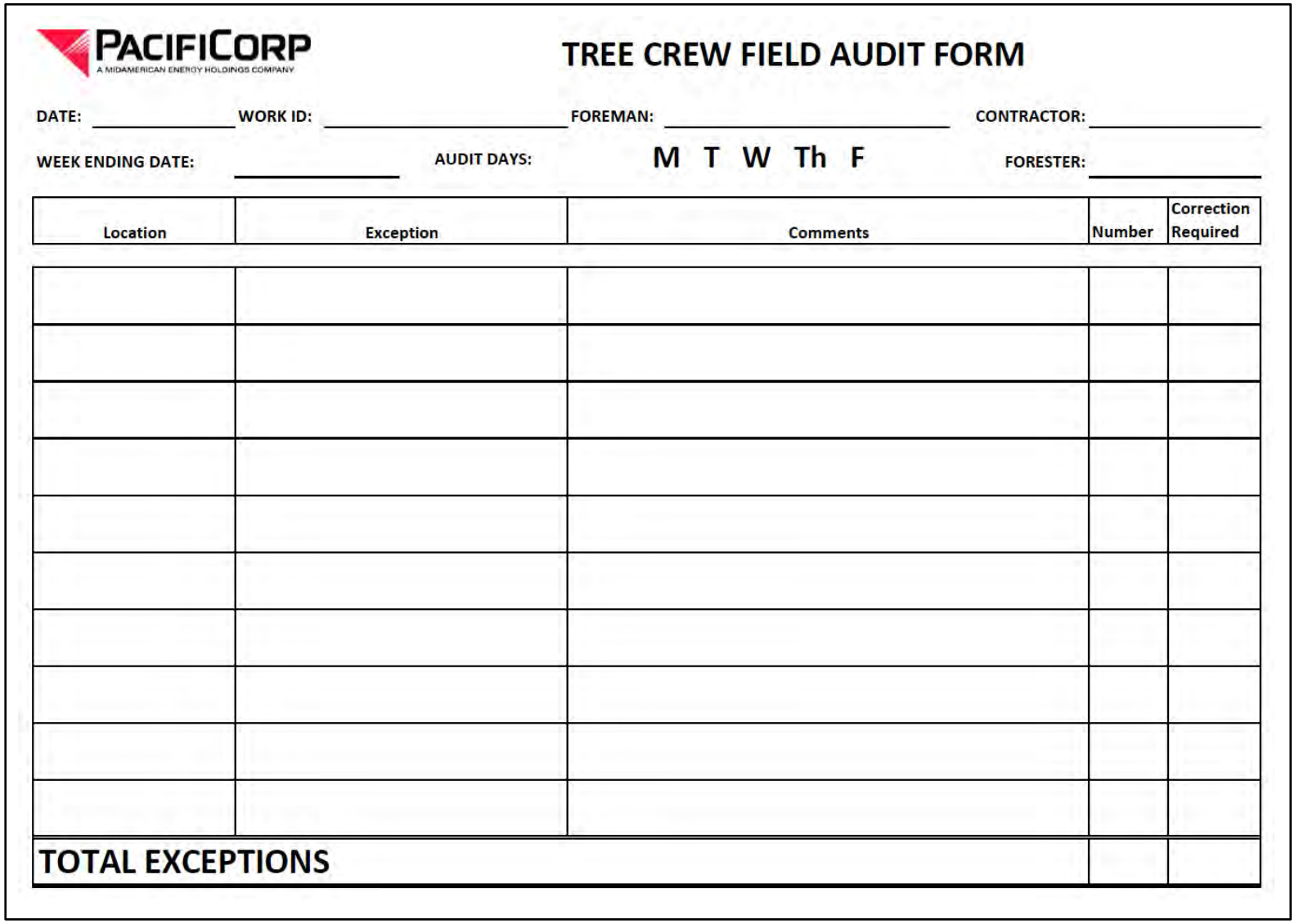


Figure A.6. Vegetation Management Daily Report



PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

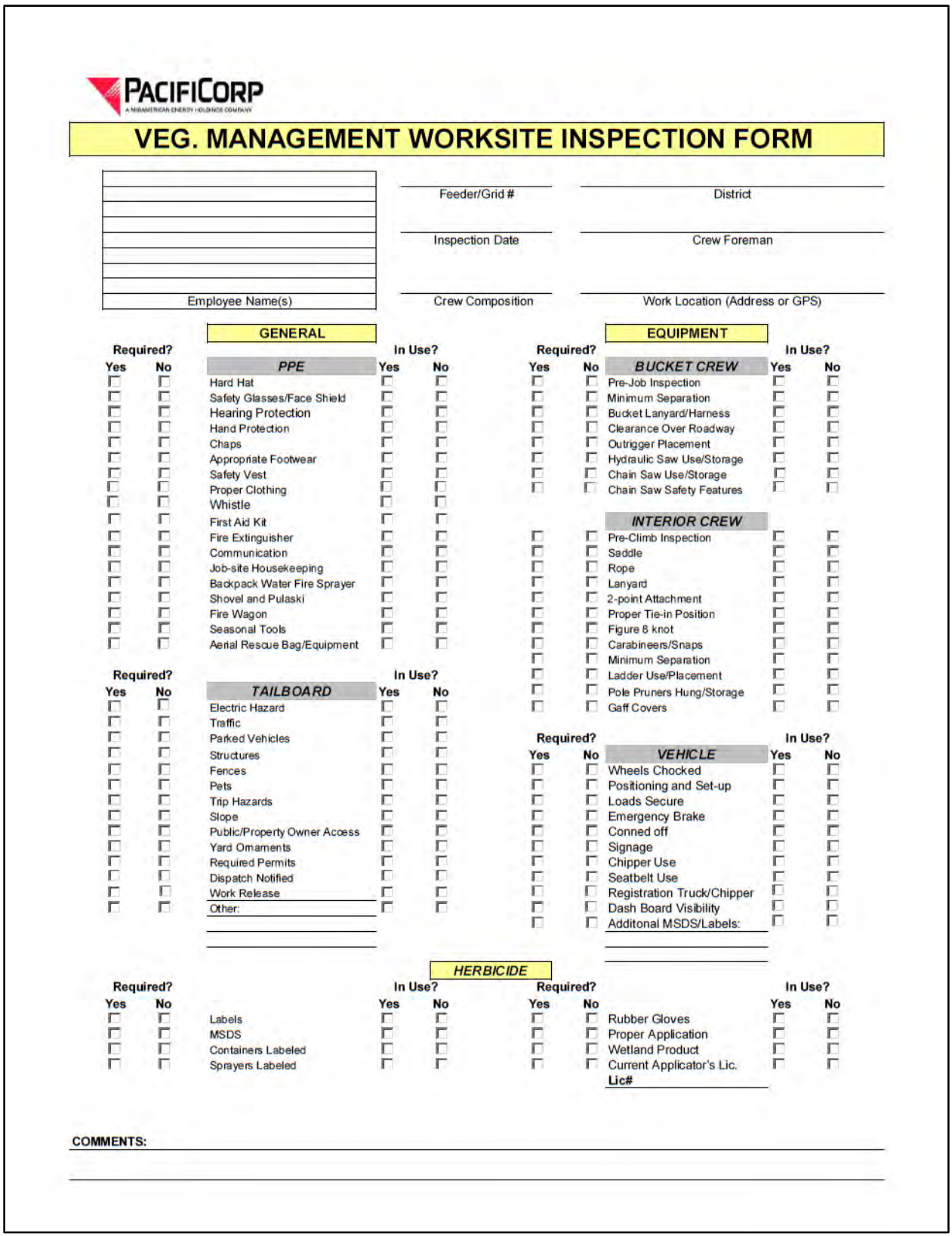
TREE CREW FIELD AUDIT FORM

DATE: _____ WORK ID: _____ FOREMAN: _____ CONTRACTOR: _____

WEEK ENDING DATE: _____ AUDIT DAYS: M T W Th F FORESTER: _____

Location	Exception	Comments	Number	Correction Required
TOTAL EXCEPTIONS				

Figure A.7. Tree Crew Field Audit Form



PACIFICORP
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VEG. MANAGEMENT WORKSITE INSPECTION FORM

Employee Name(s)

Feeder/Grid #

Inspection Date

Crew Composition

District

Crew Foreman

Work Location (Address or GPS)

GENERAL

Required? Yes	Required? No	PPE	In Use? Yes	In Use? No
☐	☐	Hard Hat	☐	☐
☐	☐	Safety Glasses/Face Shield	☐	☐
☐	☐	Hearing Protection	☐	☐
☐	☐	Hand Protection	☐	☐
☐	☐	Chaps	☐	☐
☐	☐	Appropriate Footwear	☐	☐
☐	☐	Safety Vest	☐	☐
☐	☐	Proper Clothing	☐	☐
☐	☐	Whistle	☐	☐
☐	☐	First Aid Kit	☐	☐
☐	☐	Fire Extinguisher	☐	☐
☐	☐	Communication	☐	☐
☐	☐	Job-site Housekeeping	☐	☐
☐	☐	Backpack Water Fire Sprayer	☐	☐
☐	☐	Shovel and Pulaski	☐	☐
☐	☐	Fire Wagon	☐	☐
☐	☐	Seasonal Tools	☐	☐
☐	☐	Aerial Rescue Bag/Equipment	☐	☐

Required? Yes	Required? No	TAILBOARD	In Use? Yes	In Use? No
☐	☐	Electric Hazard	☐	☐
☐	☐	Traffic	☐	☐
☐	☐	Parked Vehicles	☐	☐
☐	☐	Structures	☐	☐
☐	☐	Fences	☐	☐
☐	☐	Pets	☐	☐
☐	☐	Trip Hazards	☐	☐
☐	☐	Slope	☐	☐
☐	☐	Public/Property Owner Access	☐	☐
☐	☐	Yard Ornaments	☐	☐
☐	☐	Required Permits	☐	☐
☐	☐	Dispatch Notified	☐	☐
☐	☐	Work Release	☐	☐
☐	☐	Other:	☐	☐

EQUIPMENT

Required? Yes	Required? No	BUCKET CREW	In Use? Yes	In Use? No
☐	☐	Pre-Job Inspection	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Bucket Lanyard/Harness	☐	☐
☐	☐	Clearance Over Roadway	☐	☐
☐	☐	Outrigger Placement	☐	☐
☐	☐	Hydraulic Saw Use/Storage	☐	☐
☐	☐	Chain Saw Use/Storage	☐	☐
☐	☐	Chain Saw Safety Features	☐	☐
		INTERIOR CREW		
☐	☐	Pre-Climb Inspection	☐	☐
☐	☐	Saddle	☐	☐
☐	☐	Rope	☐	☐
☐	☐	Lanyard	☐	☐
☐	☐	2-point Attachment	☐	☐
☐	☐	Proper Tie-in Position	☐	☐
☐	☐	Figure 8 knot	☐	☐
☐	☐	Carabineers/Snaps	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Ladder Use/Placement	☐	☐
☐	☐	Pole Pruners Hung/Storage	☐	☐
☐	☐	Gaff Covers	☐	☐

Required? Yes	Required? No	VEHICLE	In Use? Yes	In Use? No
☐	☐	Wheels Chocked	☐	☐
☐	☐	Positioning and Set-up	☐	☐
☐	☐	Loads Secure	☐	☐
☐	☐	Emergency Brake	☐	☐
☐	☐	Conned off	☐	☐
☐	☐	Signage	☐	☐
☐	☐	Chipper Use	☐	☐
☐	☐	Seatbelt Use	☐	☐
☐	☐	Registration Truck/Chipper	☐	☐
☐	☐	Dash Board Visibility	☐	☐
☐	☐	Additonal MSDS/Labels:	☐	☐

HERBICIDE

Required? Yes	Required? No		In Use? Yes	In Use? No
☐	☐	Labels	☐	☐
☐	☐	MSDS	☐	☐
☐	☐	Containers Labeled	☐	☐
☐	☐	Sprayers Labeled	☐	☐

Required? Yes	Required? No		In Use? Yes	In Use? No
☐	☐	Rubber Gloves	☐	☐
☐	☐	Proper Application	☐	☐
☐	☐	Wetland Product	☐	☐
☐	☐	Current Applicator's Lic.	☐	☐
		Lic#		

COMMENTS:

Figure A.8. Worksite Inspection Form

Rocky Mountain Power Vegetation Management **Property Owner Refusal/Complaint Report**

Property owner:_____ Date: _____
Address:_____ District:_____
City, State, Zip:_____ Fdr/Grd/Trans. #:_____
Home Phone:_____ Area Forester:_____
Work Phone:_____ Pole #:_____
General Foreman/Supervisor:_____ Right-of-way? YES NO
Company:_____

Facilities (circle or enter information):
Transmission, Distribution, Voltage:____, # Phases:____, Secondary, Service line, Backlot, Roadside, ROW

Number and species of trees:_____ Are trees climbable? (circle) YES NO
Nature of refusal or complaint_____
_____
_____
_____
_____
_____

Property owner's signature:_____

Forest Tech/Crew Foreman signature:_____

VMRMP028

ROCKY MOUNTAIN POWER

Figure A.9. Property Owner Refusal/Complaint form

PACIFICORP VEGETATION MANAGEMENT					
2018 MAIN GRID TRANSMISSION PROGRESS REPORT					
Through April 28, 2018					
STATE SUMMARY					
Cycle Work					
	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7,595	**268**	**31**	**67**	**-36**
State					
California	129	7	3	2	1
Idaho	1,150	0	0	0	0
Misc States	70	0	0	0	0
Montana	137	0	0	0	0
Oregon	1,128	85	1	21	-20
Utah	2,621	166	14	42	-28
Washington	284	10	13	3	11
Wyoming	2,075	0	0	0	0
TOTAL	7,595	268	31	67	-36
FORESTER SUMMARY					
	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7,595	**268**	**31**	**67**	**-36**
Forester					
Armstrong	673	78	13	20	-7
Evans	2,115	17	2	4	-2
Jones	110	21	0	5	-5
Hooley	281	0	0	0	0
Phillips	517	22	4	5	-1
Vanderhoof	3,829	128	12	32	-20
Wolinski	71	2	0	1	-1
Total	7,595	268	31	67	-36

Figure A.10. Main Grid Transmission Report

PACIFICORP VEGETATION MANAGEMENT 2018 LOCAL TRANSMISSION PROGRESS REPORT

Summary

Through Apr 28, 2018

LOCAL TRANSMISSION WORK

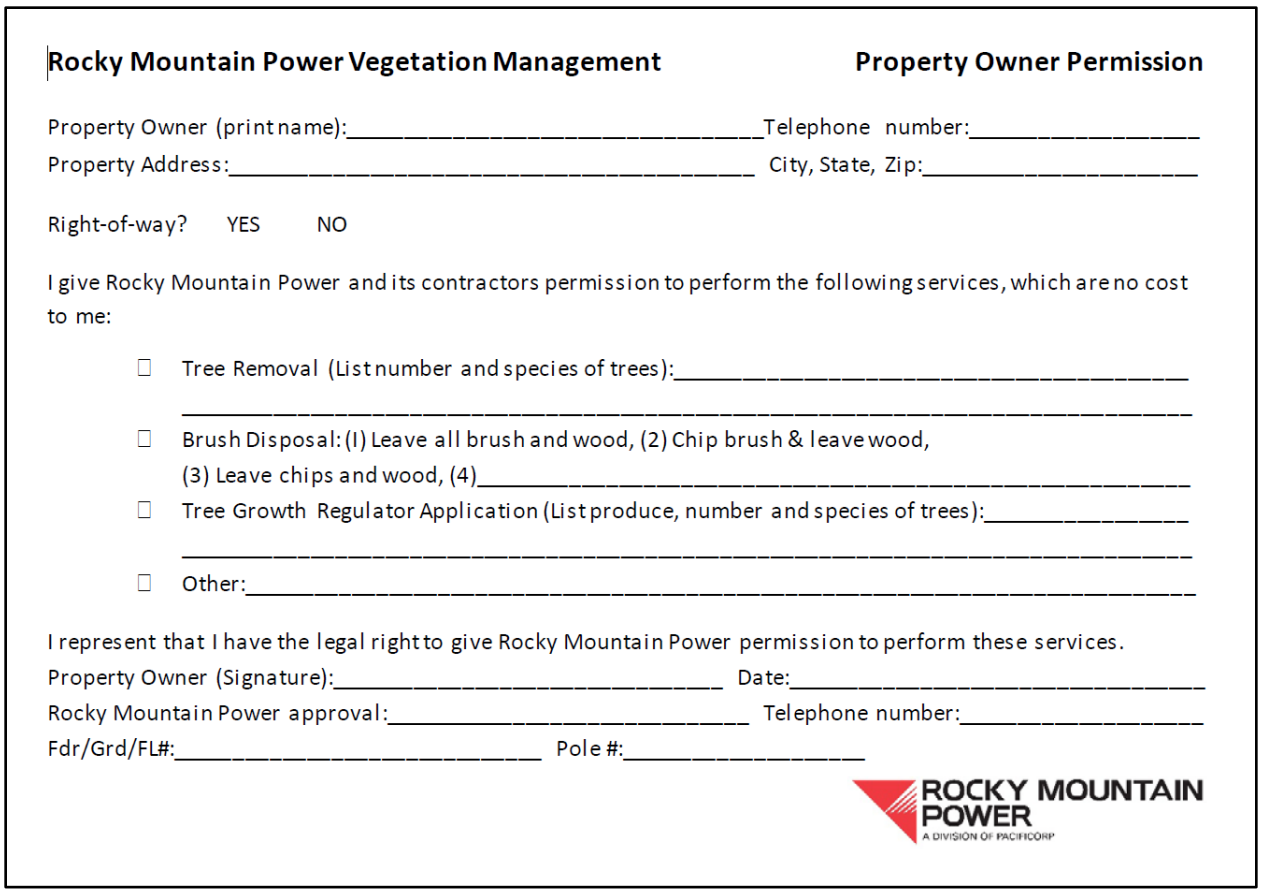
	CYCLE WORK					INTERIM WORK			
	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
State	**8,187**	**1,901**	**988**	**475**	**512**	**111**	**48**	**28**	**20**
California	572	8	2	2	0	20	0	5	-5
Idaho	835	293	46	73	-27	0	0	0	0
Oregon	1,820	9	1	2	-2	91	48	23	25
Utah	3,954	1,361	939	340	599	0	0	0	0
Washington	324	0	0	0	0	0	0	0	0
Wyoming	683	230	0	58	-58	0	0	0	0
Total	8,187	1,901	988	475	512	111	48	28	20

SUMMARY OF WORK BY FORESTER

	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	8,187	**2,012**	**995**	**503**	**492**
Forester					
Wolinski	356	25	15	6	9
Evans	2,544	895	780	224	556
Jones	731	240	119	60	59
Hooley	589	85	32	21	11
Phillips	1,038	18	3	4	-2
Vanderhoof	2,197	749	46	187	-101
Armstrong	732	0	0	0	0
Total	8,187	2,012	995	503	532

Weeks 13

Figure A.11. Local transmission progress report



Rocky Mountain Power Vegetation Management **Property Owner Permission**

Property Owner (print name):_____Telephone number:_____

Property Address:_____ City, State, Zip:_____

Right-of-way? YES NO

I give Rocky Mountain Power and its contractors permission to perform the following services, which are no cost to me:

- ☐ Tree Removal (List number and species of trees):_____
  _____
- ☐ Brush Disposal: (I) Leave all brush and wood, (2) Chip brush & leave wood, (3) Leave chips and wood, (4)_____
- ☐ Tree Growth Regulator Application (List produce, number and species of trees):_____
  _____
- ☐ Other:_____

I represent that I have the legal right to give Rocky Mountain Power permission to perform these services.

Property Owner (Signature):_____ Date:_____

Rocky Mountain Power approval:_____ Telephone number:_____

Fdr/Grd/FL#:_____ Pole #:_____

ROCKY MOUNTAIN POWER
A DIVISION OF PACIFICORP

Figure A.12. Property Owner Permission Form

APPENDIX B
Revision History

Revision	Status	Date	Author	Change Tracking
00	Issued for implementation	12/15/2008	R. H. Miller	Manual created
01	Reviewed/Updated	06/15/2012	R. H. Miller	1. Clarified language throughout 2. Revised Chapter 4 to reflect a process checklist used for project management. 3. Modified Clearance 2 to strictly reflect table 5 in IEEE 516-2003 Table 5. 4. Section 6.4.1 changed so that if contract utility Foresters identify an imminent threat, they contact the appropriate line patrolmen to initiate the imminent threat procedure.
02	Reviewed/Updated	09/06/2013	R.H. Miller	1.Clarified language throughout. 2. Revised distribution action thresholds and clearance standards to accommodate three and four year cycles. 3. Modified transmission clearance requirements to accommodate FAC-003-02
03	Reviewed/Updated	06/24/2015	R.H. Miller	1. Clarified language 2. Brought specification manual into line with FAC-003-03
04	Reviewed/Updated	07/01/2015	R.H. Miller	1. Corrected Table of Contents 2. Updated Figures 2.1 and 6.6 with Rocky Mt. Power 3. Corrected reference to Table 2.2 4. Added substation inspection Section (2.6 and 4.2.4.6) 5. Clarified definition of interim work. 6. Clarified side work.
05	Reviewed/Updated`	06/01/2016	R.H. Miller	1. Changed document to “Standard Operating Procedures” 2. Clarified language 3. Chapter 2. a. Added “At Fault” tree crew caused outages language – Section 2.1.6 b. Added language to contact media – Section 2.4.2.1 c. Added language to contact legal – Section 2.4.2.2 d. Added language that mechanical cutting (Jarraff’s and helicopters) to comply with ANSI A300. e. Added language for storm emergency response 2.10. f. Added language assigning responsibility for property damage to contractors 2.12.

Revision	Status	Date	Author	Change Tracking
				4. Chapter 4 a. Added language to requiring rules be followed on hydroelectric facilities and communicate with plant manager – Section 4.2.4.7. b. Added language requiring limited visual hazard tree inspections around substations and transition stations – 4.2.4.8. c. Added language on working around schools – Section 4.2.7.1. d. Added language regarding working near mobile home parks and apartment complexes – Section 4.2.7.2. e. Simplified language on accounting for pruning in – Section 4.3.1 5. Chapter 5 a. Updated interim maintenance language – Section 5.3 b. Added a section on distribution herbicide maintenance – Section 5.5 c. Updated work thresholds and clearances – Table 5.1 d. Added table on interim work thresholds and clearances – Table 5.2 e. Added section on padmount transformers – Section 5.7. 6. Chapter 7 a. Added section on closed chain of custody – Section 7.1
06	Reviewed/Updated`	06/01/2017	R.H. Miller	1. Made style consistent for all the chapters 2. Changed figure presentation so they followed first mention sequentially. Updated section numbering accordingly 3. Clarified language throughout 4. Updated Table 6.1 to comport with FAC-003-4 MVCDs.
07		05/13/2019	R.E. Vanderhoof	1. Modified Forest Technician qualification requirements (Chapter 1) 2. Made style consistent across tables and figures, and eliminated extraneous figures 3. Eliminated two-column format to facilitate future revisions 4. Moved standard form objects to appendix. 5. Significantly condensed chapters 3, 4 and 8

Revision	Status	Date	Author	Change Tracking
				6. Modified Table 2.1 to reflect new edition of Z133 safety requirements 7. Removed threshold clearances and increased specification clearances for California (Tables 5.2) 8. Increased interim clearances for California (Table 5.5) 9. Increased transmission clearances for 161, 138, and 115 kV lines to comply with California Electric Tariff Rule 11(table 6.1) 10. Significantly simplified tree crew audit process (Chapter 4) 11. Introduced new distribution ticket maintenance procedure (Chapter 5) 12. Reclassified brush as < 6 in. dbh and trees as > 6in. dbh 13. Removed glossary and defined terms in text.

Attachment B: Bureau of Land Management Instruction Memorandum UT-2021-004

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, UT 84101-1434

December 7, 2020

In Reply Refer To:
2800 (UT-921) P

EMS TRANSMISSION
Instruction Memorandum No. UT IM-2021-004
Expires: 12/31/2023

To: BLM Utah District Managers, Field Managers, and Realty Specialists

From: State Director

Subject: Routine Operations and Maintenance to Reduce Fire Risk on Utility Rights-of-Way

Program Area: Lands and Realty, Cadastral, Fire and Fuels, Biological and Cultural Resources, Forestry and NEPA.

Purpose: To establish policy regarding routine operations and maintenance activities on electric utilities' rights-of-way (ROW) to reduce the risk of wildfire.

Administrative or Mission Related: Mission.

Policy/Action: Electric transmission and distribution facility ROW holders have the authority to conduct routine operations and maintenance (O&M) activities within their ROW (see 43 CFR 2805.14(a)). ROW holders must also do everything reasonable to reduce the risk of wildfires within or in the immediate vicinity of their ROW area, 43 CFR 2805.12(a)(4); and comply with project-specific terms, conditions, and stipulations, including any requirements to control or prevent damage to property, and public health and safety 43 CFR 2805.12(a)(8)(iii). To prevent the risk of wildfire, Field Offices should encourage ROW holders to conduct routine O&M activities for their facilities on public land. In taking such actions, ROW holders are responsible for ensuring their activities comply, to the maximum extent practicable, with all applicable state and federal laws (see 43 CFR 2805.12(a)(1)).

To facilitate and expedite O&M activities necessary to reduce the risk of wildfire, Field Offices should immediately notify ROW holders they are authorized and responsible to carry out O&M work to prevent wildfire and request they notify the appropriate Bureau of Land Management (BLM) Field Office within 30 days of completing such work, unless this timeframe is in conflict with applicable law and regulation. If the ROW holder determines O&M work is necessary to reduce the risk of wildfire, then Field Offices should not require the ROW holder to obtain any

additional notice to proceed or other form of prior approval before conducting this O&M work. To the extent the terms and conditions of a ROW grant generally require a notice to proceed or other form of prior approval before a ROW holder conducts O&M and other activities, such provisions should not be construed to apply to actions that have already been authorized, including those required under 43 CFR 2805.12(a)(4),43 CFR 2805.12(a)(8)(iii), or other applicable laws and regulations.

When coordinating with ROW holders, the BLM should request any holder undertaking O&M activities to prevent wildfire identify in writing, as soon as practicable, the location of the ROW and the activities undertaken (legal description, maps, etc.); access route; type of work; acreage of treatment area; equipment used; start and end dates; biological data or cultural survey data (cultural resource data must be submitted in a confidential folder supplied by each BLM office); best management practices used; utility company point of contact; and BLM serial number for the ROW. Field Offices will upload this data to a Utah State Office SharePoint site. Data collected will be incorporated into ongoing efforts to streamline ROW processes as well as facilitate ROW renewals and consolidations, where appropriate.

Field Offices will follow direction as set forth in Section 512 of the Federal Land Policy and Management Act for ROW holders controlling vegetation associated with electric transmission or distribution lines. A vegetative sale contract may need to be prepared after work has been completed.

If necessary, O&M activities are required outside of the authorized ROW boundary area, the Authorized Officer (AO) may permit these activities if it is determined necessary and reasonable. The reasonable and necessary determination shall be based on the degree of potential fire hazard for that particular ROW. In conjunction, a full NEPA analysis will not be required if the activities would not create significant additional surface disturbance or detrimentally impact other resources in the respective area. The AO will authorize this activity with a Categorical Exclusion, specifically with 516 DM 2, 1.12, amongst other required authorization documents.

In emergency scenarios created by unanticipated fire hazards (e.g., inclement weather causing branches to be blown near transformers), the AO would work with the ROW holder to authorize appropriate reduction/elimination techniques. The “emergency” status would be determined collaboratively by the respective AO with the ROW holder. The techniques used to accomplish this should be the least intrusive necessary to reduce/eliminate the potential fire hazard.

The BLM will work with ROW holders to identify any follow-up actions or modifications required to implement this policy.

Field Office Realty Specialists have the lead for implementing this IM and will seek out fire and fuels, and cadastral guidance and direction when technical questions arise and require expertise with specific measures.

Timeframe: Effective immediately through December 31, 2023.

Budget Impact: The policy will have minimal budget impact, as ROW regulations allow the BLM to collect cost recovery fees from the ROW holder to cover the costs of monitoring the operation and maintenance activities of permanent or temporary facilities on public land.

Background: In recent years, the number and scope of wildfires across the West has increased substantially. This destructive wildfire trend emphasizes the need for effective vegetation management and facilities maintenance to reduce the threat of wildfire in association with electrical transmission and distribution lines.

Secretary's Order 3372, "Reducing Wildfire Risks on Department of the Interior Land Through Active Management" (01/02/2019) builds upon Executive Order 13855, "Promoting Active Management of America's Forests, Rangelands, and Other Federal Lands to Improve Conditions and Reduce Wildfire Risk." The intent of this Order is to implement active vegetation management to reduce the risk of catastrophic wildfire.

Section 211 of Title 2 of Public Law 115-141 amended the Federal Land Policy and Management Act to add Section 512 titled "Vegetation Management, Facility Inspection, and Operations and Maintenance Relating to Electrical Transmission and Distribution of Facility Rights-of-Way." This regulation acknowledges it may be necessary to address conditions outside a ROW to prevent wildfire.

WO IM 2018-070 emphasizes routine vegetation maintenance is the responsibility of the electrical utility facility owners, and to the extent feasible, the BLM will address vegetation management issues without the need for additional authorizations and processes.

Manual/Handbook Sections Affected: None. This guidance does not supersede or negate any requirements imposed by state or federal law or national BLM policy. Utilities within the State of Utah were required to complete Wildland Fire Protection Plans but these in no way supersede BLM direction found within this IM and in most cases complements these efforts.

Coordination: This IM was coordinated with associated Headquarters and State Office Programs.

Contact: Questions concerning this IM should be directed to the Utah State Office ROW team at 801-539-4105.

GREGORY SHEEHAN
Digitally signed by GREGORY SHEEHAN
Date: 2020.12.07 16:30:15 -07'00'

Gregory Sheehan
State Director

Attachment C: Memorandum of Understanding on Vegetation Management for Powerline Rights-of-Way

MEMORANDUM OF UNDERSTANDING
ON VEGETATION MANAGEMENT FOR POWERLINE RIGHTS-OF-WAY

Among the

EDISON ELECTRIC INSTITUTE
UTILITY ARBORIST ASSOCIATION

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service
Fish and Wildlife Service
Bureau of Land Management

UNITED STATES DEPARTMENT OF AGRICULTURE
Forest Service

and the

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

This memorandum of understanding (MOU) is entered into by:

- The Edison Electric Institute (EEI) and Utility Arborist Association (UAA), "the non-governmental parties," hereinafter referred to collectively as "the member companies," and

- The United States Department of the Interior, National Park Service (NPS), Fish and Wildlife Service (FWS), and Bureau of Land Management (BLM), the United States Department of Agriculture, Forest Service (FS), and the United States Environmental Protection Agency (EPA), hereinafter referred to collectively as "the Federal agencies."

This MOU addresses vegetation management for electric transmission and distribution line rights-of-way (referred to throughout this MOU as powerline ROWs) on Federal lands.

I. Authorities

The non-governmental parties are authorized to enter into this MOU by consent of their member companies.

The NPS is directed to manage all national park lands to protect and preserve natural and cultural resources, pursuant to the National Park Service Organic Act, 54 U.S.C. § 100101.

The FWS is authorized to enter into this MOU under the National Wildlife Refuge System Administration Act of 1966, as amended, 16 U.S.C. § 668dd-ee, and 50 C.F.R. §§ 29.21-4 and 29.21-8.

The BLM is authorized to enter into this MOU under Section 302(a) of the Federal Land Policy and Management Act, as amended, 43 U.S.C. § 1737(b),

The FS is authorized to enter into this MOU under the Organic Administration Act of 1897, 16 U.S.C. § 551, and the Multiple Use–Sustained Yield Act, 16 U.S.C. § 528 *et seq.*

The EPA is authorized to enter into this MOU under Section 6604(b) of the Pollution Prevention Act, 42 U.S.C. § 13103(b).

II. The Parties

EEI. This association represents all U.S. investor-owned electric utility companies. The EEI member companies provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia (DC), and directly employ more than 500,000 people. With more than $90 billion in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Reliable, affordable, and sustainable electricity powers the U.S. economy and enhances the lives of all Americans. EEI has 70 international electric utility companies as affiliate members and 250 industry suppliers and related organizations as associate members. The mission of EEI is to ensure members' success by advocating public policy, expanding market opportunities, and providing strategic business information relating to the electric power industry.

UAA. The nearly 3,000 members of this organization have an interest in and a commitment to the maintenance of trees and other vegetation in connection with powerline ROWs. The primary goal of the UAA is to ensure the safe and reliable distribution of energy, including electricity, oil, and gas, to businesses and residences through quality utility arboriculture. The mission of the UAA is to be the leading North American organization for the enhancement of utility arboriculture and vegetation management for powerline ROWs.

NPS. The NPS is responsible for managing nearly 84 million acres with over 400 units in the National Park System. The mission of the NPS is to preserve unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of current and future generations. The NPS also has management responsibilities over other areas, including parts of the National Wild and Scenic Rivers System, National Trails System, National Heritage Areas, and NPS Affiliated Areas, which are closely linked in importance and purpose to those areas directly managed by the NPS. The NPS may issue ROW permits for lands it manages only if the use or activity is specifically authorized by Congress. One of these statutory authorities, The Act of March 4, 1911, gives the NPS the general authority to issue ROW permits for national park lands for electric poles and lines for the transmission and distribution of electrical power.

FWS. The FWS manages nearly 155 million acres in more than 560 National Wildlife Refuges and Wetland Management Districts and manages National Fish Hatcheries on federally owned lands. The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. The FWS issues ROW permits under its Rights-of-Way policy (340 FW 3), (e.g., vegetation management required for a powerline corridor). The Appropriate Refuge Uses (603 FW 1) and Compatible Uses (603 FW 2) policies further guide the issuance of ROW permits on National Wildlife Refuge System lands and waters. The FWS Biological Integrity, Diversity, and Environmental Health policy (601 FW 3) establishes a process for managers to follow for maintaining and/or restoring the biological integrity, diversity, and environmental health of our lands and waters when authorizing and considering uses and activities on the National Wildlife Refuge lands and waters.

BLM. The BLM manages public lands under the principles of multiple-use and sustained yield as described in the Federal Land Policy and Management Act of 1976 (FLPMA). The BLM administers more than 245 million surface acres of Federal lands, the most of any Federal agency. This land, known as the National System of Public Lands, is primarily located in the 12 western states and Alaska. The BLM also manages 700 million acres of subsurface mineral estate throughout the United States. The mission of the BLM is to manage public lands for the use and enjoyment of present and future generations. Title V of FLPMA authorizes the BLM to grant ROWs for systems for generation, transmission, and distribution of electric energy.

FS. The mission of the FS is to sustain the health, diversity, and productivity of the national forests and grasslands to meet the needs of present and future generations. The FS achieves its mission by applying the principles of sustainable, multiple-use management to meet the diverse needs of the American people. The FS manages over 192 million acres of Federal lands and waters within the National Forest System. The FS supports America's energy needs through effective oversight and management of thousands of miles of electric utility transmission and distribution corridors and related facilities on the National Forest System lands.

EPA: The mission of the EPA is to protect human health and the environment. In support of this mission, the Office of Pesticide Programs licenses pesticides for use in the United States under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In addition, Section 136r-1 of FIFRA provides direction to the EPA and USDA related to implementation of Integrated Pest Management, which is comparable to Integrated Vegetation Management (IVM). The Agency supports, through partnerships and regulatory processes, IVM as a means of reducing pesticide risk, protecting endangered species, and promoting pollinator protection along electric utility transmission and distribution ROW corridors. The June 20, 2014, Presidential Memorandum "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators" established a Pollinator Health Task Force to be co-chaired by the USDA and EPA, that presents opportunities for all Federal agencies to include specific efforts to enhance pollinator habitat, including on Federal ROWs.

III. Purpose

The purpose of this MOU is to facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline ROWs and associated facilities. This MOU will facilitate implementation of cost-effective and environmentally sound vegetation management plans, procedures, and practices for powerline ROWs that will reduce adverse environmental and cultural impacts while enhancing the ability of utilities to provide uninterrupted electrical service to customers and address public safety. Federal agencies have established policies and procedures relating to vegetation, watershed, fire and fuels, wildlife habitat, enhancing pollinator habitat, and invasive species management that may help facilitate the MOU objectives. The Federal agencies' procedures may enhance the reliability and safety of electrical energy transmission while protecting the environment, and natural and cultural resources within and immediately adjacent to powerline ROWs on Federal lands. This MOU addresses the use of incorporating vegetation management practices into the existing and future ROW grants/authorizations across Federal lands.

IV. Mutual Interests and Benefits

Executive Order 13212, dated May 18, 2001, provides for expedited review of applications for energy-related projects on Federal lands; Section 216(h) of the Energy Policy Act of 2005, 16 U.S.C. § 824p, provides for coordinating, streamlining, and expediting Federal agency review of applications for powerline ROWs on Federal lands. Presidential Memorandum dated August 31, 2011, Speeding Infrastructure Development Through More Efficient and Effective Permitting and Environmental Review and Executive Order 13604, dated March 22, 2012, provide for Federal agencies to take all steps within their authority, consistent with available resources, to execute Federal permitting and review processes with maximum efficiency and effectiveness, ensuring the health, safety, and security of communities and the environment while supporting vital economic growth including infrastructure projects on Federal lands. Executive Order 13112, Section 2 (a)(3), dated February 8, 1999, requires each Federal agency whose actions may affect the status of invasive species, to the extent practicable and permitted by law, to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species. These authorities provide an understanding of the roles and responsibilities of the parties to this MOU with regard to vegetation management within powerline ROWs on Federal lands and facilitate expediting Federal agency review of applications for those ROWs, which typically include a vegetation management component.

Electric utilities provide a vital service that is integral to America's security, safety, economy, and welfare. Powerline ROWs are necessary components of America's energy infrastructure and include thousands of miles of electric utility powerlines and other electric utility facilities across Federal and private lands. These powerline ROWs span across millions of acres of forestlands, grasslands, wetlands, fish and wildlife habitats, rare plant communities, and other natural and constructed features across the landscape. Efficient and environmentally safe control of undesirable vegetation along the entire span of these powerline ROWs, including around utility poles and towers, is critical for providing reliable delivery of electricity, addressing utility worker and public safety, and meeting requirements in applicable law and policy. Proper vegetation management for those ROWs can protect environmental and cultural features of these

areas, (e.g., by decreasing fuel loads, minimizing the spread of invasive plants, preserving and creating wildlife habitat, creating fuel breaks, maintaining the condition of the watershed, protecting habitat for pollinators, and preserving ecosystem connectivity).

Utility companies must manage vegetation in powerline ROWs on Federal lands to prevent power outages, wildfires, and the spread of invasive species and to protect human health, property, and natural and cultural resources. Power outages can occur when overhead lines stretch or sag onto vegetation due to increased load or changes in ambient conditions, (e.g., high air temperature or wind speed). Outages may occur when undesirable vegetation grows, falls, or otherwise makes contact with overhead electric powerlines. Since 1996, the presence of undesirable vegetation within powerline ROWs on Federal and private lands has been implicated in the initiation of three large-scale electrical grid failures in the United States and Canada, including the massive August 14, 2003, blackout that affected 50,000,000 people.

Vegetation that encounters powerlines and other electric transmission facilities can also start fires. Arcing can occur when any part of a bare, high-voltage line gets too close to a tree, limb, or shrub. There have been catastrophic wildfires across multiple states caused by interaction of vegetation with powerlines and other facilities within powerline ROWs on Federal lands. The spread of invasive plants, as well as other flammable native vegetation, can increase fuel loads, creating dangerous fire conditions that can threaten powerlines and other facilities within powerline ROWs on Federal lands. Properly maintained vegetation in powerline ROWs can prevent the spread of invasive species, provide habitat for pollinators, and act as an effective firebreak for the control and suppression of wildfire.

V. Coordination and Cooperation

Coordination between Federal agencies and the utility companies before and during ROW establishment and maintenance activities along the entire corridor on Federal lands may help to avoid interruptions in electric service while maintaining the environmental and cultural integrity of the lands they occupy. This coordination is important for ROW vegetation management activities across all Federal lands. Implementing a coordinated and cooperative approach to ROW vegetation management programs for utility corridors across the landscape will increase maintenance efficiencies, and decrease management costs at all levels while considering potential environmental and cultural impacts.

Coordination and cooperation among the relevant Federal agencies and member companies, before and during establishment and maintenance of powerline ROWs on Federal lands, is important to enhance electric transmission reliability, increase maintenance efficiencies, reduce management costs, prevent the spread of invasive plants, reduce fuel loads, and minimize other potential environmental and cultural resource impacts and human safety risks. This coordination and cooperation may entail development of annual vegetation management plans that identify vegetation control prescriptions within a given year for each powerline ROW on Federal lands. Such vegetation management plans must comply with applicable Federal laws and policies, be consistent with operations and maintenance plans for each powerline, and consider requirements for member company compliance with Federal reliability standards.

VI. Roles and Responsibilities

A. The parties to this MOU will:

1. Comply with all applicable Federal, tribal, state, and local laws, regulations, policies, executive orders, and presidential memoranda regarding electric transmission safety and reliability and environmental and cultural resource protection.

2. Consistent with their respective missions, roles and responsibilities, coordinate and cooperate to promote cost-efficient, proactive, environmentally appropriate, and safe management of undesirable vegetation in and adjacent to powerline ROWs on Federal lands to minimize the risk of vegetation-caused outages and adverse impacts on powerline facilities, human health and safety, and to minimize harm to native plants and animals in particular pollinators, soil, water, and other natural and cultural resources on Federal lands. Specifically, the parties to this MOU acknowledge that:

   a. To the extent practicable, management and maintenance of powerline, ROWs on Federal lands should be coordinated with all affected landowners to enhance operational efficiency, public safety, environmental protection, and cost-effectiveness.

   b. The spread of invasive species along powerline ROWs on Federal lands is widespread but can be prevented or controlled through a proactive and integrated management approach. Where consistent with the Federal agencies' other obligations, appropriate prevention, mitigation, and control measures related to the non-governmental parties' activities that may cause invasive plant species to increase will be incorporated into vegetation management plans, land use authorizations, and maintenance agreements for powerline ROWs on Federal lands.

   c. Integrated vegetation management, incorporating established principles of "integrated pest management," is widely accepted in the public and private sectors. The proactive pest management approach includes a broad spectrum of integrated techniques for managing undesirable plant species. Standards for IVM plans outlined in the American National Standards Institute A300 Part 7 and best management practices for IVM compiled by the International Society of Arboriculture provide reliable, widely accepted guidance for protection and conservation of natural resources that balance benefits of control, cost, public health, environmental quality, and regulatory compliance.

   d. Programmatic environmental analysis for vegetation management for powerline ROWs on Federal lands where appropriate, will be conducted in accordance with the National Environmental Policy Act (NEPA). The NEPA decision document will provide a foundation for site-specific environmental analysis for vegetation management for powerline ROWs on Federal lands.

   e. Consistent with applicable law and agency responsibilities, each Federal agency will evaluate land use authorizations and vegetation management practices for powerline

ROWs on Federal lands. The Federal agencies will propose appropriate changes to those authorizations and vegetation management practices that would enhance pollinator habitat on Federal lands using pollinator-friendly best management practices. When related to vegetation management activities, provide supplemental existing vegetation management plans, agreements, and MOUs with holders of powerline ROWs on Federal lands to establish or enhance pollinator habitat.

3. Facilitate coordination and cooperation with each other at the local level to accelerate development of vegetation management plans and land use authorizations for powerline ROWs on Federal lands. To the extent possible, promote joint preparation of NEPA documents among the Federal agencies for vegetation management activities to maximize efficiency and coordination and to ensure consistency with applicable land management plans and policies and applicable law.

4. Promote safety during vegetation management activities associated with powerline ROWs on Federal lands. The parties to this MOU acknowledge that:

   a. In general, the safety of electric utility workers and the public at transmission and distribution facilities is the responsibility of the electric utility identified in the Federal land use authorization or permit. Electric utility companies and their affiliates will conduct their operations in accordance with the National Electrical Safety Code and Occupational Safety and Health Administration standards, and the terms and conditions in the ROWs/authorizations, and other worker protection standards where applicable.

   b. The Federal agencies will coordinate with the member companies to develop appropriate measures to ensure personal and public safety and protection of the public lands and resources during vegetation management activities on Federal lands.

5. Facilitate prompt identification of potential risks, unforeseen impacts, and deviations in implementing vegetation management plans within and immediately adjacent to land use authorizations associated with powerline ROWs on Federal lands and, to the extent appropriate and practicable, mitigate those risks, impacts, and deviations.

6. Encourage opportunities, where appropriate, to provide training and technical assistance to government agency staff, powerline ROW maintenance personnel, electric utility companies, and private landowners seeking to improve vegetation management and overall maintenance of powerline ROWs across public and private lands.

7. Work with the Association of Fish and Wildlife Agencies on separate MOUs to facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline ROWs and associated facilities on Federal, state and private properties.

B. The member companies will:

1. Promote coordination and cooperation between the Federal agencies and the private utilities that own, operate, or maintain powerline ROW on Federal lands.

2. Ensure that their members and affiliates that are proposing or that have a powerline ROW on Federal lands provide the necessary information for vegetation management activities; including treatment procedures, pesticide use, maps, and mitigation measures, to the administering Federal agency for review and approval of the proposed or revised vegetation management plan for ROWs/permit.

3. Ensure that their members and affiliates that have an powerline ROW on Federal lands comply with the terms and conditions of the applicable ROW/permit, including the approved vegetation management plan, and closely coordinate vegetation management activities associated with the powerline ROW with the authorizing Federal land management agency. In particular, ensure that:

    a. Vegetation management plans for powerline ROWs on Federal lands provide for the holder to give prior notice to the administering Federal agency of all proposed vegetation management activities.

    b. Vegetation management plans for powerline ROWs on Federal lands should include procedures for conducting emergency vegetation management activities to ensure the safe and reliable operation of the powerlines. Emergency vegetation management involves vegetation trimming or removal actions near powerlines that if not taken immediately would result in damage to powerline structures that interrupts service to customers. Federal agency approval is not required prior to emergency vegetation control actions; however, actions will be reported on or before the next business day or as soon as possible to the administering Federal agency.

4. Within 18 months of the effective date of this MOU:

    a. Disseminate this MOU to their members, affiliates, and other interested parties and emphasize laws, regulations, and policies associated with vegetation management for powerline ROWs on Federal lands.

    b. Work with the Federal agencies to develop a process for coordinating vegetation management for all ROWs on Federal lands; assess the effectiveness of this MOU; and document any challenges, concerns, or opportunities for improvements in connection with implementation of this MOU.

    c. Provide the Federal agencies updates on the progress of a formal agreement with Association of Fish and Wildlife Agencies that specifically addresses coordinating vegetation management of powerline ROWs on Federal land, where such operations could potentially affect state land.

C. The Federal agencies shall:

1. Promote coordination and cooperation between the Federal agencies and the private utilities that own, operate, or maintain electrical transmission line ROWs on Federal lands.

2. If necessary, take steps to modify policies and procedures to facilitate electric utility compliance with the North American Electric Reliability Corporation (NERC) standards and other regulatory and legal vegetation management requirements for those areas that require prior review.

3. Ensure that vegetation management plans for powerline ROWs on Federal lands are consistent with Federal laws, regulations, and policies.

4. Prior to issuance of powerline ROW authorizations on Federal lands and to the extent practicable and consistent with other Federal agency obligations and priorities, analyze, review, and approve the proposed annual vegetation management plan, treatment procedures, pesticide use, maps, and mitigation measures.

5. To the extent practicable and consistent with other Federal agency obligations and priorities, review requests for any required, non-emergency vegetation management for powerline ROWs on Federal lands within member companies' desired timeframes.

6. Provide to the ROW grant/permit holders a list of suitable, native ecoregion specific plants that attract pollinators for ROW areas that may require re-vegetation to mitigate vegetation management's adverse impacts.

7. When deemed appropriate, develop separate MOUs to facilitate cooperation and coordination regarding vegetation management within and immediately adjacent to existing and future powerline ROWs on Federal lands.

8. Within 18 months of the effective date of this MOU:

    a. Disseminate this MOU to Federal agency field offices, emphasize laws, regulations, and policies associated with vegetation management for powerline ROWs on Federal lands.

    b. Work with the non-governmental parties to develop a process for coordinating vegetation management of powerline ROWs on Federal lands; assess the effectiveness of this MOU; and document challenges, concerns, or opportunities for improvement in connection with implementation of this MOU.

VII. Principal Contacts

Amendments must be in writing, signed, and dated by all Parties prior to being in effect. The principal contacts for this MOU are:

Director, Environmental Activities
Edison Electric Institute
701 Pennsylvania Avenue, NW
Washington, DC 20004-2696
202-508-5647, rloughery@eei.org

Vegetation Management Supervisor
Middle Tennessee EMC
Utility Arborist Association
555 New Salem Highway
Murfreesboro, TN 37129, joe.osborne@mtemc.com

Deputy Associate Director, Natural Resource Stewardship and Science
National Park Service
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Washington, DC 20240
202-513-7208, Brian_Carlstrom@nps.gov

Chief, National Wildlife Refuge System
United States Fish and Wildlife Service
1849 C Street, NW, Room 3349
Washington, DC 20240
202-208-5333, Cynthia_Martinez@fws.gov

Assistant Director, Energy, Minerals, and Realty Management
Bureau of Land Management
1849 C Street, NW Room 5625
Washington, DC 20240
202-208-4201, mnedd@blm.gov

Director of Lands and Realty Management
United States Forest Service
201 14th Street SW, Suite 1SE
Washington, DC 20250
202-205-1769, gsmith08@fs.fed.us

Director Biopesticides and Pollution Prevention Division,
Office of Pesticide Programs
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW (7511P)
Washington, DC 20460
703-308-8712, mcnally.robert@epa.gov

VIII. Implementation, Amendments, and Termination

This MOU will become effective on the date it is fully executed and will remain in effect for 5 years, unless it is terminated in writing by all parties prior to its expiration. This MOU may be amended with the written consent of all parties. Other public or private organizations may become a party to this MOU if mutually agreed to in writing by all parties. Any party may terminate its participation in this MOU in whole or in part after 30 days written notice to the other parties. Termination of one party's participation in this MOU does not void this MOU among the remaining parties.

IX. Non-Fund-Obligating Document

Each party will fund its own participation under this MOU and will carry out its separate activities in a coordinated and mutually beneficial manner. In implementing this MOU, the Federal agencies will be operating under their own laws, regulations, and policies, subject to the availability of appropriated funds. The non-governmental parties' actions in implementing this MOU will be subject to available funds. This MOU does not obligate any party to any current or future expenditure of resources. This MOU does not authorize the parties to spend funds or enter into any contract, assistance agreement, interagency agreement, or other financial obligation, regardless of whether funds are available for that purpose. Specific projects or activities that involve the transfer of funds, services, or property among the parties require execution of separate agreements and are contingent upon the availability of appropriated funds. These activities must be independently authorized by statute. This MOU does not provide that authority. Negotiation, execution, and administration of these agreements must comply with all applicable law.

X. Endorsement

Federal agencies do not endorse the purchase or sale of any products or services provided by private organizations or their affiliates. The MOU signatories should not make any statements, based on this MOU that implies that a Federal agency endorses the purchase or use of their products or services.

XI. Limitations

This MOU is intended to improve the working relationship between the private and public sectors in connection with vegetation management for powerline ROWs on Federal lands. This MOU is not intended to and does not create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by a party against the United States, its agencies, its officers, or any person.

This MOU is not intended to alter, limit, or expand the Federal agencies' statutory and regulatory authority, including the Federal agencies' cost recovery authority for powerline ROWs on Federal lands. Cost recovery for powerline ROWs on Federal lands will be conducted, as appropriate, under applicable laws, regulations, and policies.

This MOU has no legal effect on existing or future land use authorizations for powerline ROWs on Federal lands.

This MOU does not impose any binding obligations on any party. Nothing in this MOU obligates any of the parties to engage in any activities inconsistent with their respective missions, roles, and responsibilities.

The parties will implement this MOU consistent with all applicable Federal laws and regulations, including the Federal Advisory Committee Act. Any information furnished to the Federal agencies under this MOU is subject to the Freedom of Information Act, 5 U.S.C. § 552.

This MOU in no way restricts the Federal agencies from participating in similar activities with other public or private agencies, organizations, and individuals.

No member of or delegate to Congress may benefit from this MOU either directly or indirectly.

XII. Authorized Representatives

The parties to this MOU acknowledge that each of the signatories and the principal contacts listed in Section VII is authorized to act on behalf of their respective organization regarding matters related to this MOU.

Thomas R. Kuhn
President
Edison Electric Institute

9/29/16
Date

Philip Charlton
Executive Director
Utility Arborists Association

9/21/2016
Date

Jonathan B. Jarvis
Director
National Park Service

7/13/2016
Date

Daniel Ashe
Director
United States Fish and Wildlife Service

7.11.2016
Date

Steven A. Ellis
Deputy Director
Bureau of Land Management

6/29/2016
Date

Thomas L. Tidwell
Chief
United States Forest Service

7/29/16
Date

Jim Jones
Assistant Administrator for the Office of Chemical Safety and Pollution Prevention
United States Environmental Protection Agency

8/29/16
Date

Appendix C5. Cultural Resource Protection Plan – DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C5. Cultural Resource Protection Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

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Abbreviations

BLM	Bureau of Land Management
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
HPTP	Historic Properties Treatment Plan
Plan	Cultural Resources Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

Appendix C5: Cultural Resource Protection Plan (Plan) is a partially confidential appendix that will contain the Historic Properties Treatment Plan (HPTP) that is being developed for the Project. The HPTP will be developed to resolve adverse effects to historic properties, as stipulated by the programmatic agreement for the Project, which documents the terms and conditions for compliance with Section 106 of the National Historic Preservation Act. This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction. It is anticipated that some of the information in the HPTP, such as the Monitoring and Discovery Plan will be shared with the Company and Construction Contractor, but other parts of the HPTP, such as certain site information, will be confidential.

The HPTP will provide information on the following:

- A brief description of the Project
- A list of the properties where data recovery or other actions to resolve adverse effects are to be carried out
- A list of properties that will require archeological monitoring during construction
- An archeological construction monitoring plan to include a tribal monitoring plan, should monitoring be requested by tribes
- A plan for the discovery of human remains, which will include a provision to complete a Native American Graves Protection and Repatriation Act Plan of Action, if desired by the consulting Tribes
- Identification of specific mitigation strategies proposed to address the direct, indirect, and cumulative effects of the Project
- Identification of a variance review process for operations and maintenance
- Research questions to be addressed
- Methods to be used during fieldwork for data recovery
- A cultural resource unanticipated discovery plan
- Methods to be used during analysis
- Reporting and curation of artifacts

- Schedule for the submission of progress reports
- Recommendations for treatment of cultural resources during operation and maintenance of the Project
- Qualifications of consultants employed to undertake the work
- Training protocols for contractors

Appendix C6. Paleontological Resources Treatment Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C6. Paleontological Resources Treatment Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

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Attachments

Tables

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measures
BLM	Bureau of Land Management
Company	TransCanyon, LLC
ESA	Environmentally Sensitive Areas
FLPMA	Federal Land Policy and Management Act of 1976
Forest Service	U.S. Department of Agriculture Forest Service
GIS	Geographic Information System
GPS	Geographic Positioning System
kV	kilovolt
NEPA	National Environmental Policy Act
NRS	Nevada Revised Statute
PFYC	Potential Fossil Yield Classification
PI	principal investigator
POD	plan of development
Project	Cross-Tie 500-kV Transmission Project
PRPA	Paleontological Resources Preservation Act
PRTP	Paleontological Resources Treatment Plan
ROW	Right-of-Way
SVP	Society of Vertebrate Paleontology
U.S.C.	U.S. Code
USDI	United States Department of the Interior
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

1 INTRODUCTION

TransCanyon, LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

Paleontological resources are defined as "any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth" (Paleontological Resources Preservation Act [PRPA], Section 6301). The purpose of the Paleontological Resources Treatment Plan (PRTP) is to assist the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (Forest Service) in planning and design efforts for Project as it relates to paleontological resource issues. As used here, the term treatment refers to all activities taken to minimize or avoid impacts to paleontological resources, including worker training, construction monitoring, and the documentation or salvage, when appropriate, of fossils discovered during Project activities. The Project will include ground disturbance (excavations or drilling for foundations, road construction, grading, etc.) as well as surficial work (laydown yards, existing road improvement, pull sites, etc.).

This PRTP is designed to support the implementation of the Applicant Committed Environmental Protection Measures (ACEPM) as presented in Section 9 of the Plan of Development (POD). As such, this PRTP details the worker's training on paleontological resources, monitoring procedures, and treatment of any paleontological resources that are encountered.

This PRTP provides important background and contextual information useful for the paleontological resources treatment program. The logistics, procedures, and methods outlined in this PRTP ensure compliance with federal and state regulations (BLM 1998, 2008, 2022a).

This PRTP was prepared as part of the POD. It will be updated as necessary to meet any stipulations of the BLM and Forest Service records of decision and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

This PRTP is a work plan for all the paleontological-related treatment activities performed by the Construction Contractor(s) during Project construction, as well as by the Company during operations and maintenance as applicable. It is not the intent of the PRTP to present a comprehensive list of paleontological localities with discussions of all significant fossils found from the vicinity of the Project area, defined as the ROW as well as the footprint of any Project-related activities outside of the ROW, with a 250-foot buffer. The PRTP offers a framework and accompanying logistical guidelines to ensure paleontological resources unearthed by development of the Project will be managed appropriately and in a timely manner, thereby effectively mitigating adverse impacts on these paleontological resources.

This plan has been developed following an analysis of existing data used to develop a technical report for the Environmental Impact Statement for the Project (Stantec 2022). This analysis consisted of a review of relevant published and unpublished geological and paleontological reports, geologic mapping, online locality databases, and museum paleontological locality records (Stantec 2022). A pre-construction paleontological field survey is planned to supplement the analysis of existing data, and this PRTP will be updated as necessary following the field survey. Portions herein that are designated for update are marked as "*placeholder text*".

2 REGULATORY FRAMEWORK

The following provides a brief overview of federal and state legislation, regulatory compliance, and professional standards applicable to paleontological resources in the Project area considered in the development of this PRTP.

2.1 National Environmental Policy Act of 1969 (Public Law 91-190, 83 Stat. 852, 42 U.S.C. 4321-4327)

The National Environmental Policy Act of 1969 (NEPA) as amended (Public Law [PL] 91-190, 42 USC 4321–4347, January 1, 1970, as amended by PL 94-52, July 3, 1975, PL 94-83, August 9, 1975, and PL 97-258 4(b), Sept. 13, 1982), recognizes the continuing responsibility of the federal government to "preserve important historic, cultural, and natural aspects of our national heritage…" (Sec. 101 [42 USC 4321], #382). The passage of the Paleontological Resources Preservation Act (PRPA) (see below) in 2009 made paleontological resources widely recognized natural resources that must be considered under NEPA analyses, and it is therefore now standard practice to include paleontological resources in NEPA studies in all instances where there is a possible impact.

2.2 Federal Land Policy and Management Act of 1976 (Public Law 94-579)

The Federal Land Policy and Management Act (FLPMA) of 1976 (43 United States Code [USC] 1712[c], 1732[b]); sec. 2, Federal Land Management and Policy Act of 1962 [30 USC 611]; Subpart 3631.0 et seq., Federal Register Vol. 47, No. 159, 1982) does not refer specifically to paleontological resources. However, paleontological resources are understood and recognized in policy as scientific resources, as recognized with the passage of the PRPA. Under FLPMA, federal agencies are charged to:

- manage public lands in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, archaeological, and water resources, and, where appropriate, preserve and protect certain public lands in their natural condition (Section 102);
- periodically inventory public lands so that the data can be used to make informed land-use decisions (Section 102); and
- regulate the use and development of public lands and resources through easements, licenses, and permits (Section 302).

2.3 Paleontological Resources Preservation, Omnibus Public Land Management Act of 2009, Public Law 111-011, Title VI, Subtitle D 16 U.S.C. 470aaa-aaa-11

The purpose of the PRPA of 2009 is to "manage and protect paleontological resources on federal land using scientific principles and expertise." It directs the BLM and Forest Service to "develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable BLM and Forest Service laws, regulations, and policies" (Section 6302). The PRPA codifies pre-existing policies of the BLM, National Park Service Forest Service, Bureau of Reclamation, and U.S. Fish and Wildlife Service, and provides for the following uniformity:

- criminal and civil penalties for illegal removal, transport, and sale as well as theft and vandalism of fossils from federal lands (Sections 6306, 6307, and 6308);
- minimum requirements for the issuance of paleontological resource-use permits (terms, conditions, and qualifications of applicants) (Section 6304);

- protection of locality data (Section 6309);
- definitions for "paleontological resources" and "casual collecting" (Section 6301); and
- requirements for curation of federal fossils in approved repositories (Section 6305).

2.3.1 Paleontological Resources Preservation: Title 43 Code of Federal Regulations Part 49

Title 43 Code of Federal Regulations [CFR] Part 49 (August 2, 2022) implements the PRPA by providing standards for a coordinated approach to the management of paleontological resources on public lands. The rule clarifies how bureaus will manage paleontological resources to ensure their preservation. Part 49 addresses a wide variety of aspects important to resource management:

- Definitions of terminology, application of the part to existing authorities, confidentiality of resource locations, and restricting access to particular areas (Subpart A).
- Paleontological resources permitting requirements, modifications, and appeals (Subpart B).
- Management of resource collections and repository requirements (Subpart C).
- Prohibited acts, criminal and civil penalties, forfeiture and rewards (Subpart D through Subpart F, Subpart H).
- Determining scientific value, commercial value, and costs for response, restoration, and repair (Subpart G).
- Casual collection (Subpart I).

2.4 Federal Cave Resources Protection Act

The Federal Cave Resources Protection Act of 1988 (16 U.S.C. § 4301 – 4309) includes paleontological resources in the list of materials that constitute a "cave resource" and subject to protection when on federal lands. Therefore, any reference to "cave resource" in the law applies to paleontological resources.

2.5 Utah State Codes

The State of Utah includes paleontological resources in Title 79: chapter 3 (Natural Resources: Utah Geological Survey) of the Utah Code. Title 79 defines paleontological resources as the "remains of prehistoric life pertaining to the natural history of the state" and critical paleontological resources as "vertebrate fossils and other exceptional fossils that are designated state paleontological landmarks" (Title 79. Natural Resources § 79-3-102 Definitions). Part 5 of Chapter 3:

- Establishes permitting requirements and penalties for permit violations for the excavation of critical paleontological resources on state, school, and institutional trust lands (Sections 501, 502, 504).
- Establishes state, school, or institutional trust ownership of paleontological resources found on lands owned by those entities (Section 503) and protects the interests of these entities in managing resources on their lands (Section 510).
- Provides for the designation of state paleontological landmarks on public or private lands (Section 505) and a state paleontological register (Section 506, 507).

- Specifies that before expending state funds or approving an undertaking, state agencies must consider the effects on paleontological resources and maximize the scientific information recovered (Section 508).

- Establishes training materials for volunteers who assist paleontologists (Section 509).

2.6 Nevada State Codes

The State of Nevada recognizes the conservation and preservation of paleontological resources as an aspect that must be considered in administration of public lands under Nevada Revised Statute (NRS) Title 33 (Libraries, Museums, Historic Preservation §378.081), which includes paleontological sites as part of the term "prehistoric sites" (§381.195), establishes a permitting process for the investigation and exploration of prehistoric sites (§381), and prohibits the intentional damage or destruction of a prehistoric site on state land (§383.435).

2.7 Professional Standards

The United States Department of the Interior (USDI), following interagency collaboration and solicitation of public comment, developed guiding principles of the management of paleontological resources:

1. Fossils on Federal lands are part of America's heritage;

2. Most vertebrate fossils are rare;

3. Some invertebrate and plant fossils are rare;

4. Penalties for fossil theft should be strengthened;

5. Effective stewardship requires accurate information;

6. Federal fossil collections should be preserved and available for research and public education; and

7. Federal fossil management should emphasize opportunities for public involvement.

These principles resulted in the development of recommendations that were later codified by the PRPA, described above. Many of these principles apply to paleontological treatment programs, as the implementation of appropriately designed field surveys and monitoring programs can result in the addition of scientifically important fossils (i.e., paleontological resources) to the scientific record (Principles 1 through 4), thereby ensuring they are available for use in scientific research as well as public education and outreach (Principle 6 and 7). The information collected during field surveys and monitoring programs can strengthen and expand the regulatory agencies' understanding of resource distribution on lands under their management, assisting their role as stewards (Principle 5).

While the USDI (2000) report targets high level issues in resource management, the BLM has developed detailed guidelines for conducting paleontological studies and treatment programs on public lands, which include a schema for evaluating paleontological potential and treatment actions needed in the different levels of paleontological potential (BLM 2022a), guidelines for conducting impact evaluations (BLM 2008), standards for staff qualifications, and guidelines for conducting analyses of existing data, field surveys, monitoring, and reporting requirements (BLM 1998, 2008).

Of particular importance is the establishment of scientific importance, or significance, for individual fossils. All fossils are the remains of ancient life, but only those that "are of paleontological interest and that provide information about the history of life on earth" (PRPA, Section 6301) are afforded legal protection as paleontological resources. The BLM establishes this significance threshold as:

> Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be scientifically important because it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities. [BLM 2008:19].

Other professional standards come from the Society of Vertebrate Paleontology (SVP) (2010) and a number of scientific studies (e.g., Murphey et al. 2019, Murphey and Daitch 2007, and others). These sources have developed guidelines for professional qualifications, conducting paleontological assessments, and developing treatment measures for the protection of paleontological resources, which are broadly similar to the guidelines of the BLM described above.

This PRTP has been developed following the guidelines and standards of the BLM (1998, 2008, 2022a) and professional sources (SVP 2010, Murphey et al. 2019).

3 PALEONTOLOGICAL POTENTIAL

The BLM's Potential Fossil Yield Classification (PFYC) system provides baseline guidance for predicting, assessing, and mitigating impacts to paleontological resources. The PFYC system ranks geologic formations or members on a scale of increasing potential to preserve paleontological resources from 1 to 5 and uses geologic mapping as a predictive tool to identify areas of paleontological potential (Table 1).

This classification does not reflect rare or isolated occurrences of paleontological resources or individual localities, only the relative occurrence on a formation or member-wide basis. Any rare occurrences will require additional assessment and treatment if they fall within the area of anticipated impacts. The PFYC system is an estimate based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts and provides a tool for non-specialists to assess possible impacts to paleontological resources prior to authorizing federal actions that include surface disturbance, land use planning, or land tenure adjustment (BLM 2022a).

Table 1. Summary of the BLM's (2022a) Potential Fossil Yield Classification

Assignment Criteria Guidelines	Management Summary
PFYC Designation: 1 = Very Low Potential	
• Geologic units are not likely to contain recognizable paleontological resources. • Units are igneous or metamorphic, excluding air-fall and reworked volcanic ash units. • Units are Precambrian in age.	Management concern is usually negligible, and impact mitigation is unnecessary except in rare or isolated circumstances.
PFYC Designation: 2 = Low Potential	
• Geologic units are not likely to contain paleontological resources. • Field surveys have verified that significant paleontological resources are not present or are very rare. • Units are generally younger than 10,000 years before present. • Recent aeolian deposits. • Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely.	Management concern is generally low, and impact mitigation is usually unnecessary except in occasional or isolated circumstances.
PFYC Designation: 3 = Moderate Potential	
• Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence. • Marine in origin with sporadic known occurrences of paleontological resources. • Paleontological resources may occur intermittently, but these occurrences are widely scattered. • The potential for authorized land use to impact a significant paleontological resource is known to be low-to-moderate.	Management concerns are moderate. Management options could include records searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Opportunities may exist for casual collecting. Surface-disturbing activities may require sufficient assessment by a qualified paleontologist to determine whether significant paleontological resources occur in the area of a proposed action and whether the action could affect the paleontological resources.
PFYC Designation: 4 = High Potential	
• Geologic units that are known to contain a high occurrence of paleontological resources. • Significant paleontological resources have been documented but may vary in occurrence and predictability. • Surface-disturbing activities may adversely affect paleontological resources. • Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present. • Illegal collecting activities may impact some areas.	Management concern is moderate to high depending on the proposed action. A field survey by a qualified paleontologist is often needed to assess local conditions. On-site monitoring or spot-checking may be necessary during land disturbing activities. Avoidance of known paleontological resources may be necessary.

Assignment Criteria Guidelines	Management Summary
PFYC Designation: 5 = Very High Potential	
• Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources. • Significant paleontological resources have been documented and occur consistently. • Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities. • Unit is frequently the focus of illegal collecting activities.	Management concern is high to very high. A field survey by a qualified paleontologist is almost always needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.
PFYC Designation: U = Unknown Potential	
• Geologic units that cannot receive an informed PFYC assignment. • Geological units may exhibit features or preservational conditions that suggest significant paleontological resources could be present, but little information about the actual paleontological resources of the unit or area is known. • Geologic units represented on a map are based on lithologic character or basis of origin but have not been studied in detail. • Scientific literature does not exist or does not reveal the nature of paleontological resources. • Reports of paleontological resources are anecdotal or have not been verified. • Area or geologic unit is poorly or under-studied. • BLM staff has not yet been able to assess the nature of the geologic unit.	Until a provisional assignment is made, geologic units with unknown potential have medium to high management concerns. Field surveys are normally necessary, especially prior to authorizing a ground-disturbing activity. Literature searches or consultation with professional colleagues may allow an unknown unit to be provisionally assigned to another Class, but the geological unit should be formally assigned to a Class after adequate survey and research is performed to make an informed determination.

4 DEVELOPMENT OF THE PALEONTOLOGICAL RESOURCES TREATMENT PLAN

This PRTP was developed following an analysis of existing data conducted by a paleontologist meeting BLM (1998) standards as a paleontological principal investigator. This analysis consisted of a review of the BLM's (2022b) PFYC mapping for the Project area, geologic mapping, the scientific literature, unpublished paleontological reports, online paleontological localities databases maintained by the Paleobiology Database and the University of California Museum of Paleontology, and records from the Utah Geological Survey, as described in the *Cross-Tie 500 kV Transmission Line Project Paleontological Resource Assessment - Analysis of Existing Data and Assessment of Project Alignment and Preliminary Alternative Routes* report (Stantec 2022).

The treatment plan outlined here is based on the presence of geologic units as assessed by the BLM (2022b), which has been made publicly available as Geographic Information System (GIS) files. These data are based on large scale (1:100,000 and great) geologic mapping. As such, individual formations are often not depicted at the level mapped. As paleontological potential can vary widely between formations, higher resolution mapping was consulted where available. Additionally, a pre-construction field survey

was recommended (Stantec 2022), with the results of that survey expected to better inform the details of this PRTP, which should be updated following the survey. As the PFYC system is a predictive tool, on-the-ground observations of geology can be used to identify areas where the geologic mapping is incorrect, where paleontological resources are already present on the surface, or where the observed lithology differs from the PFYC classification of the unit as a whole (BLM 1998, 2022a), all of which are important data for developing an effective treatment plan.

5 KNOWN PALEONTOLOGICAL LOCALITIES IN THE PROJECT AREA

Placeholder text - to be updated with survey results

6 PALEONTOLOGICAL TREATMENT PLAN

The potential to impact paleontological resources varies with both the location and depth of Project activities, as the occurrence of geologic units with high paleontological potential vary across the extent of the Project area both at the surface and in the subsurface (see full discussion in Stantec [2022]). Furthermore, different types of Project activities require different strategies for treatment of potential impacts (see discussion in Section 6.4 below). This PRTP has been developed to address treatment actions at the different stages of Project development, the monitoring needs of both the geologic units expected to be encountered during Project construction, and the types of activities anticipated to be utilized during Project construction.

6.1 Staff Qualifications

All work described below should be conducted under the oversight of an individual meeting federal permit qualifications (similar to a Principal Investigator as used by the BLM [2008]):

1. A degree from an accredited institution in a field of study relevant to paleontology, or demonstration of progress toward an advanced degree from an accredited institution in a field of study relevant to paleontology, or demonstrated training and experience commensurate to the nature and scope of the proposed activities.

2. Experience in collecting, analyzing, summarizing, and reporting paleontological data, and preparing collections for long-term care.

3. Experience in equipping, staffing, organizing, conducting, and supervising fieldwork similar to the type, nature, and scope of the project proposed in the application. Past performance by the applicant will be considered. Past performance includes compliance with previous permits, relevant civil or criminal violations, or current indictments or charges (43 CFR § 49.110).

Other roles that can be utilized during the execution of this PRTP come from BLM (1998, 2008) guidance:

- Field Agent – similar qualifications as for a Principal Investigator, may perform fieldwork independently.

- Field Monitor – must have sufficient field experience to demonstrate acceptable knowledge of fossil identification, collection methods, and paleontological techniques. The PI or Field Agent must be in communication with the Field Monitor using a portable communication device, such as a cell phone or two-way radio, and are required to be near enough to the Field Monitor to allow for prompt examination of all fossil discoveries (no more than two hours away) by the PI or Field Agent.

- Field Assistant – additional personnel not meeting the previously cited experience or knowledge levels may be utilized during field work, but must be under direct, on-site supervision of either the PI or a Field Agent as part of a supervised crew. Field assistants must have at least four to eight hours of training or experience received from a qualified paleontologist in identifying paleontological resources prior to performing field work or when first utilized in this capacity.

6.2 Treatment Timeline

The following are timeline details treatment actions to be employed prior to, during, and after construction conducted in association with development of the Project. These actions effectively mitigate adverse impacts on paleontological resources to less-than-significant levels.

6.2.1 Prior to Construction

Prior to the initiation of construction activities, a paleontologist meeting BLM (1998) standards as a Principal Investigator will be retained to oversee all aspects of the treatment program described here.

6.2.1.1 Permitting

Once retained, the Principal Investigator will obtain from the BLM a Paleontological Resources Use Permit and a Project-specific Notice to Proceed and will submit to the Forest Service a Project-specific Application for Authorization for Paleontological Resources Research or Collection. As part of these applications, the Principal Investigator will obtain a curation agreement with agency approved repositories. Additionally, the Principal Investigator will obtain permits from the Utah Geological Survey and the Nevada State Museum.

6.2.1.2 Worker Environmental Awareness Program (WEAP)

The Principal Investigator will develop a WEAP training to be included in the environmental training program provided to the construction crew. This training will include information on the legal protection of paleontological resources, the types of fossils that might be encountered in the Project area during construction, steps to follow in the event of a fossil discovery, and safety information for working with paleontological monitors on site (see POD Appendix B5: Environmental and Safety Plan). This training will be provided by the Construction Contractor or their designee to all personnel accessing the ROW. Completion of the training should be documented through the maintenance of attendance records and the provision of hardhat stickers to individuals once they have completed the training.

6.2.1.3 Environmentally Sensitive Areas

Placeholder text: to be revised with more details on Environmentally Sensitive Areas (ESA), as identified during surveys. If no ESAs are identified during surveys, this section will be modified to address only the conditions under which an ESA would need to be established during construction. Should fossil localities be identified during the field surveys that will be conducted to develop this PRTP and are not collected or salvaged, the Principal Investigator will oversee their designation as an ESA. This will entail the physical demarcation of the boundary of the locality in a clearly visible manner, such as by construction fencing, and the designation of the ESA in the Construction Contractor's GIS data used by crews during construction. The contents of the ESA will be kept confidential, in order to reduce the risk of theft or vandalism to the locality.

6.2.2 During Construction

During the construction phase of the Project, the Principal Investigator will oversee the implementation of the PRTP, including conducting additional field surveys of changes to the Project area, establishing and maintaining ESAs around any paleontological localities identified in the Project area, and conducting on-site paleontological monitoring (sometimes referred to as fulltime monitoring) or paleontological spot checks, as appropriate based on the affected geologic units and method of construction.

6.2.2.1 Variance Surveys

Should the Project area change during construction, such as for the rerouting of access roads, placement of work areas, or similar alterations, field survey will be necessary of any new Project areas that were not surveyed during the initial survey that will be conducted to inform this PRTP, where units with unknown (PFYC U), or moderate (PFYC 3) to very high (PFYC 5) are mapped at the surface. The results of the variance survey will be used by the Principal Investigator to develop recommendations for further treatment actions, such as onsite monitoring or spot checks, following the guidelines presented in this PRTP. Should aerial imagery at a sufficient resolution indicate the variance area unlikely to yield and data on the geology or paleontological potential of the area, such as in areas of dense vegetation or prior disturbance, the area can be cleared from survey with monitoring or spot check stipulations applied based on geologic mapping of the area and planned activities.

6.2.2.2 Onsite Monitoring

Placeholder text: Following the results of the paleontological survey, monitoring recommendations will be made per geologic unit, including areas where subsurficial geology is anticipated to have higher potential than the surficial geology (see section 6.3 below). Specific monitoring recommendations should also take into account the type of construction activity in terms of the dimensions and type of ground disturbance (see section 6.4 below).

Paleontological monitoring will consist of the paleontological monitor observing ground disturbing activities in the specified locations and depths from a safe distance, as established in the Project's safety documentation, as per the Construction Contractor(s). Monitors will inspect cut slopes, graded surfaces, spoils piles, or other exposed sediments when it is safe to do so, in coordination with the construction crew. Monitors will collect data in the form of photographs and observational notes regarding the type and extent of construction activities, observed sediments, and any communications with the crew, all of which will be included in a daily log.

Paleontological monitors will be equipped to efficiently collect fossils as they are unearthed to avoid excavation or construction delays. This will include data recording equipment (Geographic Positioning System [GPS], camera, etc.) and basic fossil recovery equipment (hand tools, brushes, consolidant, jacketing materials). Monitors will be in contact with the Principal Investigator or Field Agent via cellular phone or radio communication while monitoring and will update the Principal Investigator or Field Agent of conditions as needed.

Paleontological monitors and their necessary equipment (including trucks) will be working in the area of active Project work. For safety purposes, safety setback distances will be established for construction equipment and activities that will be clearly communicated to all onsite personnel. These distances will provide enough distance to avoid accidents and for the monitors to be fully visible to heavy equipment operators at all times. Monitors will receive appropriate safety training to work safely around construction equipment and activities, including the use of hand signals, maintaining eye contact, and driving in construction sites. Paleontological monitors will be equipped with appropriate safety materials (hard hats,

safety glasses, high-visibility clothing of at least Class 2, ANSI-certified boots, etc.). Equipment operators must be alert at all times to the presence of paleontological monitors and their equipment.

6.2.2.3 Spot Checks

In the event that spot checks are an appropriate action instead of onsite monitoring, an appropriately qualified paleontologist will conduct a spot check of the activities. This may include areas where geologic units requiring monitoring are present at an unknown depth below younger surficial sediments with low (PFYC 2) paleontological potential, or areas where after sufficient monitoring observations and with approval from the BLM or Forest Service approval has been received to conduct spot checks due to a lack of paleontological potential. Spot checks may also be utilized for construction methods that involve the accumulation of spoils when fossils cannot be effectively salvaged in the subsurface should they be encountered, such as augering (see Section 6.4 below).

Spot checks will consist of brief inspections of exposed sediments in order to assess their paleontological potential and check for fossils. The monitor will be equipped as described above for onsite monitoring. Should the monitor identify low potential sediments, spot checks will continue. Should the monitor identify high potential sediments, full time paleontological monitoring will commence in those areas and at the depths in which high potential units are identified. The monitor will complete a spot check log for each check, documenting the extent of ground disturbance checked and recording lithological conditions and observations, and communicate their findings with the Principal Investigator or Field Agent, as needed.

6.2.2.4 Sediment Sampling

Should conditions indicate the potential preservation of very small paleontological resources ("microvertebrates"), such as body fossils of rodents, birds, or reptiles, a sampling plan may be instituted to check for these types of fossils that are difficult to see during the course of normal monitoring. With agency approval, an initial sample of between 20 and 30 pounds should be screen washed to ascertain if microvertebrate fossils are present (Murphey et al. 2019). Typically, dry screening will be used; should the lithology prove unconducive to dry screening, wet screening with water or a chemical disaggregate may be needed. Should this initial sample prove fossiliferous, a larger sample should be screened, the exact quantity of which should be determined by the Principal Investigator and approved by the agency. The monitors may enlist the assistance of construction personnel and equipment in this undertaking to avoid delays in excavation activities. Should the workspace and construction schedule allow, initial screening can be conducted onsite to avoid extensive transport and storage requirements.

6.2.2.5 Treatment of Fossils

Should potential fossils be encountered during Project activities, whether identified by the paleontological monitor or a member of construction staff, all work should cease in a safe radius around the find, usually 20 to 50 feet. The monitor will make an initial assessment of the find to confirm if it is a fossil. If the find is a fossil, as opposed to modern biological remains or abiotic material, the monitor will maintain diverted work radius and notify the Principal Investigator or Field Agent of the find. If the potential find is determined to not be a fossil (i.e., recent remains or abiotic material), work can resume in the area. Construction personnel are never to move or alter a potential fossil discovery in any way, as this can result in damage to the specimen or the loss of important contextual data.

All fossils will be assessed for significance by the Principal Investigator or Field Agent, using the criteria described in Section 2.6. Paleontological discovery forms will be completed for all fossil discoveries. Fossils will be treated based on their significance, as follows:

- **Nonsignificant Fossils**. Nonsignificant fossils will be fully documented through the collection of photographs and the completion of a paleontological discovery form recording written descriptions of the surrounding sediment, fossil appearance and condition, conditions of discovery, and GPS coordinates and depth data for the find. Nonsignificant fossils will not be collected. Once the monitor has fully documented the find, work can resume in the area.

- **Significant Fossils.** Should the Principal Investigator or Field Agent assess a fossil as significant, the Principal Investigator will report the find to the BLM or Forest Service, as appropriate. The fossil will be salvaged in the most efficient means available. While the exact methodology will be determined by the Principal Investigator and be tailored to the find, toilet paper or tin foil and baggies or vials are often appropriate for small, stable finds, while consolidants or plaster jackets may be required for larger or fragile finds.

  Should the find consist of a large quantity of fossils, large-sized fossils, or represent other complexities, the Principal Investigator may need to develop a treatment plan for the salvage of the fossil(s), in coordination with the BLM or Forest Service, and receive an excavation permit from the BLM for all excavations over one square meter in aerial extent. The treatment plan will vary depending on the type, size, quantity, and fragility of fossil specimens, and may include the use of fossil stabilization techniques such as plaster jackets or the use of chemical consolidants. Should large quantities of invertebrate fossils be encountered, the treatment plan may provide for the collection of a reference sample rather than full collection of the fossils encountered. Should small vertebrate fossils be encountered the treatment plan may include screen washing of an appropriate volume of sediment, as described above in Sediment Sampling. Should trackways or fossil footprints be identified, treatment activities are quite varied and may involve some combination of the documentation of the trackways using digital photography for use in photogrammetry reconstructions, avoidance in place, or salvage, to be determined in coordination with the agencies. Following salvage, fossils will be transferred to a laboratory facility.

  Once the fossil has been salvaged, work can resume in the area. Work can continue during the salvage process providing that the diverted work radius around the find can be maintained.

- **Fossils of Undetermined Significance.** Sometimes the most expeditious treatment of fossils is to salvage the material immediately such that work can resume while the Principal Investigator assesses its significance in the laboratory. This might occur, for example, in the event of discovery of a small, isolated bone or an invertebrate shell bed that could be easily sampled. In these cases, the fossil will be treated as for significant fossils as described above and transferred to a secure facility until the Principal Investigator can complete the assessment. Should fossils from public lands be assessed as nonsignificant they can be documented as such and used as teaching or educational samples (working collection, per 43 CFR Part 49.200) or returned to the agency, as the agency prefers. Should fossils from private lands be assessed as nonsignificant they can be documented as such and then returned to the landowner. Should the fossils be assessed as significant then treatment should continue as for significant fossils.

6.2.3 After Construction

6.2.3.1 Fossil Treatment

Following the significance assessment, fossils that meet significance criteria (i.e., paleontological resources) will be catalogued into a spreadsheet with relevant data, including documentation of all preparation methods. Should paleontological resources have been collected on private lands, the landowner will need to be contacted to provide written documentation of donation of the specimens to the

repository; if the landowner is unwilling to do so the specimens will be returned to them without additional work.

Paleontological resources from public lands and donated specimens will be cleaned and stabilized to the point of identification, packaged as requested by the repository for curation (appropriate labelling, packaging, etc.), and transferred to the repository, along with all associated data and the assessed curation fees to be invoiced to the Project proponent. Should sediment samples have been collected for potential microvertebrates, they should be processed following standard protocols as described in the scientific literature for the matrix type. This may include wet or dry sieving, with or without the use of detergents or acids, followed by the use of dissection scopes or microscopes to identify and remove any fossils.

6.2.3.2 Reporting

Following the conclusion of all ground disturbing activities and the fossil treatment described above, the Principal Investigator will oversee the development of a final Paleontological Monitoring Report that meets the standards of the BLM (2008) and the Forest Service (2015), to be submitted to the BLM as the lead agency and the Forest Service as a cooperating agency of the Project, for their approval. This report will document the extent of variance surveys, onsite monitoring, and spot checks, including descriptions of the observed sediments and any areas in which the observed geology differed from the mapping. Should fossil localities have been encountered, regardless of significance, they will be documented in the report, with an inventory of the fossils observed at each locality as well as discovery forms and maps plotting the localities on 7.5-minute U.S. Geological Survey (USGS) topographic maps using North American Datum 83. These discovery forms will be completed for all fossil localities encountered and provided as a confidential attachment.

6.3 Operation and Maintenance

Following the construction phase, should the Project's operation and maintenance (O&M) phase involve ground disturbance into previously undisturbed sediments, those O&M activities should be evaluated for the need of paleontological treatment activities such as monitoring. Should O&M activities occur outside of the Project area as established for the construction phase, additional survey might be needed. O&M activities within this established Project area would be unlikely to need survey. Similarly, surficial activities within this established Project area are unlikely to need paleontological treatment activities. Ground disturbance, whether within or outside of the established Project area, may need paleontological treatment activities, depending on the nature of ground disturbance and the paleontological potential of the geologic units involved. Therefore, O&M activities that are outside or within the established Project area and involve ground disturbance should be assessed by a qualified paleontologist in accordance with this PRTP in order to recommend specific treatment activities needed, to be determined in coordination with the appropriate agency. Any fieldwork would need to be conducted under the appropriate permits.

6.3.1 Treatment Recommendations for Geologic Units in the Project Area

This section summarizes the results of the paleontological resources assessment conducted in support of the Environmental Impact Statement for the Project (Stantec 2022). Map figures of the paleontological potential of the geologic units mapped at the surface of the Project area, as assessed by the BLM (2022b) are shown in Attachment A *(pending survey results)*. This section applies the treatment actions described in the previous section to the Project area according to these broad PFYC designations. These actions apply to all areas of potential impact across all areas of Project activities (structure work areas, access roads, multipurpose areas, etc.).

Currently, these treatment actions are applied on the basis of the PFYC ranking of the geologic units in question as assessed by the BLM (2022b) and do not include data collected from the field survey. As a field survey is a key component of developing such determinations (BLM 1998, 2022a), these treatment actions will be updated pending the results of the pre-construction field survey and should be finalized by the Principal Investigator upon receipt of the final construction plans. These treatment actions are summarized in Table 2. Attachment B *(pending survey results)* shows these treatment actions as they are anticipated to be needed across the Project area, with considerations for differing types of ground disturbing activities discussed in Section 6.4 below.

For all of the below treatment actions, should observations during the course of monitoring enable the Principal Investigator to make more precise recommendations of paleontological potential and treatment needs, the prescribed treatment can be revised by the Principal Investigator with approval from the agencies.

6.3.2 Unknown Paleontological Potential (PFYC U)

Geologic units with unknown paleontological potential (PFYC U) should be subject to field surveys in order for the consulting contractor to make informed recommendations regarding their paleontological potential and developing, in consultation with the agencies, treatment determinations (BLM 2022a). *Placeholder text (to be replaced with description of units that Stantec recommends retaining PFYC U, following survey): Should the planned pre-construction survey fail to yield sufficient data to make such determination, the unit will be treated as having moderate to high management concerns (BLM 2022a), and as such, onsite paleontological monitoring will be required for units that remain classified as having unknown paleontological potential (PFYC U) after the pre-construction field survey.*

6.3.3 Very Low Paleontological Potential (PFYC 1)

Geologic units with very low paleontological potential (PFYC 1) generally do not preserve paleontological resources and so do not require treatment actions. *Placeholder text (to be replaced with list of units that have PFYC 1); at this time there are no paleontological resource avoidance areas, as survey data are not available.*

6.3.4 Low Paleontological Potential (PFYC 2)

Geologic units with low paleontological potential (PFYC 2) generally do not require additional treatment actions, unless in specific locations where paleontological resources are known to exist (BLM 2022a). However, many of the units assessed as having low paleontological potential (PFYC 2) in the Project area (Table 1) are surficial sediments that may overlie older geologic units with moderate (PFCY 3) or higher (PFYC 4 or PFYC 5) paleontological potential. Should Project activities extend beyond the depth of these surficial sediments and into these underlying, higher potential units, onsite monitoring or spot checks would be needed during construction, depending on the activities (see Section 6.4). *Placeholder text (to be replaced with list of units that have PFYC 2; Attachment B for location-specific recommendations once Project plans are received); at this time there are no paleontological resource avoidance areas, as survey data are not available*.

6.3.5 Moderate Paleontological Potential (PFYC 3)

Geologic units with moderate paleontological potential (PFYC 3) are variable or sporadic in their preservation of paleontological resources, and so treatment actions should be based on the nature of the proposed activity (BLM 2022a). In general, some form of treatment action is required, either onsite monitoring or spot checks. *Placeholder text (to be replaced with list of units that have PFYC 3; Attachment B for location-specific recommendations once Project plans are received); at this time there are no paleontological resource avoidance areas, as survey data are not available.*

6.3.6 High and Very High Paleontological Potential (PFYC 4 and 5)

Geologic units with high and very high paleontological potential (PFYC 4 and 5) have similar requirements for construction treatment actions (BLM 2022a). These treatments depend on the type of proposed activity, but generally include onsite monitoring. Avoidance of known resources is an option in some cases in units with high paleontological potential (PFYC 4) and should be considered in units with very high paleontological potential (PFYC 5), pending the results of the pre-construction survey (BLM 2022a). *Placeholder text (to be replaced with list of units that have PFYC 4-5; Attachment B for location-specific recommendations once Project plans are received):* At this time no areas are recommended for avoidance, as survey data are not available. *Placeholder text (to be replaced with discussion of areas recommended for ESAs):* Should the results of the survey indicate areas for avoidance, they will be submitted for approval to the BLM or Forest Service, as appropriate, and designated as ESAs (see above).

6.4 Treatment Recommendations for Expected Project Activities

A wide variety of Project activities are expected during the construction phase, some of which involve ground disturbance (excavations or drilling for foundations, road construction, grading for buildings, etc.) and some of which involve largely surficial work (laydown yards, existing road improvement, pull sites, etc.). An overview of planned activities can be found in Section 8.0 of the POD. In general, the former activities which involve bedrock disturbance are those that require paleontological treatment actions. Activities that are restricted to areas of existing disturbance or topsoil are generally at low risk of impacting paleontological resources. Furthermore, the type of treatment activity prescribed varies with the type of ground disturbing activity.

Activities that result in the exposure of large areas of bedrock, such as excavations and grading, are good candidates for onsite monitoring. Should fossils be encountered, the monitor will be able to effectively stop work and treat the fossil, including expanding the excavation if necessary to salvage any paleontological resources. Other activities, such as augering, result in the collection of spoils that can be effectively spot checked. Even if these sorts of activities encounter a resource in the subsurface, the paleontologist would only be able to assess and, if necessary, salvage the portion of the fossil that is brought to the surface. The likelihood of salvageable paleontological resources being recovered depends on the diameter of the auger and the size and preservation style of the types of fossils that might be encountered. In general, as auger diameter decreases, so too does the size of fossils that can be brought to the surface with little or no damage. Furthermore, some styles of preservation, such as impressions along a bedding plane, are unlikely to be brought to the surface in a salvageable state, while individual bones or shells may be recovered. For some ground disturbing activities, such as driven piles, neither spoils nor open excavations are available and as such these activities cannot be effectively monitored for paleontological resources. There is also the possibility that Project activities that do not involve ground disturbance might disturb paleontological resources, should such resources be present on the surface. *Placeholder text: Should such areas be identified during survey, treatment actions, such as the establishment of an ESA, would be recommended by the Construction contractor's consultant and determined in coordination with the agency.*

Table 2. Treatment Actions Prescribed by PFYC

PFYC [1]	Geologic Units (Map Abbreviations)	Treatment Actions			
		Onsite Monitoring	Spot Checks	Avoidance	Comments
Unknown (U)	Surficial alluvium, colluvium, and alluvial fan deposits (Qa, Qac, Qaf1, Qaf2, Qs); Lacustrine deposits (Qll, Qlk, Qls); Pediment mantle (QTpm); Older alluvium and alluvial fan deposits (Qoa, Qof, Qdf); Older volcanic rocks (Tov); Conglomerate and tuff of Confusion Range (Tct); Quartz latite of Squaw Peak (Tsp); Tuff member of the Blawn Formation (Tbt); Isom Tuff (Ti); Lacustrine limestone and breccia (Tl); Red Knolls Tuff (Trk); Volcanic rocks (Tov); Upper and Lower Needles Range Group (Tnl, Tnu)	Yes	No	Only for specific resource localities, should any be identified	*Placeholder text: Once sufficient data has been collected to propose area-specific PFYC designations, prescribed treatment may be revised.*
Very Low (1)	Basaltic andesite north of Smelter Knolls (Tbsk); Fernow Quartz Latite (Tf); Volcanic sequence of Dennison Canyon (Tdc); Little Drum Formation (Tld); Prospect Mountain Quartzite (Ꞓm) (“Lower Part”); McCoy Creek Group (pꞒ); Caddy Canyon Quartzite (pꞒc); Mutual and Inkom Formations, undivided (Zmi)	No	No	No	*Placeholder text: No revisions to treatment actions anticipated.*
Low (2)	Younger sands and dune deposits (Qes, Qs, Qsm, Qsa, Qso); Alluvial fan deposits, landslide deposits (Qf, Qls, Tys); Lacustrine deposits (Qlf, Qlb); Gravel and sand deposits (Qg); Skull Rock Pass Conglomerate (Tsr); Canyon Range Formation (TKc); Eureka-Crystal Peak-Watson Ranch Formations, undivided (Oew); Pogonip Group and Eureka Quartzite, undivided (Ol, OC)	Only for activities that may exceed the depth of the PFYC 2 unit in areas where underlying units have higher potential (see Section 6.4)	Only for activities that may exceed the depth of the PFYC 2 unit in areas where underlying units have higher potential (see Section 6.4)	*Placeholder text: Unlikely*	*Placeholder text: Treatment actions dependent on survey results and planned activities (see Section 6.4).*

PFYC [1]	Geologic Units (Map Abbreviations)	Treatment Actions			
		Onsite Monitoring	Spot Checks	Avoidance	Comments
Moderate (3)	Alluvium (Qa); Coalesced alluvial-fan deposits (QTcf); Flagstaff Formation (Tf); Goldens Ranch Formation; agglomerate and Sage Valley Limestone Member (Tgra, Tgrs, Tgr); Rib Hill Sanstone (Pr); Arcturus Formation (Pa); Oquirrh Group (PIPo); Ely Limestone (PIPMe); Riepe Spring Limestone, Ely Limestone, undivided (PIP); Great Blue and Humbug Formations and Deseret Limestone, undivided (Mu); Chainman Formation (Mc); Joana Limestone (Mj); Chainman Shale, Joana Limestone, Pilot Shale (MD); Gardison Limestone and Fitchville Formation, undivided (MDu); Guilmette Formation (Dg); Sevy Dolomite (Dsy); Simonson and Sevy Dolmites, undivided (Ds); Laketown Dolomite (Sl); Laketown and Ely Springs Dolomites, undivided (Sou); Orr Formation (Ꞓob, Ꞓou); Limestone of Cricket Mountains (Ꞓcm); Eye of Needle-Swasey-Whirlwind Formations, undivided (Ꞓew); Wah Summit Formation and Trippe Limestone, undivided (Ꞓwt); Pole Canyon Limestone (“Middle Cambrian Carbonates”); Lincoln Peak Formation (“Middle Cambrian Carbonates”);	Depending on type of activity (see Section 6.4)	Depending on type of activity (see Section 6.4)	*Placeholder text: Only for specific resource localities, should any be identified*	*Placeholder text: Treatment actions dependent on survey results and planned activities (see Section 6.4).*
High (4)	Salt Lake Formation (Tsl); Park City Formation (Pp); Marjum or Pierson Cove Formation (Ꞓmp); Weeler-Swasey-Whirlwind Formations, undivided (Ꞓww)	Yes	*Placeholder text: Only for construction activities like augering, from which subsurface salvage is not possible; dependent on survey results for specific activities in*	*Placeholder text: May be required for specific resource localities, pending survey results*	*Placeholder text: Treatment actions dependent on survey results and planned activities (see Section 6.4).*

PFYC [1]	Geologic Units (Map Abbreviations)	Treatment Actions			
		Onsite Monitoring	**Spot Checks**	**Avoidance**	**Comments**
			PFYC 4 for which spot checks would be appropriate		
Very High (5)	North Horn Formation (TKn); Pioche Shale (Є1) (“Lower Part”)	Yes	*Placeholder text: Only for construction activities like augering, from which subsurface salvage is not possible; dependent on survey results for specific activities in PFYC 5 for which spot checks would be appropriate*	*Placeholder text: May be required, pending survey results*	*Placeholder text: Treatment actions dependent on survey results and planned activities (see Section 6.4).*

1. See Stantec (2022) for a discussion of variability between mapping sources for PFYC assignments of surficial geologic units.

Placeholder text: Once the dimensions (aerial as well as depth) of ground disturbance as well as specific locations for all Project activities are known, Table 3 will be completed to provide precise monitoring directions, and an attachment will be drafted with mapping and monitoring directions for each specific Project component (individual structures, pull sites, laydown yards, access roads, etc.).

Table 3. Generalized Plan for the Implementation of Paleontological Onsite Monitoring and Spot Checks

Activity	Dimensions	Monitoring Recommendations per Surficial Mapping		
		Very Low (PFYC 1)	Low (PFYC 2)	Moderate or Higher (PFYC 3 or above)
Placeholder text – rows will be added for each type of ground disturbance	—	—	—	—

6.5 Resource Protection

Treatment measures presented here are designed to protect paleontological resources from adverse effects due to Project activities. This approach must take into account: 1) both the surficial and subsurficial presence of geologic units with the potential to preserve paleontological resources, 2) variability in different geologic units' paleontological potential (as captured by the PFYC scale), and 3) methods of ground disturbance, including both depth and lateral extent of disturbance.

The paleontological resources assessment conducted for this Project identified numerous geologic units with moderate (PFYC 3) or higher (PFYC 4 or PFYC 5) paleontological potential present in the Project area, as well as units with unknown (PFYC U) paleontological potential. *Placeholder text: Once the pre-construction survey is complete this PRTP will be updated with the results, including any approved PFYC ranks for treatment of the units currently designated as having unknown (PFYC U) paleontological potential.*

This PRTP has tailored the treatment actions prescribed here to the distribution of geologic units in the Project area, both at the surface and as expected in the subsurface and to the location of the different types of Project activities. *Placeholder text*: *This is summarized in Tables 2 and Table 3 above and in the comprehensive treatment plan depicted in Project mapping and recommendations in Attachment B. This mapping also includes ESAs to be established around existing fossil localities in the Project area, as identified during the pre-construction paleontological survey, and for this reason should be considered confidential at this time.*

Because of the potential for significant paleontological resources in the Project area, ACEPMs for the Project and any developed Selective Treatment Measures would be adhered to. These ACEPMs can be found in Section 9 of the POD.

7 REFERENCES CITED

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Attachment A Geologic Unit and Paleontological Fossil Yield Classification Maps
(PENDING SURVEY RESULTS)

Attachment B Paleontological Treatment Maps
(PENDING SURVEY RESULTS)

Appendix C7. Erosion, Dust Control, and Air Quality Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C7. Erosion, Dust Control, and Air Quality Plan

Prepared by:

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July 2023

CONTENTS

Abbreviations

BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
CWA	Clean Water Act
EIS	Environmental impact statement
Forest Service	U.S. Department of Agriculture Forest Service
NDEP	Nevada Department of Environmental Protection
Plan	Erosion, Dust Control, and Air Quality Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-way
UDEQ	Utah Department of Environmental Quality
UPDES	Utah Pollutant Discharge Elimination System
USC	United States Code

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Erosion, Dust Control, and Air Quality Plan (Plan) addresses regulatory compliance and environmental concerns related to soil conservation and air quality in the states of Utah and Nevada. Further, the Plan addresses selective measures and monitoring requirements to be implemented by the Construction Contractor(s) and when applicable, the Company to ensure that impacts to these environmental resources associated with construction, operation, and maintenance activities for the Project are minimized.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

2 PURPOSE

This Plan provides measures required to be implemented by the Construction Contractor(s), and as applicable, the Company, to ensure protection of the soils and air quality that will be affected by the Project. This Plan is to be implemented during the preconstruction, construction, and operation and maintenance phases of the Project. These measures are intended to address 1) soil erosion and sedimentation and 2) the minimization of dust and emissions from construction-related activities.

This Plan describes a variety of selective measures that are either required to or can be used to achieve these goals. Determination of the appropriate control measures to use in a particular area will depend on a variety of factors, including weather conditions, selected construction techniques, site characteristics, the extent of the area to be disturbed, and other factors.

3 REGULATORY COMPLIANCE

Construction, operation, and maintenance activities for the Project are subject to various local, state, and federal government permits and regulations designed to protect environmental resources and the public from erosion, dust, and other possible effects to air quality. The following permits and regulations contain requirements for preventing accelerated erosion and minimizing dust and emissions. The Construction Contractor(s) and the Company, as applicable, will refer to these documents, along with this Plan, when assessing which selective measures are appropriate or required for a specific area. At a minimum, the Construction Contractor(s), and if applicable, the Company, will obtain the necessary permits as required and adhere to the regulations listed below.

3.1 Federal

- BLM ROW grant: Federal Land Policy and Management Act of 1976 (Public Law 94-579); 43 United States Code (USC) 1761–1771; 43Code of Federal Regulations (CFR) 2800

- Colorado River Basin Salinity Control Act, as amended

- Forest Service special-use authorization: 36 CFR 251.50; 36 CFR 220
- U.S. Environmental Protection Agency – National Pollutant Discharge Elimination System permit: Clean Water Act (CWA) (33 USC 1342)
- U.S. Army Corps of Engineers – CWA Section 401; CWA (33 USC 1341)

3.2 State

- Utah Department of Environmental Quality (UDEQ)
- Division of Water Quality
- Utah Pollutant Discharge Elimination System (UPDES) – Construction General Permitfor Discharges (UTRC00000)
- CWA Section 401 Water Quality Certification as per Rule R317-15 and consistent withthe Utah Water Quality Act, Title 19, Chapter 5
- CWA Section 303(d) and 305 Water Quality Program and Implementation Plans
- State Stream Alteration Permits
- Division of Air Quality – Air Quality Construction Permit
- Concrete Batch Plant Permit(s)
- Nevada Department of Environmental Protection (NDEP)
- Water Pollution Control
- Construction Storm Water General Permit
- General Permit for Storm Water Discharges Associated with Industrial Activities
- Division of Air Quality
- Dust Control Plan
- Concrete Batch Plant Permit(s)

3.3 Local

Any dust control and air quality requirements identified for Juab, Millard, and White Pine Counties will be followed.

4 ENVIRONMENTAL CONCERNS

4.1 Soil Conservation and Erosion

Soil conservation efforts for the Project include minimizing impacts that will affect soils associated with construction, operation, and maintenance of the Project, such as curtailing wind and water erosion, soil compaction, surface disturbance, and construction activities in wet soils.

Erosion potential is the result of several factors, including slope, vegetation cover, climate, and the physical and chemical characteristics of the soil. Increased soil erosion may occur when groundcover vegetation is removed during construction or in areas where the surface is disturbed by heavy equipment. Increased erosion often occurs during high-intensity or long-duration rainstorms and may reduce the productivity of the soil and affect the water quality of streams by accelerating sediment loading. Wind is also an erosion factor throughout portions of the Project area. Soil compaction, such as rutting and puddling, also could be a concern if there is repeated traffic use on sections of access roads. Traffic use on wet soils can result in rutting and puddling, reducing soil productivity.

Where disturbance is anticipated in areas of steep terrain with high potential for erosion, vegetation clearing and grading will be conducted in a manner to minimize these effects. Soil stabilization and reclamation practices also will be implemented to reduce erosion. In areas of soil compaction, soil treatment and reclamation will be implemented as directed in Appendix C9: Reclamation, Revegetation, and Monitoring Plan. In these areas, any buried facilities, such as conduit, grounding cables, or counterpoise, will be installed and the location clearly noted before any reclamation activities begin.

4.2 Air Quality and Dust Control

Construction of the Project will cause a temporary and minimal increase in fugitive dust. Ambient levels of nitrogen oxides, hydrocarbons, and carbon monoxide near the construction zone also will be increased temporarily and minimally due to emissions from heavy construction equipment. Related facilities will cause a minimal increase in fugitive dust.

Air quality control measures are intended to minimize fugitive dust and air emissions in addition to maintaining conditions free from air pollution, where practicable. The Construction Contractor(s) will adhere to all requirements of those entities having jurisdiction over air quality matters, and any permits needed for construction and reclamation activities will be obtained by the Construction Contractor(s) prior to the start of construction or reclamation, as applicable. The Company will obtain all required air quality permits associated with operation and maintenance of the Project. The Construction Contractor(s) will not proceed with any construction activities without first taking reasonable precautions to prevent excessive particulate matter from becoming airborne and creating nuisance conditions. Work would not be initiated or would be suspended in consultation with the BLM and/or Forest Service based on National Weather Service advisories, watches, or warnings for the area in question. Information about these advisories, watches, or warnings are available at Wind Warnings, Watches and Advisories (weather.gov) and would be used to guide work activities that could generate excessive dust issues.

Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance, and no open burning of construction trash or other open fires will be allowed. Also, idling of equipment will be limited to the extent feasible to reduce exhaust emissions.

Where necessary, water may be used by the Construction Contractor(s) as an agency-approved dust control method during applicable construction activities (i.e., those that can create airborne dust). Water also will be applied on unpaved roads, material stockpiles, and other surfaces as appropriate to reduce the

generation of fugitive dust. In addition, open-bodied trucks and trailers transporting materials likely to become airborne will be covered. Earth or other materials that have become airborne and have accumulated on paved roads will promptly be removed from paved roads by the Construction Contractor(s). Matting will be used by the Construction Contractor(s) in rock-blasting operations to minimize and control dust (refer to Appendix C14: Blasting Management Plan).

5 SELECTIVE MEASURES

The selective measures for this Plan include the applicant-committed environmental protection measures (ACEPMs) of the Project, and other specific stipulations and methods that the Construction Contractor(s) will implement during construction and that the Company will implement as applicable during operation and maintenance of Project facilities.

If erosion-control and air quality measures implemented during construction and reclamation are not effectively minimizing accelerated erosion and reducing dust, then the selective measures described below will be reviewed and will be reapplied where necessary by the Construction Contractor(s) in consultation with the respective federal land management agencies, the Compliance Inspection Contractor (CIC), and/or the Company. If new disturbances occur during the operation and maintenance phases of the Project, the Company will review the measures described below and, in consultation with the BLM and/or Forest Service, implement the appropriate measures. Several measures may be required to mitigate both particular impacts and/or potential erosion, dust control, and air quality impacts associated with Project activities.

5.1 Applicant-Committed Environmental Protection Measures of the Project

To minimize the potential impacts from the Project, a suite of ACEPMs have been developed to address potential conflicts with environmental resources and to minimize the potential issues with erosion, dust control and air quality. These ACEPMs can be found in Section 9 of the POD.

5.2 Selective Measures

The selective measures to be applied on a site-specific basis to minimize potential adverse effects regarding erosion, dust control, and air quality during construction, operation, and maintenance of the Project appear below. In selected areas, and on a case-by-case basis, selective measures will be implemented by the Construction Contractor(s) and/or by the Company, if applicable, for operation and maintenance activities (refer to POD Appendix A: Detailed Route Alignment Figures).

6 MONITORING

Monitoring of the effectiveness of erosion-control measures will continue until reclamation efforts are considered by the applicable land management agencies to be successfully completed and accelerated erosion has been controlled. Additional monitoring requirements are included in Appendix C10: Stormwater Pollution Prevention Management Plan, as well as in the UPDES Construction General Permit for Discharges and in the Stormwater Pollution Prevention Plan that the Construction Contractor(s) is required to obtain from Utah and Nevada. The state permit monitoring requirements may supersede those listed below.

7 OPERATION AND MAINTENANCE PHASE

After construction and reclamation, the Company will continue monitoring of erosion-control measures on an annual basis during the operation and maintenance phase until affected soils have been stabilized.

Monitoring will continue until erosion control and reclamation efforts are considered complete and successful by the applicable federal land management agency.

Appendix C8. Fire Precaution and Response Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C8. Fire Precaution and Response Plan

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July 2023

CONTENTS

Attachment

Tables

Abbreviations

ACEPM	Applicant Committed Environmental Protection Measures
BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
DO	Duty Officer
EIS	Environmental impact statement
FMO	Fire Management Officers
Forest Service	U.S. Department of Agriculture Forest Service
FP	Fire prevention
IM	Instructional Memorandum
NWS	National Weather Service
O&M	Operations and maintenance
Plan	Fire Protection Plan
Project	Cross-Tie 500-kV Transmission Project
ROW	rights-of-way

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Fire Precaution and Response Plan (Plan) details measures that will be implemented to 1) reduce the risk of starting a fire and 2) suppress a fire in the event one does occur in the construction area during construction of the Project. The precautions and procedures identified in this Plan are also applicable for operation and maintenance and reclamation activities. The Company, their Construction Contractor(s), and crews throughout the life of the Project will be required to follow the measures described in this Plan.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

1.1 Purpose

The risk of fire danger during construction of the Project is related largely to the use of vehicles and other motorized equipment operating off roadways, the handling and use of explosive materials and flammable liquids, and welding/grinding operations.

The purpose of this Plan is to outline responsibilities, notification procedures, fire prevention measures and precautions, fire suppression equipment, initial response procedures, and post-fire rehabilitation strategies related to the Project. The goal is to minimize the risk of Project-related fires and in case of fire, provide for immediate suppression in the construction area. Other plans containing information related to fire precaution and response include Appendix C12: Hazardous Materials Management Plan, Appendix C13: Emergency Preparedness and Response Plan and Appendix C14: Blasting Management Plan.

1.2 Regulatory Compliance

The Project will be subject to state, county, and federally enforced laws, ordinances, rules, and regulations that pertain to fire prevention and suppression activities. Key regulatory agencies include the BLM, the Forest Service, and local fire protection agencies in Utah and Nevada.

Operations and maintenance activities will be governed by the Instructional Memorandum (IM) dated March 28, 2023, and titled *Routine Operations and Maintenance to Reduce Fire Risk on Utility Rights-of-Way*. The IM established BLM policy regarding routine operation and maintenance activities on electric utility ROWs to reduce the risk of wildfire. This IM is included as an attachment to this plan (see Attachment A: Bureau of Land Management Instruction Memorandum IM-2023-034). Additionally, IM-2022-036 (dated April 25, 2022) further clarifies fire reduction and prevention methods to be employed on utility ROWs. This is included as Attachment B: *Standard Stipulations for Fire Prevention and Control for Electric Transmission and Distribution Rights-of Way.* The instructions provided in this IM, and other relevant existing and future IMs, will be followed by the Company as applicable on BLM land. The Company and/or its contractors will routinely check for BLM IMs that would be applicable to the Project. The Federal Land Policy and Management Act, Section 512 establishes requirements and procedures for operating plans and agreements for powerline facilities on BLM and Forest Service lands,

both within the linear right-of-way for powerline facilities and on BLM and Forest Service lands adjacent to either side of the linear right-of-way. This would include fire management on federal lands.

2 RESPONSIBILITIES

2.1 Federal Land Management Agencies

The federal land management agencies' Fire Management Officers (FMOs) or Unit Duty Officers (DOs) will oversee all fire control activities in their respective administrative units. Appropriate BLM and Forest Service representatives will discuss fire protection stipulations at the notice-to-proceed meeting, which will be attended by the respective federal land management agencies' Authorized Officer(s) or their designated representative(s), the Compliance Inspection Contractor (CIC), the Construction Contractor(s), and the Company. The federal land management agencies' Authorized Officer or their designated representative will be responsible for immediately notifying the appropriate Fire Dispatch Center (Richfield Interagency Fire Center in Richfield, Utah; or Ely Interagency Communication Center in Ely, Nevada) first, then informing the CIC, the Construction Contractor(s), and the Company in the that event a non-Project–related fire threatens access to or egress from the Project area for construction personnel.

2.2 Company

The Company, as the authorized holder of the ROW, will ultimately be responsible for any fire started in the Project ROW by its employees or contractors. The Company will also be responsible for compliance with this Plan and its implementation during operation and maintenance activities.

2.3 Construction Contractor(s)

It will be the responsibility of the Construction Contractor(s) to immediately notify the appropriate Fire Dispatch Center (Richfield Interagency Fire Center, or Ely Interagency Communication Center) when a Project-related fire occurs in or adjacent to the construction area. The Company will hold the Construction Contractor(s) responsible for any fire started, in or out of the Projectarea, by its employees or activities. The Construction Contractor(s) will be responsible for preserving the point of origin for the fire for further investigation as to the fire cause and fire suppression and will take safe and immediate action to prevent and suppress fires on and adjacent to the Project area that are a result of contractor activities. The Construction Contractor(s) will use workers and equipment on the Project for preventing the spread of fires started by contractor activities unless the fire exceeds immediate control, at which time all the Construction Contractor(s)' employees will exit the area to predetermined locations safe from wildfire and the Construction Contractor(s) will immediately initiate notifications as described in Section 2.5.

All federal, state, and county laws, ordinances, rules, and regulations that pertain to prevention, presuppression, and suppression of fires will be strictly adhered to by the Construction Contractor(s). All personnel will be advised of their responsibilities under the applicable fire laws and regulations.

Costs involved with fires caused by the Construction Contractor(s) will be charged to the Construction Contractor(s). Specific construction-related activities and safetymeasures will be implemented during construction of the Project to prevent fires and to ensure quick response and suppression in the event a fire occurs, as specified in this Plan.

Fire rehabilitation for fires that are the result of contractor activities is the responsibility of the Construction Contractor(s). The Construction Contractor(s) will consult with the respective federal agencies' Authorized Officer(s) or their designated representative(s) to obtain federal agency rehabilitation requirements before performing any rehabilitation activities.

As part of the environmental compliance training program (see Appendix B5: Environmental and Safety Plan), the Construction Contractor(s) will receive training addressing initial fire suppression techniques, reporting requirements, how to determine if a fire is manageable, what control measures should be implemented by on-site field crews, and fire evacuation procedures. The training also will address how to respond to wildfires in the area and maintain knowledge of, and plans for, evacuation routes.

2.3.1 Construction Crew

The construction crew will be responsible for the following:

- If a fire starts in the Project area, either caused by Project activities or naturally, the construction crew will immediately initiate fire suppression activities on the Project until relieved by appropriate fire authorities or when the fire exceeds immediate control. Refer to Section 5 of this Plan for further information regarding the initial response to fire.
- The construction crew will immediately notify the Construction Contractor(s)' Fire Marshal (see below) when a fire occurs in the area.
- Available Project crews will follow the direction of the Construction Contractor(s)' Designated Fire Marshal for responding to a fire.
- The construction crew will have the fire prevention and suppression equipment listed in Section 4 readily available and maintained in good working order at all times during Project construction.

2.3.2 Construction Contractor(s)' Designated Fire Marshal

The Construction Contractor(s) will designate a Fire Marshal responsible for the following:

- Conduct regular inspections of tools, equipment, and first aid kits for completeness.
- Inspect the storage of any blasting materials for fire safety as detailed in Appendix C14: Blasting Management Plan.
- Conduct regular inspections of storage areas and practices for handling flammable fuels toconfirm compliance with applicable laws and regulations as detailed in Appendix C12: Hazardous Materials Management Plan.
- Post smoking and fire rules at centrally visible locations.
- Coordinate initial response to fires caused by Construction Contractor(s), construction activities, or naturally in the Project area.
- Accompany the CIC on fire inspections of the Project area.
- Ensure all construction workers and subcontractors are aware of the contents of this Plan.
- Remain on duty when construction activity is in progress and any additional periods where fire safety is an issue.

- Report all wildfires immediately to 911 and to the appropriate Fire Dispatch Center (Richfield Interagency Fire Center, or Ely Interagency Communication Center) first, then the CIC, the appropriate federal agency Authorized Officer(s) or their designated representative(s), and the Company in accordance with the notification procedures described in the Notification section below (Section 2.5).

- If a fire starts in the Project area, initiate and implement fire suppression until relieved by the appropriate fire agencies or when the fire exceeds immediate control.

- Monitor current fire potential and issue fire safety warnings to construction personnel.

- Contact the appropriate Fire Dispatch Center daily when fire danger is of concern, to check fire danger rating, and any warnings (red flag, fire weather watch), and include construction work location for the day so dispatch can notify in the event of a wildland fire.

- For aerial flights, send flight schedule to the appropriate Fire Dispatch Center on a weekly basis. An example flight schedule is included in Attachment C: Example Flight Schedule.

- Ensure that helicopters are equipped with an Automated Flight Following transponder so that the aircraft dispatcher can see where helicopters are at any point in time and advise other aircraft. Project pilots should have agency air to air frequencies so they can talk to other aircraft, as needed.

- Prior to fire season, work with the Unit Aviation Managers to determine basic fire reporting information that Project ground personnel needs to provide in the event of a fire in order to expedite information to the dispatch center.

  Advise all construction personnel about activities that must be limited or restricted during periods of elevated fire danger and alert personnel when conditions reach elevated fire danger.

2.4 Compliance Inspection Contractor

The CIC and the Construction Contractor(s)' Fire Marshal will accompany the federal land management agencies' Authorized Officer or their designated representative on fire inspections and take corrective action when notified that fire protection requirements are not in compliance. The fire inspection schedule will be determined by the availability of federal land management agencies' Authorized Officer or their designated representative. The CIC will notify the Construction Contractor(s) to stop or reduce Project activities that pose a significant fire hazard until appropriate safeguards are taken.

2.5 Notification

All wildfires will be reported immediately to 911 and to the appropriate Fire Dispatch Center (Richfield Interagency Fire Center, or Ely Interagency Communication Center) first, then the CIC, the appropriate federal agency Authorized Officer(s) or their designated representative(s), and the Company. The Construction Contractor(s) and the Company will have notification numbers readily available for all employees in case of fire and will update the following emergency contact numbers (Table 1) for any changes prior to construction, reclamation, or operations and maintenance in the Project area.

Table 1. Fire Notification Numbers

Contact Name	Phone Number
911	911
Ely Interagency Communication – for fires in the Bristlecone FO jurisdiction or Humboldt-Toiyabe National Forest, Nevada	775-289-1925
Richfield Interagency Fire Center – for wildland fires in Juab or Millard Counties, Utah	435-896-8404
Compliance Inspection Contractor	To Be Determined
BLM Authorized Officer or designated representative	To Be Determined
Forest Service Authorized Officer or designated representative	To Be Determined
Company	To Be Determined
Construction Contractor(s)	To Be Determined

During operation and maintenance activities, the Company's maintenance or contract crews will be responsible to immediately notify the appropriate Fire Dispatch Center (Richfield Interagency Fire Center, or Ely Interagency Communication Center) and the Company, if applicable, of any fire that starts or that they observe in the Project area. The following information would be reported:

- Caller's name
- Call back telephone number
- Project Name
- Location: legal description (Township, Range, Section or Latitude/Longitude) and descriptive location (reference point)
- Fire information: including acres, rate of spread, and wind conditions

3 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

Applied Project-wide, applicant committed environmental protection measures (ACEPMs) have been developed in accordance with federal land management agency and/or state standards and will address many of the concerns associated with fire precaution and response. These ACEPMs can be found in Section 9 of the POD.

4 MINIMUM FIRE PREVENTION AND SUPPRESSION EQUIPMENT REQUIRED

The following fire prevention and suppression equipment will be readily available and maintained in good working order at all times during Project construction.

- All motorized vehicles and equipment in each active construction area will carry the following:
  - One long-handled, round point, size 0 shovel
  - One ax or Pulaski fire tool
  - One 5-pound ABC Dry Chemical Fire Extinguisher

  - One 5-gallon water-backpack with pump (or other approved container) filled with water or other extinguishing solution

  - One hardhat, work gloves, and eye protection

- In addition to the fire suppression equipment required in motorized vehicles, construction work sites shall comply with the following:

  - Power saws, if required for construction, will be equipped with an approved spark arrestor and accompanied by one 5-pound ABC dry chemical fire extinguisher and a long-handled, round point, size 0 shovel when used away from a vehicle.

  - Fuel service trucks shall contain one 35-pound capacity fire extinguisher charged with the necessary chemicals to control electrical and fuel fires.

  - Wood cutting, welding, or other construction work sites that have a higher risk of starting fires shall have at least two long-handled, round point, size 0 shovels and two 5-pound ABC dry chemical fire extinguishers available onsite.

- In addition to being available at the work site, the truck and operator shall patrol the area of construction for at least 30 minutes after shutdown.

- Every construction work site shall have at least one radio and/or cellular/satellite telephone capable of contacting fire suppression agencies or the Project management. These communication devices will be tested weekly to ensure that emergency communication is possible at each construction work site.

- Every at-risk work site shall include two water-backpacks with pumps filled with water.

- During periods of heightened fire danger (see Section 7.1.4), the following equipment shall be available in the construction area or stationed near high-risk construction work sites to aid in response to a fire situation when the ratings is “High”:

  - One fire suppression vehicle equipped with a water tank with a minimum 500-gallon capacity, 250 feet of 1-inch heavy-duty rubber hose and a 1-inch adjustable nozzle with a discharge capacity of at least 10 gallons per minute. The pump shall have fuel capacity to operate for at least 2 hours.

  - The fire suppression vehicle shall be outfitted with one tool cache for fire use only, containing at a minimum two long-handled round point, two size 0 shovels, two axes or Pulaski fire tools, and one chainsaw of 3.5 or more horsepower with a cutting bar of at least 20 inches in length.

- During periods of heightened fire danger (see Section 7.1.4), the following equipment shall be available in the construction area or stationed near high-risk construction work sites to aid in response to a fire situation when the rating is “Very High”:

  - Same as “High”, noted above.

- During periods of “Extreme” fire danger (see Section 7.1.4), no work would be allowed unless authorized from the appropriate Authorized Officer.

5 IN CASE OF FIRE – INITIAL RESPONSE AND EMERGENCY CONTACTS

If a fire does start in the Project area and if the fire is manageable, then construction personnel will safely attempt to control it with a fire extinguisher or other available equipment. The Fire Marshal will be the lead in the field in coordinating the initial response to any fires as well as being the point of contact with 911 and the appropriate Fire Dispatch Center and will contact the appropriate Fire Dispatch Center daily for the fire danger rating level. If the Fire Marshal is unavailable, the crew will initiate fire suppression within the limits of their training and what they can do safely as well as contacting 911 and the appropriate Fire Dispatch Service.

The Construction Contractor(s)' personnel and equipment, including water trucks, will be dispatched within 15 minutes from the time a fire is reported to initially suppress the fire. If the fire is unmanageable, field crews will evacuate and first call 911 followed by the appropriate Fire Dispatch Center (Richfield Interagency Fire Center, or Ely Interagency Communication Center), The CIC, the federal land management agencies' Authorized Officer(s) or their designated representative(s), and the Company The Construction Contractor(s) must also report all fires immediately to the jurisdictional fire agency regardless of size and actions taken.

6 POST-FIRE REHABILITATION STRATEGIES

If the cause of a fire is determined to be the result of the Project, the Construction Contractor(s) will implement rehabilitation measures, as required by the federal land management agencies as well as the following post-fire rehabilitation measures:

- After a fire has been extinguished, the burned areas will be reclaimed in accordance with federal land management agencies' requirements using standard Emergency Stabilization and Rehabilitation protocols. Small burn areas will be revegetated to the native vegetation using appropriate seed mixtures as identified in Appendix C9: Reclamation, Revegetation, and Monitoring Plan. Larger burn areas may require specific reclamation plans. Coordination with the federal land management agencies is necessary to determine requirements for each particular area, depending on the size and location of a fire, and the location of environmental resources.

- For fires on National Forest System land, the Forest Service may assemble a Burned-Area Emergency Response Team to make a rapid assessment of the burned area.

- To prevent the spread of noxious weeds and invasive species during post-fire rehabilitation, the measures outlined in the Appendix C2: Weed Management Plan, will be implemented by the Construction Contractor(s).

7 ACTIVITY-RELATED PRECAUTIONS

7.1 Fire Conditions

Weather and fuel conditions are considered in determining current and forecasted fire danger. Adjective fire danger ratings and Red Flag Warnings are used in combination to determine the appropriate fire precaution level and associated selective measures.

7.1.1 Fire Danger Ratings

Fire Danger Ratings would be obtained daily and used to direct daily activities and in-field crew safety briefings. Fire Danger Ratings take into account current and antecedent weather, fuel types, and both live and dead fuel moisture and would be used by the land management agency to determine mitigation or curtailment of operations. Adjective fire danger ratings will be obtained from the appropriate Fire Dispatch Center.

7.1.2 Red Flag Warnings

The National Weather Service (NWS) issues Red Flag Warnings for extreme fire danger during periods of low humidity, high winds, dry lightning, and high temperatures. Red Flag Warnings will also be used by the land management agency to determine mitigation for fire prevention or curtailment of specific activities or all operations.

Red Flag Warnings are posted on the NWS website: National Weather Service NOAA Fire Weather website

7.1.3 Fire Weather Watches

The NWS issues Fire Weather Watches to alert land managers and the public that upcoming weather conditions could result in extensive wildland fire occurrence or extreme fire behavior. A Fire Weather Watch means critical fire weather conditions are possible but not imminent or occurring.

7.1.4 Fire Precaution Levels

The Construction Contractor(s)' Fire Marshal will contact the appropriate Fire Dispatch Center to check fire danger ratings, and any warnings (red flag, fire weather watch), and will check the forecasted and current weather (local remote automatic weather stations or similar) and if there are Red Flag Warnings or fire restrictions issued for the Project area at the start of each day of operation. If there are questions as to the level of fire danger and the effect on operations, the Construction Contractor(s)' Fire Marshal or CIC will contact the appropriate Fire Dispatch Center (Richfield Interagency Fire Center or Ely Interagency Communication Center) first, then the federal land management agencies' Authorized Officer(s) or their designated representative(s) and the FMOs prior to conducting work for any additional required mitigation for fire prevention or orders to curtail specific activities or all operations. Regardless of the fire danger or warnings, and if the BLM and/or the Forest Service have not required additional mitigation for fire prevention or curtailment of specific activities or all operations, the Construction Contractor(s)' Fire Marshal, in coordination with the CIC, must determine when additional fire prevention measures will be taken or if operations will be shut down due to periods of extreme dryness and wind. Equipment needed for each Fire Precaution Level are provided in Section 4.

Fire precaution levels associated with the Fire Danger Ratings, periods of no Red Flag Warnings issued, and periods of issued Red Flag Warnings are described below.

- Low/Moderate Danger Rating:
  - No Red Flag: Normal fire precautions
  - Red Flag: Consider additional measures and resources
- High Danger Rating
  - No Red Flag: All welding and grinding shall be discontinued except in an enclosed building or within an area cleared of all flammable material for a radius of 16 feet and must be pre-wet.
  - Red Flag: No welding or grinding, unless it is in an enclosed building during the timeframe designated as Red Flag Warning. Burning or blasting shall not be permitted. At Project access points provide a sign to notify workers of the time the restriction becomes effective.
- Very High Danger Rating:
  - No Red Flag: Chainsaw and mastication operations shall be discontinued after 1:00 PM.
    - All welding and grinding shall be discontinued except in an enclosed building or within an area cleared of all flammable material for a radius of 16 feet and must be pre-wet for a radius of at least 40 feet.
    - All blasting shall be discontinued unless the area has been previously cleared from all flammable materials.
    - Smoking will be permitted only in an enclosed vehicle equipped with an ashtray or in an enclosed building.
    - Except in case of emergency, vehicular travel will be restricted to cleared areas or areas which have been pre-wet and are accessible by pressurized water hose or pressurized water tank.
    - In areas not cleared for a radius of 16 feet, pre-wet the area before beginning operations. Maintain the area in a wet condition and provide one lookout with fire-fighting equipment.
    - In addition to being available at the work site, the truck and operator shall patrol the area of construction for at least 1 hour after shutdown.
  - Red Flag: During the timeframe designated as Red Flag Warning, no welding or grinding, unless it is in an enclosed building. Burning or blasting shall not be permitted. At Project access points provide a sign to notify workers of the time the restriction becomes effective.
- Extreme Fire Danger Rating
  - No Red Flag/Red Flag: Unless authorized by the land jurisdictional agency, ALL OPERATIONS WILL BE SHUT DOWN EXCEPT on mineral soil involving watering or equipment maintenance.

If there are conflicts between fire restrictions (fire prevention orders) and fire precaution levels (Table 2), the more restrictive will be followed. Fire suppression vehicle referenced in Table 2 are those vehicles a Contractor may use whose purpose is to extinguish fires started by project activities. Detailed descriptions of the fire suppression vehicles and equipment associated with each level are described in Section 4. They may contain additional fire suppression equipment not carried by other Project vehicles.

Table 2. Fire Precaution Levels

Danger Rating	No Red Flag	Red Flag
Low	Normal fire precautions	Consider additional measures and resources
Moderate	Normal fire precautions	Consider additional measures and resources
High	One fire suppression vehicle is required for blasting.	One fire suppression vehicle is required for blasting, welding, cutting, and grinding, AND operations will shut down from noon until 8 p.m.
Very High	One fire suppression vehicle is required for blasting, welding, cutting, and grinding. Power saws will be shut down from 1 p.m. until 8 p.m.	Two fire suppression vehicles are required for blasting, welding, cutting, and grinding, AND operations will shut down from 10 a.m. until 8 p.m. Power saws will be shut down from 10 a.m. until 8 p.m.
Extreme	Unless authorized by the land jurisdictional agency, ALL OPERATIONS WILL BE SHUT DOWN EXCEPT on mineral soil involving watering or equipment maintenance.	Unless authorized by the land jurisdictional agency, ALL OPERATIONS WILL BE SHUT DOWN EXCEPT on mineral soil involving watering or equipment maintenance.

Attachment A. Bureau of Land Management Instruction Memorandum IM-2023-034

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
https://www.blm.gov

March 28, 2023

In Reply Refer To:
2800 (350) P

EMS TRANSMISSION 03/30/2023
Instruction Memorandum No. 2023-034
Expires: 09/30/2026

To: All Field Office Officials

From: Assistant Director, Energy, Minerals and Realty Management (HQ-300)

Subject: Routine Operations and Maintenance to Reduce Fire Risk on Utility Rights-of-Way

Program Area: Lands and Realty, Biological and Cultural Resources, Forestry, Wildland Fire Management, and National Environmental Policy Act.

Purpose: This Instruction Memorandum (IM) establishes policy regarding routine operations and maintenance activities on electric utilities' rights-of-way (ROW) to reduce the risk of wildfire.

Administrative or Mission Related: Mission.

Policy/Action: Electric transmission and distribution facility ROW holders have the authority to conduct routine operations and maintenance (O&M) activities within their ROW, 43 CFR 2805.14(a). ROW holders must also do everything reasonable to prevent and suppress wildfires on or adjacent to the ROW area, 43 CFR 2805.12(a)(4), and comply with project-specific terms, conditions, and stipulations, including any requirements to control or prevent damage to property, and public health and safety, 43 CFR 2805.12(a)(8)(iii). Field Offices should encourage ROW holders to conduct routine O&M activities including inspections to reduce wildfire risk from and to their facilities on public land. In taking such actions, ROW holders are responsible for ensuring that their activities comply to the maximum extent practicable with all applicable State and Federal laws, 43 CFR 2805.12(a)(1). Field Offices should also be aware of BLM IM 2022-036, "Standard Stipulations for Fire Prevention and Control for Electric Transmission and Distribution Rights-of-Way (ROWs)."

To facilitate and expedite O&M activities necessary to reduce the risk of wildfire, the BLM affirms that ROW holders are authorized and responsible to carry out O&M work including inspections to prevent wildfire. The BLM will encourage ROW holders to provide the Authorized Officer prior

oral or written notification of O&M activities. The BLM Field Office will request that ROW holders notify the appropriate BLM Field Office within 30 days of completing such work unless this timeframe conflicts with applicable law and regulation. If the ROW holder determines that O&M work is necessary to prevent and suppress wildfire, then Field Offices should not generally require the ROW holder to obtain any additional notice to proceed or other form of prior approval before conducting the O&M work. However, the BLM Field Office will request that any ROW holder planning and authorized to use prescribed fire notify the BLM office with jurisdiction to first determine feasibility and discuss requirements and personnel qualifications to implement prescribed fire on BLM-managed lands (see BLM Handbook 9214-1, Chapters 3 and 5, Fuels Management and Community Assistance). To the extent the terms and conditions of a ROW grant generally require a notice to proceed or other form of prior approval before a ROW holder conducts O&M, inspections, and other activities, such provisions should not be construed to apply to actions that have already been authorized in a grant or approved operations and maintenance plan, including those required under 43 CFR 2805.12(a)(4), 43 CFR 2805.12(a)(8)(iii), 43 CFR 2805.14(d), or other applicable laws and regulations.

ROW holders should be encouraged to provide the Authorized Officer prior oral or written notification of O&M activities. Prior notification ensures O&M activities will not conflict with other uses on public land and assists the Authorized Officer with inquiries from the public. Notification does not require follow-up or approval for the ROW holder to complete the activity.

When coordinating with ROW holders, the BLM will request that any holder undertaking emergency O&M activities to prevent wildfire identify, as soon as practicable, the location of the ROW and the O&M activities undertaken (legal description, maps, etc.); access route(s); type of treatment work; acreage of treatment area; equipment used; start and end dates; biological data, and cultural survey data (cultural resource data must be submitted in a confidential folder supplied by each BLM office); species, height, and exact diameter of trees cut greater than 8 inches (diameter breast height); best management practices used; the utility company point of contact; and the BLM serial number for the ROW. Field offices will upload this data to the applicable BLM State Office SharePoint site and provide access to the BLM Headquarters for data mining. Data collected will be incorporated into ongoing efforts to streamline ROW processes as well as facilitate ROW renewals and consolidations, where appropriate.

Field offices will follow direction as set forth in Section 512 of the Federal Land Policy and Management Act (FLPMA) for ROW holders controlling vegetation associated with electric transmission or distribution lines, including hazard trees. In most situations, FLPMA requires that the United States receive fair market value for vegetative resources; a vegetative sale contract may need to be prepared after work has been completed if the treatment results in marketable timber.

This guidance does not supersede or negate any requirements imposed by State or Federal law.

The BLM will work with ROW holders to identify any follow-up actions or modifications that may be required to implement this policy.

Timeframe: Effective immediately through expiration.

Budget Impact: The policy will have minimal budget impact, as ROW regulations allow the BLM to collect cost recovery fees from the ROW holder to cover the costs of monitoring O&M activities of permanent or temporary facilities on public land.

Background: In recent years, the number, scope, and magnitude of wildfires across the western United States has increased substantially due to several factors, including population growth in fire-prone areas, drought, and climate change. This destructive wildfire trend emphasizes the need for effective vegetation management and facilities maintenance to reduce the threat of wildfire in association with electrical transmission and distribution lines.

The Fuel Break categorical exclusion (CX) established in Section 40806 of the Infrastructure Investments and Jobs Act (Public Law 117-58), informally known as the Bipartisan Infrastructure Law (BIL), recognizes the need for fuel breaks in forests and other wildland vegetation in limited situations with the creation of a new statutory categorical exclusion.

Secretarial Order 3372, "Reducing Wildfire Risks on Department of the Interior Land Through Active Management" (01/02/2019) builds upon Executive Order 13855, "Promoting Active Management of America's Forests, Rangelands, and Other Federal Lands to Improve Conditions and Reduce Wildfire Risk." The intent of these Orders and law is to implement active vegetation management to reduce the risk of catastrophic wildfire.

Section 211 of Title 2 of Public Law 115-141 amended the FLPMA to add Section 512 titled "Vegetation Management, Facility Inspection, and Operations and Maintenance Relating to Electrical Transmission and Distribution Facility Rights-of-Way." This FLPMA amendment acknowledges that it may be necessary to address conditions outside a ROW to prevent wildfire.

Previously issued BLM Instruction Memorandum WO IM 2018-070 emphasized that routine vegetation maintenance is the responsibility of the electrical utility facility owners, and, to the extent feasible, the BLM will address vegetation management issues without the need for additional authorizations and processes.

Manual/Handbook Sections Affected: This IM transmits national policy that will be incorporated into BLM Manuals MS-2800 through MS-2809 during the next revision. This IM will replace the following state IMs:

State	IM	State	IM
AK	AK-2020-003	MT	MT-2021-004
AZ	AZ-2021-004	NV	NV-2020-009
CA	CA-2021-003	NM	NM-2021-002
CO	CO-2021-003	OR	OR-2020-004
ES	ES-2020-004	UT	UT-2021-004
ID	ID-2020-006	WY	WY-2020-006

Coordination: BLM HQ-300, FA-100.

Contact: Questions may be directed to Erica Pionke, Realty Specialist Program Lead for Powerlines and Energy Corridors, (202) 570-2624 or epionke@blm.gov or Steve Fusilier, ROW Branch Chief, (202) 309-3209 or sfusilie@blm.gov.

Signed by:

Benjamin E. Gruber
Acting Assistant Director
Energy, Minerals and
Realty Management

Authenticated by:

Ambyr Fowler
Division of Regulatory Affairs and Directives (HQ-630)

Attachment B. Bureau of Land Management Instruction Memorandum IM-2022-036

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
https://www.blm.gov

April 25, 2022

In Reply Refer To:
9210 (HQ-800, HQ-300, HQ-600) P

EMS TRANSMISSION 04/28/2022
Instruction Memorandum No. 2022-036
Expires: 09/30/2023

To: State Directors
Attn: Realty Specialists and Fire Management Officers and Deputy State Directors for Minerals and Resources

From: Deputy Director, Operations

Subject: Standard Stipulations for Fire Prevention and Control for Electric Transmission and Distribution Rights-of-Way (ROWs)

Program Areas: Fire Management, Lands and Realty, Resources, Vegetation Management.

Purpose: This Instruction Memorandum (IM) provides guidance on the incorporation of appropriate fire prevention and control stipulations, as required by 43 CFR 2805.12(a)(4), for electric transmission and distribution right-of-way (ROW) authorizations issued under Title V of the Federal Land Policy and Management Act (FLPMA). The fire prevention and control stipulations shall be incorporated as standard stipulations into new authorizations, renewals, amendments, and assignments. This IM applies to electric transmission and distribution ROWs issued under Title V of FLPMA and clarifies terms and conditions required by 43 CFR 2805.12(a)(4) to prevent and suppress wildfires within, or in the immediate vicinity of, the ROW boundary. Incorporating fire prevention and control stipulations should be done in coordination with resource specialists (wildlife, fuels, cultural, NEPA specialists, etc.) who participate on interdisciplinary teams formed to work on electric transmission and distribution ROWs.

Administrative or Mission Related: This IM is mission-related because it furthers the BLM's ability to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.

Policy/Action: Standard stipulations for electric transmission and distribution ROWs required to reasonably prevent and suppress wildfires have been collaboratively developed by BLM headquarters (HQ), state, district, and field offices. When granting, renewing, amending, or assigning an electric transmission and distribution ROW, the realty specialist and

interdisciplinary team should include the fire prevention and control stipulations described in Attachment 1.

These standard fire prevention and control stipulations should be included in the electric transmission and distribution ROW grant as provided in Attachment 1. To depart from or make any revision to these standard stipulations, the authorized officer must request and obtain concurrence from the next higher supervisory level. Additional non-standard stipulations may be developed to address site-specific conditions above and beyond these standard fire prevention and control stipulations to respond to issues revealed during environmental analysis or when otherwise supported in the record. Any additional non-standard stipulations should not contradict or be inconsistent with the standard stipulations outlined in this IM.

The only non-standard fire prevention and control stipulation requiring a specific finding to be included in the electric transmission and distribution ROW authorization, is the strict liability stipulation #4. This strict liability stipulation should be included in an authorization if a risk of fire or other damage or injury to the United States is generally foreseeable. See 43 CFR 2807.12(b).

Where activities involve transmission of electric energy over wildland vegetation, or where equipment failures may be a source of ignition, strict liability stipulations should be included in the authorization if a determination of foreseeable hazard or risk is made by the authorized officer. Examples of such activities may include, but are not limited to, operation of electric transmission and distribution facilities, structures, and equipment (components).

The focus of this IM on electric transmission and distribution ROWs in no way limits or prohibits the BLM from including strict liability provisions in other ROWs consistent with 43 C.F.R. § 2807.12(b).

Timeframe: This policy is effective immediately. These standard fire prevention and control stipulations will be reviewed periodically for potential revision.

Budget Impact: None.

Background: Although standardized or "guide" stipulations have been included in previous manuals and training materials, the stipulations have often been edited in different ways by various offices over the years. Some of the subsequent language changes have resulted in different outcomes, even though the stipulations attempt to address the same issue. These new standard fire prevention and control stipulations are to be incorporated into BLM practice through this IM for fire prevention and control to reduce inconsistencies among field offices and to protect the public lands from fire dangers and the United States from liabilities.

Manual/Handbook Sections Affected: This IM transmits interim policy to be incorporated into the appropriate handbook or supplement during the next revision. Bureau Manual 2805, Terms and Conditions for FLPMA Grants, governs the use of stipulations.

Coordination: This IM was coordinated with the Office of the Solicitor as well as the BLM's Fire and Aviation Directorate; the Energy, Minerals and Realty Management Directorate; and the Resources and Planning Directorate.

Contact: If you have any questions concerning the content of this IM, please contact Erica Pionke, HQ-350 Realty Specialist at epionke@blm.gov or (202) 570-2624, or Jon Skinner (FA-600) at jskinner@blm.gov or (208) 387-5321.

Signed by:	Authenticated by:
Michael Need	Robert M, Williams
Deputy Director, Operations	Division of Regulatory Affairs and Directives,(HQ-630)

1 Attachment
1 - Standard Fire Prevention and Control Stipulations for BLM Electric Transmission and Distribution Right-of-Way Grants (3 pp)

Standard Fire Prevention and Control Stipulations for
BLM Electric Transmission and Distribution Right-of-Way Grants

The following is a list of standard fire prevention and control stipulations to be used in electric transmission and distribution right-of-way (ROW) grants. The only stipulation requiring a specific finding to be included is the strict liability stipulation #4. The BLM authorized officer and specialists will identify foreseeable harms from the activity to determine whether the strict liability stipulation in #4 should be included in each authorization. The strict liability stipulation in #4 shall be included if a risk of fire or other damage is generally foreseeable.

Where activities involve transmission of electric energy over wildland vegetation, or where equipment failures may be a source of ignition, strict liability stipulations shall be included in the authorization if a determination of foreseeable hazard or risk is made by the authorized officer. Examples of such activities may include but are not limited to: operation of electric transmission and distribution facilities, structures, and equipment (components).

This list provides guidance on the incorporation of appropriate fire prevention and control stipulations, as required by 43 CFR 2805.12(a)(4), in addition to other mandatory terms and conditions described in 43 CFR 2805.12 and other terms and conditions that the BLM determines to be appropriate for each right-of-way authorization. These standard fire prevention and control stipulations should be included in the electric transmission and distribution ROW grant without revision. To depart from or make a revision to these standard stipulations, the authorized officer must request and obtain concurrence from the next higher supervisory level. Any additional non-standard stipulations should not contradict or be inconsistent with the standard stipulations outlined in this IM, absent concurrence from the next higher supervisory level.

Standard Fire Prevention and Control Stipulations

1. When performing construction and maintenance (including emergency repairs) activities when State or Federal fire prevention restrictions or closures are in effect, the Holder shall ensure that there is at least one functioning on-site vehicle with firefighting equipment, including, but not limited to all of the following: fire suppression hand tools (e.g., shovels, rakes, and pulaskis); a 16-20 pound fire extinguisher; and a sufficient supply of water (minimum of 5 gallons) to extinguish a potential fire start, with a mechanism to effectively spray the water (e.g., backpack pumps or a water sprayer). A BLM authorized officer may issue a Fire Prevention Order that requires the Holder to implement additional fire prevention measures.

2. Within, and in the immediate vicinity of, an electric transmission and distribution ROW, the Holder shall provide and maintain a sufficient vegetation clearance around the base of wood poles or other facilities with the potential to catch or spread fire in accordance with minimum clearance standards adopted by the State where the powerline resides.

3. The Holder shall do everything reasonable to prevent and suppress wildfires on all structures, equipment, and facilities that are on the electric transmission and distribution line for which the ROW is granted, without regard to whether they are located within the ROW or on non-federal land – and where a failure or fire ignition could reasonably lead to adverse impacts to public land.

Standard Fire Prevention and Control Stipulations for
BLM Electric Transmission and Distribution Right-of-Way Grants

4. As provided in 43 CFR 2807.12(b)(1)-(5), the Holder shall be strictly liable for any activity or facility associated with the ROW area that the BLM determines presents a foreseeable hazard or risk of damage or injury to the United States. The BLM has determined that the permitted/authorized activity or facility (*describe here*) presents a foreseeable hazard or risk of damage and has also determined that the financial limitation on strict liability under 43 CFR 2807.12(b) and this grant will be based on the most current annual BLM Calendar Year ROW Cost Recovery Fee Schedule and Strict Liability Amount instruction memorandum issued in the year that the incident occurred, subject to any other statutory or court-ordered strict liability standards. This strict liability amount is updated annually by BLM under 43 CFR 2807.12(b)(3). [*Note to those processing these Land Use Authorizations: The authorized officer must determine whether the permitted activity or facility presents a foreseeable fire risk. If it is determined that such a risk exists, this strict liability stipulation shall be included in an authorization.*

   The authorized officer must identify in the authorization the activity or facility posing such hazard or risk and specify the financial limitation on strict liability. The authorized officer must identify as the financial limitation the maximum extent of strict liability for any one incident found in the annual BLM Calendar Year ROW Cost Recovery Fee Schedule and Strict Liability Amount Instruction Memorandum. The BLM updates this amount each year to account for changes in the Consumer Price Index for All Urban Consumers, US City Average as of July of each year (43 CFR 2807.12(b)(3) and 2886.13(b)(3)).]

4. If a fire ignites within the ROW area, burns on to the ROW area, or threatens the ROW area, the Holder shall cooperate with the BLM in its efforts to respond to, investigate, and suppress all fires and will:

   a. Immediately report fires to the BLM Authorized Officer or local fire dispatch *(enter phone number(s)* _____) and take all necessary fire suppression actions, when safe to do so on any fires they cause to ignite.

   b. Maintain the condition of the origin area of the fire from additional disturbance to enable the BLM Fire Investigator to properly assess the origin area and cause of the fire.

   c. Defer to and follow the instructions of the BLM's Incident Commander or designee during fire suppression operations regarding activities within the boundaries of the fire including checking in and out of the fire, not entering the origin areas unless given permission to do so, and recognizing the BLM's primary authority over the fire scene.

   d. Share factual information with the BLM concerning fires, including, but not limited to, the names of Holder's employees and invitees with knowledge of the fire; and to allow the Holder's employees and their invitees to be interviewed by the BLM's investigators regarding the fire.

Standard Fire Prevention and Control Stipulations for
BLM Electric Transmission and Distribution Right-of-Way Grants

e. Provide an account to the BLM of the actions taken at the scene of a fire by the Holder and Holder's employees and invitees.

f. Minimize disturbance of potential evidence located at the scene, including by not engaging in any evidence collection or destruction without the BLM's express written consent; properly handling and preserving any evidence collected; and making all documents and other evidence, including expert reports, available to the BLM in a rapid and timely manner upon request of the BLM or its counsel. If the Holder determines that evidence is under immediate threat of destruction due to the fire itself, suppression operations, weather, etc., that evidence may be collected at the scene if it is properly handled and preserved, and BLM is notified, in writing, in a timely manner.

g. Not hamper the BLM's investigation of origin and cause of the fire and reasonably assist the BLM's investigation.

h. Provide information upon request of the BLM or its counsel concerning the construction, monitoring, inspection, maintenance, or repairs of any of Holder's facilities that the BLM determines may be relevant to the BLM's investigation of a fire.

Attachment C. Example Flight Schedule

HELICOPTER FLIGHT SCHEDULE

Initial Request Information		Charge Code	Aircraft Information
Date	Time		A/C N#
To	From		Flight Schedule Number
Mission Details			Make/Model
			Color
			Vendor
			Telephone Number
			Pilots

Passenger and Cargo Information

Name/Cargo	Weight	Order #	DPT	DST	Name/Cargo	Weight	Order #	DPT	DST

Flight Itinerary

Departure							Arrival			Drop Off			Relayed
Date	PAX	Weight	Airport	ETD	ATD	ETE	Airport	ETA	ATA	PAX	Cargo	Key Points	To/From

Flight Following		Radio Frequencies				
	FAA Flight Plan Filed	UNIT	Transmit		Receive	
			Frequency	Tone	Frequency	Tone
	Agency Flight Following					
NICC Flight Following	1-800-994-6312					
Home Unit Phone						

Notes and Comments:

Appendix C9. Reclamation, Revegetation, and Monitoring Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C9. Reclamation, Revegetation, and Monitoring Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Tables

Abbreviations

BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
cm	centimeter
Company	TransCanyon, LLC
GPS	global positioning system
Forest Service	U.S. Department of Agriculture Forest Service
LPI	line point intercept
m	meter
OHV	off-highway vehicle
Plan	Reclamation, Revegetation, and Monitoring Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-Way

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

The purpose of this Reclamation, Revegetation, and Monitoring Plan (Plan) is to prescribe reclamation actions, standards of revegetation success, and reclamation monitoring protocols and requirements to accomplish the following: mitigate Project–related disturbance; prevent unnecessary degradation of the environment; reclaim disturbed areas to make them ecologically functional and visually compatible with the surrounding environment to the greatest extent practicable; and to ensure reclamation and revegetation activities comply with federal, state, or other agency requirements. This Plan specifies the preconstruction, construction, and postconstruction reclamation measures that will be implemented by the Construction Contractor(s) during construction and, as applicable, by the Company during operation and maintenance activities.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (Forest Service) records of decision and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction. It is anticipated that the BLM, prior to Project approval, will require TransCanyon to post a reclamation surety bond covering reclamation activities.

The Company will have the overall responsibility of ensuring this Plan is satisfactorily implemented and complied with during the construction and operation and maintenance phases while the Construction Contractor(s) will be responsible for the implementation of this Plan during the construction phase. Requirements for reclamation, revegetation, and monitoring on private lands may differ from those contained in this Plan based on negotiations between the Company and the landowner/manager. Reclamation monitoring will be conducted by the Construction Contractor(s) and a third-party reclamation monitoring contractor.

2 RECLAMATION GOALS AND OBJECTIVES

The primary goal for Project reclamation is eventual ecosystem reconstruction, wherein habitats are returned to conditions that approximate the pre-disturbance habitat quality, site stability, visual quality, and hydrological functioning. Reclamation actions are designed to re-create a successional pathway that restores cover and species composition of vegetation communities toward a pre-disturbance trajectory.

Reclamation focuses on initiating and accelerating the recovery of an ecosystem's health, integrity, and sustainability through rapid surface stabilization to avoid unnecessary degradation of disturbed areas. Measures will target temporary Project facilities and permanent Project facilities that have a reclamation component that are disturbed during construction or operation and maintenance throughout the life of the Project.

- Objectives of reclamation are to establish a healthy native plant community and biologically active topsoil, in disturbed areas that are not needed during operation and maintenance, and for that community to be self-sustaining and resistant to the introduction or spread of noxious and invasive weed species.
- Reclamation will begin after construction activities have been completed.
- Reclamation will include the following:
- Stabilizing disturbed soil surface areas to reduce erosion and runoff to or below naturally occurring levels.
- Regrading disturbed areas to approximate pre-disturbance topography to the extent practicable.
- Reclaiming disturbed areas with native (or otherwise approved) vegetation species.
- Control of noxious and invasive weed species on the disturbed areas and control of the expansion of these species onto adjacent non-impacted areas, including pre-treatment of weeds in advance of construction (POD Appendix C2: Weed Management Plan).
- Reclamation measures will be considered complete and areas will be released from monitoring when reclamation success standards have been achieved (Section 5.4). To operate and maintain the Project facilities, it may be necessary to re-disturb vegetation and soils within areas where reclamation has been completed (e.g., roads and overland travel routes that provide access to structure locations). Should this occur, the disturbed area will be reclaimed according to the directions in this Plan following use. Re-disturbance of areas will be minimized to the extent practicable.

2.1 Decommissioning

Final reclamation will be addressed in the Project Decommissioning Plan, which will be prepared and implemented by the Company once the Project is slated for decommissioning. Final reclamation measures and success standards will be determined during the development and finalization of the Decommissioning Plan. Prior to implementation, the Decommissioning Plan will be submitted to the appropriate federal agency for review and approval.

3 DISTURBANCE TYPES AND DURATION

Construction and operation and maintenance of the Project will cause different types of soil and vegetation disturbance to Project facilities. For the purposes of this Plan, disturbances associated with Project facilities are categorized by disturbance duration and disturbance type.

3.1 Disturbance Types

This Plan defines five disturbance types associated with the construction and operation and maintenance of the Project, including the following:

- **No new disturbance:** These areas include existing access roads and pre-disturbed locations that do not require improvement (vegetation removal or grading) that will remain permanent (in place) after Project construction is complete.

- **Overland drive and crush:** This disturbance type is caused by access to a site or construction activities in a work area that does not significantly modify the landscape. Vegetation is crushed but not cropped (i.e., removed entirely or maintained by mowing, plowing, brush-hogging, or other applications). Soil compaction is negligible or low, and no surface soils are removed. Even though vegetation may be damaged, and even destroyed, the surface soils and seedbanks remain relatively intact. It is expected that some crushed vegetation will resprout after disturbance ceases. Depending on conditions and/or fire restrictions, drive and crush may be prohibited or fire precautions would need to be implemented (e.g., pre-wetting of the site). Exemptions would be requested in advance of the work.

- **Overland clear and cut:** This disturbance type is caused by access to the Project site or construction activities in a work area that requires the removal of all vegetation to improve or provide suitable access for equipment and vehicles. Most woody shrub vegetation is removed, and soils are compacted, but no surface soils are removed. Mowing is the preferred method for clearing woody vegetation and will be used where practicable.

- **Grading and excavation permanent use areas:** This disturbance type is caused by removal of vegetation and displacement of surface soils, either through surface earthwork (grading) or deeper excavation. These areas will remain permanent (in place) after Project construction is complete.

- **Grading and excavation temporary use areas:** This disturbance type is caused by removal of vegetation and displacement of surface soils, either through surface earthwork (grading) or deeper excavation. These areas will be temporary and will be reclaimed after Project construction is complete.

For each disturbance type implemented on the Project, noxious weeds and other invasive species of concern will be monitored for and controlled according to POD Appendix C2: Weed Management Plan. See Section 4.1.1 for further details for the control of noxious weeds and other species of concern.

The “no new disturbance” and “grading and excavation permanent use areas” disturbance types will not be discussed further in this Plan, unless specifically acknowledged, because they are associated with permanent use areas, which will be maintained over the entire life of the Project. Reclamation of Project facilities with those disturbance types will be addressed in the final Decommissioning Plan. Measures to mitigate impacts from the remaining three disturbance types, including soil handling procedures, are discussed in Section 4.

3.2 Disturbance Duration

This Plan defines two types of disturbance duration based on the length of time that areas of Project facilities will be used for construction and regular operation and maintenance of the Project (Table 1):

- **Temporary use areas:** Temporary use areas are used only for the amount of time it takes to construct the Project and reclaim disturbed areas. The Construction Contractor(s) will maintain responsibility for postconstruction monitoring for these temporary use areas for 5 years or until areas achieve reclamation success, as described in Section 5, whichever occurs first. Monitoring will identify areas not meeting success standards and coordination with the appropriate land management agency will occur for needed further reclamation efforts. If reclamation fails due to conflicting land management and environmental limitations (e.g., areas with open OHV access, grazing of domestic livestock, natural disasters, such as fire or flooding, and construction of other utility projects) not associated with the Project, neither the Company nor the Construction Contractor(s) will be held responsible for continued reclamation and monitoring of these sites

(see Section 7 for details). Any additional temporary use areas needed during operation and maintenance activities during the life of the Project will also be reclaimed using the procedures outlined in this Plan.

- **Permanent use areas:** Permanent use areas are used for the life of the Project, and the landscape is permanently altered (until final decommissioning) through vegetation removal, site leveling, modification of natural drainages, and installation and construction of permanent Project facilities. For permanent Project facilities that have a reclamation component, TransCanyon, through the Construction Contractor(s), will maintain responsibility for postconstruction monitoring for these permanent use areas for 5 years or until areas achieve reclamation success, as described in Section 5, whichever occurs first. Monitoring will identify areas not meeting success standards and coordination with the appropriate land management agency will occur for needed further reclamation efforts. If reclamation fails due to conflicting land management and environmental limitations (e.g., areas with open OHV access, grazing of domestic livestock, natural disasters, such as fire or flooding, and construction of other utility projects) not associated with the Project, neither the Company nor the Construction Contractor(s) will be held responsible for continued reclamation and monitoring of these sites (see Section 7 for details).

Table 1. Project Facilities by Disturbance Duration

Project Facility Types	Permanent Use Areas	Temporary Use Areas
Structure work areas [1]	—	Yes
Wire-pulling/tensioning	—	Yes
Wire splicing sites	—	Yes
Guard structures	—	Yes
Multi-purpose construction yards	—	Yes
Helicopter fly yards	—	Yes
Expanded limit of disturbance areas [2]	—	Yes
Expanded limit of disturbance areas – 20 percent slope [2]	—	Yes
Other ancillary facilities that result in temporary disturbance	—	Yes
Overland drive and crush – temporary use [3]	—	Yes
Temporary access road (Access Road Type 5)	—	Yes
Turnout areas	—	Yes
Turning Radii	—	Yes
Permanent structure area	Yes	—
Series compensation stations	Yes	—

Project Facility Types	Permanent Use Areas	Temporary Use Areas
Communication regeneration stations	Yes	—
Other ancillary facilities that result in permanent disturbance	Yes	—
Permanent access roads (Access Road Types 1, 2, 3, [3] and 4 [4])	Yes	—

1. Structure work areas include cranes pads and will be reclaimed and reseeded by the Construction Contractor(s) but will maintain a grade that a crane can set up on for future use during operation and maintenance activities.
2. Expanded limits of disturbance are Project facility disturbance areas where the typical Project facility limits of disturbance requires expansion, due primarily to steep terrain. Refer to Appendix B4: Project Facilities and Construction Plan.
3. Type 3 access road disturbance outside of the required Company road construction standard minimum travel surface of 14 feet will be reclaimed by the Construction Contractor(s) in accordance with this Plan.
4. Overland drive and crush disturbances may require additional reclamation actions based on the level of impact to aboveground vegetation and the level of compaction created from repetitive use, including overseeding and decompaction.

4 RECLAMATION ACTIONS

Reclamation actions are physical treatments and activities that can occur throughout each phase of the Project and are specific to the unique combination of the existing vegetation community and disturbance type(s) present at a given Project facility. These reclamation actions are designed to 1) facilitate resource protection during construction, 2) support the recovery of areas temporarily disturbed by Project construction and operation and maintenance activities, and 3) promote the reestablishment of vegetation communities with species composition cover and diversity to preconstruction conditions. The following sections detail how reclamation actions should be implemented by the Construction Contractor(s), or the Company if applicable. This plan will be updated, as applicable, as specific measures are developed to reduce impacts along with the terms and conditions (stipulations) of the ROW grant and special use permit.

4.1 Preconstruction Site Preparation

4.1.1 Weed Management

Refer to POD Appendix C2: Weed Management Plan for 1) specific preconstruction measures for areas where noxious weeds have been identified and 2) measures to prevent the spread of noxious weeds during construction and minimize impacts on sensitive plants. When weed control measures have been implemented by the Construction Contractor(s) during the preconstruction phase, subsequent actions for right-of-way (ROW) preparation may proceed. Additional control of noxious weeds and other invasive plant species of concern will continue during operation and maintenance consistent with the goals and objectives identified in POD Appendix C2: Weed Management Plan.

4.1.2 Measures for Overland Drive and Crush Disturbance Areas

In areas of overland drive and crush, vegetation will be crushed but not cut or removed by the Construction Contractor(s). Soil compaction will be minimal, and soils will not be salvaged or redistributed. However, depending on the level of disturbance, some decompaction, scarification, or seedbed preparation may be required (see Section 4.2.1 for details).

Overland drive and crush access roads are included and defined as part of POD Appendix B3: Traffic and Transportation Management Plan for the design of Type 4 access roads. Although the Project design does not include any Type 4 roads, it is possible that the Construction Contractor(s) may utilize these types of access roads during construction, as applicable, through the variance request process.

4.1.3 Measures for Overland Clear and Cut Disturbance Areas

Within clear and cut disturbance areas, vegetation will be removed but topsoil will remain relatively intact (i.e., not salvaged). Topsoil and subsoil management will retain soil resources and properties of individual soil horizons to ensure effective reestablishment of native plant communities. Topsoil will be decompacted or scarified to an appropriate depth during postconstruction seedbed preparation (see Section 4.2.1 for details). In these areas, dead or cut plant material and rock materials are to be temporarily set aside during ROW preparation and they may be shredded or otherwise placed on the soil surface (after construction) to increase fertility, provide microclimates for seeds to germinate, and stabilize soil. Large rocks and boulders also will be moved to the side of the work area or will be removed if necessary and stockpiled within the disturbance area to the extent practicable so that they may be placed back on the soil surface after construction. Care will be taken to prevent the disturbance of the natural patina or desert varnish of rocks. Rocks over 6 inches in diameter can be removed and stockpiled outside the disturbance areas but within the ROW to be put back later. If an outcrop of boulders will be disturbed, some specimens may be windrowed as recommended by the Construction Contractor(s) and approved by the appropriate federal land management agency or landowner. Previously stockpiled large rocks and boulders may be used to control access with approval by the appropriate federal land management agency or landowner as described in Section 4.2.1.8. In vegetation communities with high mulch density, the removal of excess mulch to a location off-site will be arranged after replacement quantities have been determined in coordination with the compliance inspection contractor (CIC). Temporary storage areas of vertical mulch will be located within the ROW.

POD Appendix C7: Erosion, Dust Control, and Air Quality Plan will incorporate applicable erosion, dust control, and air quality measures for areas of overland clear and cut disturbance as well as POD Appendix C10: Stormwater Pollution Prevention Management Plan for applicable measure for waterways.

4.1.4 Measures for Grading and Excavation Disturbance Areas

The Construction Contractor(s) or the Company, as applicable, will minimize grading and excavation disturbance to those areas where it is required for construction and operation and maintenance activities. Prior to grading and excavation, materials including dead plants, cut plants, and rocks, are to be temporarily set aside during ROW preparation so they may be shredded or otherwise placed on the soil surface (after construction) to increase fertility, provide microclimates for seeds to germinate, and stabilize soil. Large rocks and boulders will be moved aside or removed if necessary and stockpiled in previously disturbed areas so that they may be placed back on the soil surface after construction. Care will be taken to prevent the disturbance of the natural patina or desert varnish of these rocks. Rocks over 6 inches in diameter can be removed and stockpiled outside the disturbance areas but within the ROW to be put back later. If an outcrop of boulders will be disturbed, some specimens may be windrowed as recommended by the Construction Contractor(s) and approved by the appropriate federal land management agency or landowner. In vegetation communities with high mulch density, the removal of excess mulch to a location off-site will be arranged after replacement quantities have been determined in coordination with the CIC. To the extent practicable, vertical mulch will be stored within the ROW on top of temporary topsoil stockpiles to mitigate erosion and loss of topsoil resources.

POD Appendix C7: Erosion, Dust Control, and Air Quality Plan will include applicable measures to reduce impacts from grading and excavation disturbance.

4.1.4.1 Measures for Topsoil Salvage and Handling

For areas where grading and excavation activities are necessary, the Construction Contractor(s), or the Company if applicable, must manage the topsoil appropriately to maintain the biological, chemical, and physical properties of the topsoil and subsoil layers to support the establishment and long-term survival of native plant communities. Seedbanks of native plants and other critical soil resources are generally located in the topsoil. Maintaining topsoil integrity, as well as native seedbanks, will facilitate the reclamation of disturbed areas. Topsoil salvage will be performed prior to construction activities and the equipment used for salvage will generally be determined by the terrain and extent of topsoil salvage. In flat areas, topsoil salvage will typically be conducted with a blade, unless in tight extents/areas where a skid steer may be more applicable. In steeper terrain, a track hoe is typically used, unless other equipment is more suitable.

Topsoil segregation includes the separation of topsoil from subsoil. Topsoil segregation will be performed to preserve soil organic material and seeds of plants growing on the site in areas where earthworks will cause disturbance to vegetation and surface soils. The Construction Contractor(s) will conduct topsoil segregation, with topsoil set aside within approved Project disturbance limits, for postconstruction replacement. To the extent practicable, vegetation will be placed on top of topsoil stockpiles as vertical mulch to prevent erosion. Disturbed subsoils can be used as fill consistent with the direction provided in POD Appendix B4: Project Construction Plan or stockpiled for reclamation efforts. In compliance with weed management requirements, during surface disturbance activities equipment will be washed when leaving areas with noxious weeds to prevent their spread (refer to POD Appendix C2: Weed Management Plan).

To decrease the loss of topsoil and mixing with subsoil horizons, topsoil will be salvaged based on topsoil depth. In disturbance areas where the average topsoil depth is greater than 6 inches, the upper 6 inches of topsoil will be salvaged. In disturbance areas where the average topsoil depth is less than 6 inches, the upper 4 inches of topsoil will be salvaged or any depths within the upper 6 inches of a restrictive soil layer (e.g., a hardpan). In disturbance areas with severe chemical limitations such as high salt content in saline soils, the upper 4 inches of topsoil will be salvaged. In these areas, additional measures will be implemented to avoid the movement and mixing of salts. Flagging, consistent with POD Appendix B2: Flagging, Fencing, and Signage Plan, will be used to indicate a sensitive environmental area and identify work areas with limiting soils (including saline and shallow soils).

In the event of variable topsoil depth(s) or topsoil anomalies (e.g., variable depth to bedrock, increased rock fragments, other soil constraints) the CIC will be notified, and the topsoil anomalies noted.

To reduce mixing topsoil with subsoil, in disturbance areas where the topsoil depth is greater than 6 inches, topsoil will generally not be salvaged to the next soil horizon. However, the biological, chemical, and physical properties of the topsoil may extend below the topsoil horizon. Consequently, the Construction Contractor(s) may select to remove some additional topsoil for use in reclamation and revegetation establishment efforts. Topsoil salvaged from permanent Project facilities will be a surplus of topsoil and will also be re-spread and used for reclamation.

When performing topsoil stripping, the Construction Contractor(s) will set the stripping equipment to strip topsoil to the salvaged depth described above. Due to terrain features, the equipment that will be used will have a tolerance of ± 2 to 3 inches. Stripped topsoil will be stored in stockpiles within approved Project limits of disturbance. Topsoil will not be stockpiled adjacent to subsoil to avoid the misidentification and/or mixing of soils, as practicable. Stockpiles will be protected from erosion, degradation, contamination, and inadvertent use as fill by implementing appropriate measures including signage (see POD Appendix B2: Flagging, Fencing, and Signage Plan).

Where preconstruction surveys have identified noxious or invasive weed species infestations, as described in POD Appendix C2: Weed Management Plan and identified in POD Appendix A: Detailed Route Alignment Figures, topsoil and other soils removed from those areas will be placed next to the infested areas and clearly identified as coming from an infested area. The movement of stockpiled vegetation and salvaged topsoil will be limited to minimize the transport of soil-borne noxious weed seeds, roots, or rhizomes and it will be marked as containing noxious weed materials to avoid mixing it with certified weed-free soil. Topsoil will be returned to the area it was taken from and will not be spread in adjacent areas.

In addition to the procedures identified above, the following best management practices pertaining to topsoil handling will be applied:

- Ridge (roughen) topsoil stockpiles to maximize surface area.
- Apply certified weed-free mulch and/or soil tackifiers to assist in mitigating stockpile wind erosion and contribute organic materials.
- As necessary, rip and aerate prior to mulching.
- As necessary, apply certified weed-free wood and straw to improve soil aggregation, increase porosity and permeability, and improve aeration and drainage, for stockpiles stored for more than 2 years.
- When practicable, use growth and till cycles to maintain biological activity, reduce compaction, and incorporate native organic matter and seed sources in soil stockpiles that are stored for more than two years.
- Long-term stockpiles (> 2 years) will be managed with appropriate treatments such as tracking, furrowing, and watering to prevent wind erosion. Seeding with selected seed mixes is an additional measure to further stabilize topsoil and maintain biological activity in long-term stockpiles and will be used, as needed.
- Trap moisture during winter months through the use of snow fences, if appropriate.
- During topsoil salvage, incorporate native vegetation as vertical mulch into salvaged topsoil to include organic matter and maintain native seedbank.
- Locate stockpiles within disturbed areas to reduce additional surface disturbance to native topsoil.

4.1.4.2 Measures for Subsoil Salvage and Handling (if applicable)

Soils collected below the stripped topsoil will be handled as subsoil. Subsoil characteristics generally have a weak effect on vegetation establishment. Therefore, in coordination with the CIC and/or the appropriate federal land management agency, the application of subsoil as subsurface fill from one disturbance area to another may occur in specific areas. Subsoils can be used as fill consistent with the direction provided in Appendix B4: Project Construction Plan.

Subsoil storage may be necessary during construction activities. All subsoil will be stored within approved Project limits of disturbance. Subsoil will not be stockpiled adjacent to topsoil to avoid the misidentification and/or mixing of soils, as practicable. The Construction Contractor(s) will follow the steps and direction described in Appendix B4: Project Construction Plan to manage the storage of subsoils.

4.1.4.3 Soil Management Measures in Cultivated Agricultural Areas (if applicable)

The reclamation of areas being cultivated for agricultural uses will require coordination directly with the landowner. Measures to reduce impacts to cultivated areas will be developed and incorporated into Project plans as applicable.

4.1.4.4 Soil Management Measures Near Riparian Areas (if applicable)

Reclamation near riparian areas will require coordination directly with the BLM, and/or Forest Service (as appropriate based on land ownership). Measures to reduce impacts to riparian areas will be developed and incorporated into Project plans as applicable.

4.2 Postconstruction Reclamation Actions

4.2.1 Postconstruction Reclamation Measures

Postconstruction reclamation actions occur after Project construction is completed and primarily focus on stabilizing permanent use areas and reclaiming temporary use areas to support vegetation reestablishment. Postconstruction reclamation actions are defined and organized below by their sequence of implementation.

Seeding and seedbed preparation, including decompaction and/or surface scarification, will occur for all temporary Project facilities and permanent Project facilities that have a reclamation component, except in areas with minimal overland travel. Within overland travel areas with minimal vegetation disturbance, little to no reclamation, decompaction, or seeding activities will be required and vegetation and soils will be left to recover naturally.

4.2.1.1 Earthwork, Decompaction, and Seed Bed Preparation

Earthwork, decompaction, and seedbed activities may include recontouring, ripping and scarifying, roughening and imprinting, and applying appropriate soil erosion measures in conformance with POD Appendix C10: Stormwater Pollution Prevention Management Plan. Earthmoving equipment will replace removed material as close to the preconstruction contour as possible to reclaim the visual quality and provide stability to the slope. Soil decompaction, if required, may include ripping or surface scarification to allow permeation of water into the ground. Erosion-control measures such as water bars and erosion control blankets may be installed, as determined by the Construction Contractor(s) or CIC and used in conformance with POD Appendix C10: Stormwater Pollution Prevention Management Plan.

The level of decompaction and scarification will depend on the disturbance type and soil handling procedures. Topsoil will be scarified within areas of 1) overland clear and cut and 2) any areas of drive and crush that require seedbed preparation, as needed based on the level of disturbance and compaction. The depth of scarification will be appropriate for the given disturbance type and soil conditions and will avoid the mixing of subsoil horizon(s) with topsoil horizon(s). Areas with subsoil compaction will be scarified to a depth of no more than 16 inches. For areas with minimal disturbance where the topsoil only needs to be scarified, the maximum depth will be 4 inches.

Within areas of grading or excavation, recontouring will return surfaces to natural terrain contours, to the extent practicable, while also supporting maintenance activities. Recontouring includes burying subsurface soils excavated during construction activities and regrading fill areas. Excess subsoils can be used as fill consistent with the direction provided in POD Appendix B4: Project Construction Plan before re-spreading topsoil. Subsoils will not be spread outside of flagged construction areas and will be

restricted to areas of permanent disturbance, if possible. Excessive subsoils that cannot be reasonably spread will be removed to an approved off-site disposal facility.

Graded and excavated areas where compaction or detrimental puddling occurs will be decompacted to a relative average density comparable to undisturbed adjacent material before re-spreading topsoil. The compacted surface will be ripped or scarified to a depth sufficient to achieve up to 16 inches of subsoil decompaction or to the depth of bedrock, as appropriate, and will retain a 12-inch buffer from existing vegetation. The depth and area of compaction and/or puddling relief will depend on site-specific conditions. Decompaction or ripping will be conducted to avoid "corn rows." Cross-ripping is preferable, and care will be taken to prevent inverting the soil horizons and preserve existing vegetation. Deep, sandy soils do not need to be decompacted and will not be ripped. Decompaction of highly erodible soils will be coordinated with the CIC and will include measures to prevent the loss of soil due to erosion. Once decompaction has occurred, topsoil will be re-spread along the surfaces, as appropriate.

Imprinting, pitting, and/or pockmarking will be used to prepare seedbed surfaces, which are generally done concurrently with seeding. Imprinting, pitting, and pockmarking will be done using a tractor to pull a large, heavy (often water-filled) cylinder with metal attached to the surface to create indentations in the ground that will collect runoff and precipitation and possibly organic material and plant seed. The practice creates a microhabitat for plant establishment on soils that are difficult to revegetate, such as clays, or on slopes that are too steep to rip or scarify.

4.2.1.2 Wet Soil Conditions

Wet and muddy conditions require special considerations for construction and postconstruction activities. Construction activities in the affected area will be halted until drier conditions can be achieved or proper equipment pads and matting are in place to prevent rutting and compaction of soils. Construction equipment access within wet and muddy soils will be limited to the minimum area feasible; topsoil will not be removed and separated in wet or saturated areas; subsurface soils will be stabilized with a combination of one or more of the following:

- perform grading to dewater problem areas,
- use weight dispersion mats, and
- maintain erosion control measures, such as surface drilling and back dragging.

Measures to reduce impacts from earthwork activities will be developed and incorporated into Project plans as applicable.

4.2.1.3 Noxious Weed Management

Refer to POD Appendix C2: Weed Management Plan (as appropriate) for specific measures to be implemented by the Construction Contractor(s), or the Company if applicable, where noxious weeds and other invasive species of concern have been identified as well as preventive measures to be implemented to prevent the spread of noxious weeds and other invasive weed species of concern after completion of construction. This includes postconstruction monitoring and treatment, as necessary. Postconstruction reclamation and monitoring will occur concurrent with weed management practices and monitoring as outlined in POD Appendix C2: Weed Management Plan (as appropriate).

4.2.1.4 Alternative Seeding

Alternative seeding is employed to establish ground cover in disturbed or weed infested areas by seeding annual grasses and/or forbs or other alternative seed mixes and will only be necessary for sites that will remain exposed without seeding treatment for 12 months or longer. The annual grasses are usually sterile rye or oats because the regeneration of non-natives is not desirable. Annual species applied in alternative seeding provide short-term soil cover, stabilization, and a source of organic litter until other vegetation can become established. Similar to regular seeding, alternative seeding mix compositions and seeding methods, amendments, and certified weed-free mulches will be determined prior to application through coordination with the applicable federal land management agency.

4.2.1.5 Reseeding

All temporary Project facilities and permanent Project facilities that have a reclamation component will be reseeded. Reseeding involves planting new seed of desired plant species in affected areas. Seed mixes of native species, as feasible, will be identified in in coordination with the federal land management agency or landowner and will be best suited for the existing vegetation communities. All seed used will be certified weed free and based on market availability. Alternative species not included in the seed mix may be identified in coordination with the federal land management agency's Authorized Officer or landowner. If approved by the federal land management agency or landowner, the alternative species will be used by the Construction Contractor(s). Any special measures required for sensitive or special-status species will be addressed through measures described in POD Appendix C1: Biological Resources Conservation Plan.

Seeding and seedbed preparation, including decompaction and/or surface scarification, will occur for all temporary Project facilities and permanent Project facilities that have a reclamation component. Within overland travel areas with minimal vegetation and soil disturbance, little to no reclamation, decompaction, or seeding activities will be required and vegetation and soils will be left to recover naturally.

On lands managed by the Fillmore Field Office, all disturbed lands that are not too steep or rocky shall be reseeded with a rangeland drill to maximize the chances of reseeding success. The rangeland drill will provide proper seed burial depths, deep furrows for protection of new seedlings, and rough soil microtopography. Areas that are too steep or rocky for rangeland drills will be broadcast seeded and harrowed to cover/plant the seeds.

For Project facilities that are located on lands owned or managed by entities other than the BLM or Forest Service, the appropriate landowner/manager will determine the seed mix if different than the BLM or Forest Service approved seed mix.

Project facilities that have split landowners/land managers may require separate seed mixes if a single seed mix cannot be agreed upon. The preference will be to use the applicable approved seed mixes for Project facilities on corresponding federal ownership (i.e., BLM or Forest Service) with split land ownership/management.

Reseeding will be conducted at the first appropriate time for the seed mix after completion of construction. Seeding methods and the time frame for seeding will be determined by the Construction Contractor(s) but will not occur when there is snow on the ground.

In areas subject to high winds, to promote germination and prevent seed loss, seedbed preparation will include roughening of the surface. Furrows will be created by the rangeland drill to provide a roughened surface post seeding. To the extent practicable, furrows would be made perpendicular to the prevailing wind direction in high wind areas.

4.2.1.6 Replacement of Vertical Mulch

For cleared areas, vegetation that was windrowed to the outside of the disturbance boundary will be replaced back onto the site. Vertical mulch/slash will be applied in a way that it is not completely in contact with the soil surface; rather, parts of the mulch will rise above the soil surface. Vertical mulch/slash should be placed randomly and in accordance with POD Appendix C4: Vegetation Management Plan. All vertical mulch (including large rocks and boulders, as described below) will be scattered on temporary disturbance areas in a natural manner that is consistent with agency visual resource management objectives. Certified weed-free straw mulch may be used in addition to or as an alternative to vertical mulch when vertical mulch is not available or will not provide adequate coverage in areas that will not be seeded.

4.2.1.7 Replacement of Rocks and Permeon Application (if applicable)

Boulder outcrops that were windrowed will be replaced by the Construction Contractor(s) in a manner similar to preconstruction conditions, where possible. Large rocks and boulders removed to the side of the disturbance will be placed back with the darkened side facing up in a natural-appearing pattern. Permeon (or federal land management agency–approved equal) may be applied to rocks to enhance their natural patina/desert varnish or recolor scrapes or tool marks on boulders when necessary. Permeon is an artificial patina/desert varnish that reproduces natural colors similar in appearance to aged patina/desert varnish in a short period of time. It is nontoxic to plants and animals. In areas identified as having high visual sensitivity, and depending on the soil type, application of Permeon (or federal land management agency–approved equal) by the Construction Contractor(s), or the Company if applicable, may be required if the soil surface contrast is high due to cut slopes and aged rocks. Application rates and color tint will be site-specific and may require both a blanket application and spot treatments depending on the adjacent natural landscape. The product is applied via backpacks or a truck-mounted sprayer if access to the area adjacent to the reclamation site remains open. Product application may be necessary for large boulders that have been windrowed, and application will occur after they have been replaced, including any tool marks on boulders, as recommended by the Construction Contractor(s). Application rates and techniques will be determined by the Construction Contractor(s).

4.2.1.8 Supplemental Mulch

Mulch usually consists of shredded plant material or straw but also includes wood fiber, paper mulch, or biodegradable erosion mats. Certified weed-free straw mulch or native haygrass mulching/crimping may be used in addition to or as an alternative to vertical mulch, and parabolic ripping during mulching activities will not be implemented on the Project. Hydroseeding or the use of wood fiber, tackifiers, or erosion blankets may be a less expensive alternative to straw mulch in areas that require seeding. The quantity of mulch to be used will be recommended by the Construction Contractor(s) and approved by the land management agency for non-private lands based on site conditions and will be installed according to the manufacturer's specifications. Straw mulch and other alternative mulches will be certified free of weeds, mold, and fungi, as specified in the POD Appendix C2: Weed Management Plan. Straw mulch will contain fibers long enough to facilitate crimping and provide the greatest cover. Hay, straw, or mulch used on BLM-administered land in Utah will be noxious weed-free, as certified by the land managing agency; in the event that noxious weed-free hay, straw or mulch is not available, approval of sources will be requested from the Authorized Officer. On National Forest System land, any straw, hay, mulch, gravel, forage, seed, and other materials must be certified noxious weed free. . Other techniques, such as the use of Biochar, may be used if approved by the land management agency.

4.2.1.9 Access Control, Off-Highway Vehicle Deterrents, and Signage

Operation of off-highway vehicles (OHVs) by the recreating public, hunters or other public land users in areas undergoing Project reclamation can cause mechanical damage to stabilization structures and soils and mortality to plants. Access by such vehicles will be limited in areas of reclamation. Measures to minimize or eliminate access will be developed, as appropriate. These measures may include the installation of signs, fences with latching/locking gates, selectively placed boulders, and/or vertical mulch of heavy woody material. Specific areas of potential access to the ROW by OHVs will be identified, and measures to minimize or eliminate access will be identified on a site-specific basis, as appropriate. The development of site-specific OHV deterrents will be determined on a case-by-case basis in coordination between the appropriate federal land management agency, Company, and the Construction Contractor(s) approved by the federal land management agency.

Reclamation areas will require informational signs pertaining to reclamation efforts to prevent further disturbance in these recovering areas. All reclamation areas will have signs installed at appropriate intervals determined by the Construction Contractor(s) to deter vehicular damage. Sign locations will be provided by the Construction Contractor(s) to the appropriate federal land management agency following completion of postconstruction reclamation procedures and prior to the initiation of reclamation monitoring. Signs will be comprised of material sufficient to last up to 5 years and maintained, replaced as necessary, and removed by the Construction Contractor(s), or the Company if applicable, upon site release of individual Project facilities.

4.2.2 Postconstruction Measures for Overland Travel

Following the use of areas where overland drive and crush or overland clear and cut was implemented, site conditions will be evaluated for the implementation of any reclamation actions, if needed. Actions may include, but are not limited to, decompaction and/or surface scarification and reseeding. Applicable postconstruction measures, as described in Section 4.2.1, will be applied to facilitate reclamation of overland drive and crush areas, where appropriate.

Seeding and seedbed preparation, including decompaction and/or surface scarification, will occur for all overland travel temporary Project facilities and all overland travel permanent Project facilities that have a reclamation component, except in areas with minimal overland travel. Within overland travel areas with minimal vegetation and soil disturbance, no reclamation, decompaction, or seeding activities will be required and vegetation and soils will be left to recover naturally.

4.2.3 Postconstruction Measures for Grading and Excavation

Following final grading, stockpiled topsoil will be re-spread on all temporary Project facilities and permanent Project facilities that have a reclamation component that are suitable for backfill such as areas that do not have soil aggregate or rock stabilization features after final grading. Topsoil will be returned to the same disturbance area it was stripped from, but in the event that topsoil is needed for additional reclamation efforts across other disturbance areas, topsoil compatibility will be determined in coordination with the applicable land management agency before the topsoil is redistributed.

5 RECLAMATION MONITORING

The purpose of reclamation monitoring is to 1) track revegetation success after reclamation implementation and 2) inform the third-party reclamation monitoring contractor, the Company, the Construction Contractor(s), and the federal land management agency in the need for additional reclamation treatments or adaptive management strategies (Section 6). Monitoring data will specifically be used to document trends toward reclamation success standards (Section 5.4) and eventual site release (Section 8).

Reclamation monitoring will be conducted by the Construction Contractor(s) and a third-party reclamation monitoring contractor on an annual basis for 5 years following the completion of construction and the implementation of postconstruction reclamation actions, or until areas achieve reclamation success, whichever occurs first. In addition to reclamation monitoring, annual reporting (Section 5.5) and the identification of needs for adaptive management will be completed by a Company-funded third-party reclamation monitoring contractor, in coordination with the appropriate federal land management agency and the Company (see Section 6). The first annual monitoring event will occur during the first growing season after postconstruction reclamation actions have been completed.

5.1 Selection of Reclamation Monitoring Locations

Reclamation monitoring will be conducted to capture temporal and spatial variability within the Project area. Monitoring locations will be stratified and distributed by disturbance type and will be paired with established reference site locations to the extent practicable. This will include biological variation such as vegetation communities and soil types. The number of reclamation monitoring locations will be determined by the Construction Contractor(s) in coordination with the CIC and the appropriate federal agency's Authorized Officer. The level of effort will ensure that the quantitative data collected will inform the evaluation against the reclamation success standards, as defined in Section 5.4.2.

5.2 Selection of Pre-disturbance Reference Sites

Pre-disturbance reference site selection and characterization is an important process for reclamation monitoring because reference sites provide necessary baseline vegetation information to 1) evaluate the effectiveness of revegetation activities in reclaimed sites and 2) assess trends toward qualitative and quantitative reclamation success standards. Reference sites on National Forest System land will be field inspected and confirmed by Forest Service personnel prior to the commencement of construction. If deemed necessary by the third-party reclamation monitoring contractor performing surveys, additional reference sites may be established in undisturbed areas (after construction) to more accurately capture vegetation variability for a given vegetation community and disturbance area.

As described in Section 6, if through the adaptive management process some Project facilities are determined to be incapable of meeting reclamation success standards, the BLM (or applicable land management agency) may adjust success standards for those facilities to enable site release. If adjacent land uses are hindering reclamation success (e.g., adjacent disturbance increasing erosion or spread of noxious weeds), the Company will not be required to conduct remedial actions and/or monitoring for more than 3 years in those areas. The Company and the BLM or landowner will coordinate to make this determination. If a site is disturbed (for maintenance or other operational activities) after achieving site release, additional monitoring may be required to assess revegetation efforts (for 5 years or until areas achieve reclamation success, whichever occurs first).

5.3 Monitoring Methodology

Monitoring surveys are assessment methods to document overall revegetation recovery across the entire Project footprint. Monitoring surveys will be used by the third-party reclamation monitoring contractor in combination with site monitoring surveys, which record revegetation conditions within select Project facilities to be reclaimed, to evaluate revegetation conditions, trends toward reclamation success standards (Section 5.4), and potential site release. Monitoring surveys will occur during the period of peak vegetation production during each year throughout the Project as determined on a site-specific basis considering the location, elevation, and precipitation zones at each monitoring site. The timing selected for some monitoring locations may be determined based on the blooming season of a focal species.

5.3.1 Route Monitoring Surveys

Route monitoring surveys will be rapid assessment methods to document overall revegetation recovery across the entire Project footprint. This survey will include a general field review of the entire transmission line layout within areas accessible by vehicle. Areas inaccessible by vehicle but undergoing revegetation would be accessed by foot. The survey will include the following observations to assess qualitative metrics and quantitative standards:

- **Identification of problem areas**: Areas of 1) noxious and invasive weed populations, 2) low germination or establishment of native species, and/or 3) significantly eroded soils will be identified and recorded via a global positioning system (GPS) unit and photo documented.
- **Photo points and qualitative site characteristics**: Representative photographs will be taken at individual Project facilities or groups of Project facilities to document the characteristics listed below. Locations will be recorded via GPS.
- Presence and establishment of self-sustaining and resilient native plant communities, as evidenced by morphological features (e.g., average height and size of forbs, grasses, shrubs) and successful reproduction (e.g., presence of flowers, seed heads, and/or seeds)
- Semi-quantitative visual estimates of cover by native forbs, grasses, and shrubs
- Evidence of soil erosion will be documented
- Semi-quantitative visual estimates of cover by noxious or invasive weed species

A protocol for taking photographs and a standardized data-recording form will be developed by the third-party reclamation monitoring contractor and approved by the applicable federal land management agency to ensure consistency of monitoring. Semi-quantitative cover data will be used to determine whether an individual Project facility or group of Project facilities are meeting the quantitative standards detailed in Section 5.4.2 or if additional adaptive management strategies need to be considered.

5.3.2 Site Monitoring Surveys

Site monitoring surveys will be implemented to record revegetation conditions within select Project facilities. Site attributes will be evaluated using established monitoring techniques (Daubenmire 1959; Herrick et al. 2017). The data collected will support a robust evaluation of reclamation efforts through the assessment of site stabilization, native vegetation establishment, quantification of vegetation composition, and assessment of ecological successional trajectories of reclaimed sites against conditions in reference sites.

In addition to data collected per the methods described in Sections 5.3.2.1 and 5.3.2.2, the following information will be collected at each quantitative monitoring location during each annual survey:

- GPS location of transect origin.
- Five photographs will be taken, following modified photo point methods described by Herrick et al. (2017). A representative transect photograph will be captured at the origin (0 m) of each vegetation transect. Four additional landscape photographs will be established for each cardinal direction (North – 0o, East – 90o, South – 180o, and West – 270o).
- Presence and establishment of self-sustaining and resilient native plant communities, as evidenced by morphological features (e.g., estimated height and size of forbs, grasses, shrubs) and successful reproduction (e.g., presence of flowers, seed heads and/or seeds).
- Evidence of soil erosion will be documented.
- Presence of noxious weeds and other invasive plant species of concern will be documented.

A protocol for taking photographs and a standardized data-recording form (for the methods described below) will be developed by the third-party reclamation monitoring contractor and approved by the applicable federal land management agency.

5.3.3 Monitoring Survey Timing, Location and Metrics

The timing, location, and metrics for surveys are detailed in Table 2.

Route monitoring surveys will be completed during Years 1–5 (Section 5.3.1) and will assess conditions for all reclaimed Project facilities. Site monitoring surveys (conducted at discrete survey locations [referred to as reclamation monitoring locations]) will include quadrat sampling surveys during Years 1–2 (Section 5.3.3.1) and LPI surveys during Years 3–5 (Section 5.3.2.2). Both route and site monitoring surveys will assess qualitative metrics (Section 5.4.1). Survey results will be used to assess progress toward reclamation success (i.e., achieving quantitative standards [Section 5.4.2]) and potential site release (see Section 7), which will be detailed in the Annual Reclamation Monitoring Report (see Section 5.5) to be prepared by the third-party reclamation monitoring contractor responsible for reclamation monitoring. If monitoring surveys indicate that the reclamation for any reclaimed Project facility is not on a trajectory to meet the reclamation success standards, adaptive management interventions may be identified and implemented (see Section 6).

Table 2. Plant Community Data to be Collected During a 5-Year Reclamation Monitoring Cycle

Time after Reclamation	Survey Method	Data Type	Survey Locations	Attribute Measured	Monitoring Metrics
Years 1–5	Route monitoring	Semi-quantitative and qualitative	Entire alignment including all Project facilities (accessible by vehicle)	Seedling emergence (grasses, forbs, and shrubs); native vegetation cover; noxious and invasive weed species occurrences; evidence of erosion	Early stage of community development; native vegetation establishment (meeting qualitative assessment metrics during and after Year 2); potential for noxious and invasive weed species establishment; erosion issues; identify adaptive management measures (if needed); community trajectory toward quantitative reclamation success standards and potential site release
Years 1–2	Site monitoring (quadrat sampling)	Quantitative and qualitative	Reclamation monitoring locations	Seedling emergence (grasses, forbs, and shrubs); native vegetation cover; noxious and invasive weed species occurrences; evidence of erosion	Early stage of community development; native vegetation establishment (meeting qualitative assessment metrics); potential for noxious and invasive weed species establishment; erosion issues; identify adaptive management measures (if needed)
Years 3–5	Site monitoring (line point intercept [LPI] and quadrat sampling)	Quantitative and qualitative	Reclamation monitoring locations	Vegetative cover (basal and foliar cover); community composition, richness, species dominance; noxious and invasive weed species occurrences; evidence of erosion	Community trajectory toward quantitative reclamation success standards and potential site release; identify adaptive management measures (if needed)

5.3.3.1 Years 1–2 (Quadrat Method)

During Years 1–2 after reclamation, quantitative monitoring surveys will assess early plant community development, site stabilization, seed bed condition, species composition, and noxious and invasive weed species occurrences through quantitative quadrat sampling. A 100-meter (m) transect line will be located randomly within the selected Project facility and 30 sampling quadrats (50 centimeters (cm) by 50 cm) spaced at 10 m apart along the transect line will be used to quantify seedling establishment and density (individuals/square meter). Daubenmire cover classes (class 1 = 0%–5%, 2 = 5%–25%, 3 = 25%–50%, 4 = 50%–75%, 5 = 75%–95%, 6 = 95%–100%) will be used to quantify community composition based on percent foliar cover of native functional groups (e.g., native grasses, forbs, and shrubs) (Daubenmire 1959). Detection and percent foliar cover (by cover class) of noxious and invasive weed species will also be recorded to further inform the planning and development of weed control methods. Photographs of each sampling quadrat will be taken to document vegetation establishment patterns at reclaimed sites.

Quadrat data will be compiled (from all 10 quadrats at a given Project facility) to calculate average foliar cover by native and noxious/invasive functional groups (grasses, forbs, and shrubs) and overall species occurrence. The average percent dominance by native functional groups will also be calculated.

5.3.3.2 Years 3–5 (Line Point Intercept Method and Quadrat Method)

During Years 3–5 after reclamation, quantitative monitoring surveys will assess trends toward reclamation success standards through direct comparison of conditions within reclaimed Project facilities vs. conditions in undisturbed reference sites. Quantitative surveys will include an inventory of native plant species, canopy and basal vegetative cover estimates, ground cover estimates, dominant plant species, and shrub canopy intercepts. A 100-m LPI transect line will be located randomly within in the selected Project facility. As possible, 100-m LPI transects lines will be established in the same locations as the quadrat sampling transects. When such placement is not possible, the LPI transect will be randomly located within the Project facility. Top canopy, sub-canopy, basal, and ground cover will be recorded per species at 1-m intervals along the vegetation sampling line to estimate percent cover of native and invasive/noxious grasses, shrubs, and forbs (Herrick et al. 2017). Photographs of the surrounding vegetation and landscape will also be collected at the start, mid-point and end of each transect line.

LPI data will be compiled to calculate average 1) basal, and 2) foliar cover by native and invasive/noxious functional groups (grasses, forbs, and shrubs). Percent dominance by native functional groups will also be calculated. These cover and dominance calculations will be used to determine whether an individual Project facility or group of Project facilities meet the quantitative success metrics detailed in Section 5.4.2.

Quadrat sampling is described in Section 5.3.3.1.

5.4 Reclamation Success Standards

Reclamation success standards will be used by the third-party reclamation monitoring contractor, the Construction Contractor(s), the Company, and the federal land management agency to evaluate success of vegetation re-establishment by comparing vegetation attributes of reclaimed sites against conditions in undisturbed reference sites. These success standards will be used to qualitatively assess the effectiveness of reclamation implementation and to quantitatively evaluate the level of reclamation success for site release.

5.4.1 Qualitative Standards

A qualitative assessment will be used to evaluate the overall effectiveness of reclamation and revegetation efforts, which will be tracked through both route monitoring and site monitoring surveys during all survey years. Qualitative metrics have been established to inform this assessment. If these metrics are not being met within any portion of the project by Year 3, adaptive management strategies would be identified to address the specific issues or needs for the Project facility or facilities (see Section 6). Qualitative assessment metrics include the following:

- Native vegetation is established to 1) control soil erosion and 2) resist invasion by noxious and invasive weed species; and
- A self-sustaining native vegetation community is defined as having recruitment of seedlings from the reproduction of the original seeded material.

5.4.2 Quantitative Standards

The following quantitative standards will be assessed through quantitative (site monitoring) and semi-quantitative (route monitoring) survey methods to determine if sufficient native vegetation has been established for site release:

- Established plant communities have a relatively high species diversity (e.g., either as a number of species present from each vegetation functional group or as percent of the species diversity found at reference sites). No single seeded species will have a vegetative cover that is more than 30% of the total vegetation composition in reclaimed sites, unless reference conditions exhibit greater dominance by a single species.
- Permanent vegetation establishment is determined successful when the vegetative cover (i.e., basal and/or foliar) of desirable perennial species (i.e., grasses, forbs, and shrubs) reaches at least 70 percent of the undisturbed reference site.
- Invasive plant species are a minor component of the plant community and should account for less than 5% of total plant cover, or comparable to adjacent background levels. No state-listed noxious weeds are present.
- Evidence of erosion (erosional features) is equal to or less than the surrounding area.

Reclamation monitoring success standards and desired vegetation cover metrics for each reference site are provided in Table 3.

Table 3. Reclamation Monitoring Success Standards

(to be determined through coordination with the BLM and Forest Service)

5.5 Reclamation Monitoring Report

The third-party reclamation monitoring contractor will prepare and submit a reclamation monitoring report to the Company, the applicable federal land management agency, and the Construction Contractor(s) on an annual basis for 5 years (or until these areas achieve reclamation success, whichever occurs first). The annual reclamation monitoring reports will be submitted to the Company, the applicable federal land management agency, and the Construction Contractor(s) by October 1. The federal land

management agency will complete an evaluation of the annual reclamation monitoring report by December 31 of each year and, if appropriate, approve adaptive management recommendations or determine if any other adaptive management actions will be required to be implemented by the Construction Contractor(s).

The purpose of the reclamation monitoring report is to provide a status update on progress toward meeting reclamation objectives and success standards, as described in this Plan. Recommendations will facilitate the implementation of adaptive management strategies (if needed) to address any revegetation issues or needs. The reclamation monitoring report will include, at a minimum, the following information:

- The locations of monitoring and reference sites.
- A summary of qualitative and quantitative monitoring results (community composition, including percent cover [basal, vegetative, foliar, and ground cover] by native and invasive/noxious grasses, forbs, and shrubs).
- Determination of whether Project facilities have met or are on trend towards achieving reclamation success standards.
- Potential site release of Project facilities.
- Adaptive management strategies to develop and implement remedial actions if reclamation success standards are not being met.
- Monitoring locations for noxious and invasive weed species.
- A summary of any potential conflicting land uses or other environmental limitations to reclamation. This information will also be documented in the RIF.
- Spatial data will also be provided to the applicable federal agency and the Company as a geodatabase.

6 ADAPTIVE MANAGEMENT

The reclamation actions described in this Plan will be implemented by the Company or Construction Contractor(s), as applicable, in coordination with and under the guidance of the federal land management agencies and the third-party reclamation monitoring contractor. Adjustments to actions by the Company/Construction Contractor(s) may be necessary if Project conditions change; however, any modifications to reclamation actions and associated actions will be reviewed and approved by the federal land management agency Authorized Officer or their designated representatives. This Plan is intended to provide flexibility with respect to construction and unknown constraints that may be encountered in the field. Changes to the original disturbance level or duration, previously described, will be documented by the Company/Construction Contractor(s) and the reclamation actions will be reassessed using the RIF process to ensure that appropriate reclamation actions will be implemented.

Federal land management agencies require an adaptive management approach be designed to support frequent review and feedback on the progress of reclamation measures implemented for the Project. Adaptive management greatly increases the potential for reclamation success by providing early detection of problems and the opportunity to implement remedial actions to address these problems. Effective monitoring is an essential element of adaptive management because it provides reliable feedback on the effects of reclamation actions. During the 5-year monitoring time frame, the third-party reclamation monitoring contractor may recommend adaptive management recommendations on a case-by-case basis,

where feasible, that will be submitted to the applicable federal land management agency for review and approval.

If it has been determined that adaptive measures are necessary, monitoring data (both qualitative and quantitative) will provide information on reclamation components that are deficient, such as native vegetation cover, soil erosion, soil compaction, or lack of natural surface material. Based on this information, appropriate reclamation actions may include measures such as supplemental seeding, certified weed-free mulching, and additional weed and/or erosion control measures. Recommendations also could include waiting to determine if favorable germination/establishment conditions are expected. All adaptive management actions will be subject to the review and approval by the federal land management agency in coordination with the Company.

The third-party reclamation monitoring contractor will help the Company ensure reclamation is progressing toward the success standards identified in Section 5.1. It is possible that some sites will be incapable of supporting adequate vegetation to progress toward the success standards due to conflicting land uses and environmental limitations not associated with the Project. For example, reclamation may fail in areas with open OHV access, grazing of domestic livestock, natural disasters, such as fire or flooding, and construction of other utility projects. If reclamation failure on federal land management agency lands is determined to be caused by these conditions by the third-party reclamation monitoring contractor and verified by the federal land management agency, neither the Company nor the Construction Contractor(s) will be held responsible for the continued reclamation and monitoring of these sites. Corrective actions may include temporary grazing exclusions, season of use modifications, temporary OHV closures, or blockages of roads with boulders.

7 SITE RELEASE

For the purposes of reclamation monitoring, site release is defined as the point in time when a Project facility (as defined in Section 3.2) has met its reclamation success criteria (as defined in Section 5.4) and the federal land management agency or landowner determines that no additional reclamation monitoring is required to track revegetation trends. Through the monitoring and annual reporting process (see Section 5.5), the third-party reclamation monitoring contractor will identify individual Project facilities or groups of Project facilities that meet the reclamation success standards for site release. The federal land management agency will review annual reclamation monitoring reports and may conduct site visits to make a final determination on site release for those Project facilities. The federal land management agency will document the determination of site release for applicable Project facilities in a letter to the Company. Reclamation monitoring will continue annually for 5 years following completion of construction or until areas achieve reclamation success as determined by the federal land management agency, whichever occurs first. Monitoring will identify areas not meeting success standards and coordination with the appropriate land management agency will occur for needed further reclamation efforts.

As described in Section 6, if through the adaptive management process some Project facilities are determined to be incapable of meeting reclamation success standards, the federal land management agency may adjust success standards for those Project facilities to enable site release. The federal land management agency will document the rationale for adjusting the success standards and the determination for site release in a letter to the Company.

If the federal land management agency makes the determination that adjacent or other non-Project land uses are hindering the reclamation success of specific Project facilities (which should already be documented through annual monitoring and previously addressed, if possible), the Company will not be required to conduct remedial actions and/or monitoring after completion of reclamation actions for those

Project facilities and the federal land management agency will release those sites. The Company and the federal land management agency or landowner will coordinate to make this determination.

If this determination is on federal land, the federal land management agency will document in a letter to the Company that adjacent or other non-Project land uses are hindering reclamation success and the determination that the Company will not be required to conduct remedial actions and/or monitoring for more than 3 years after completion of reclamation actions for those Project facilities. If a site is disturbed by the Company (for maintenance or other operational activities) after that site has achieved site release, additional reclamation monitoring by the Company and reclamation measures implemented by the Company may be required by the federal land management agency or the landowner to assess and facilitate revegetation efforts.

8 LITERATURE CITED

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Appendix C10. Stormwater Pollution Prevention Management Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C10. Stormwater Pollution Prevention Management Plan

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CONTENTS

Attachments

Abbreviations

BLM	Bureau of Land Management
BMP	best management practices
CIC	Compliance Inspection Contractor
CFR	Code of Federal Regulations
Company	TransCanyon, LLC
EPA	U.S. Environmental Protection Agency
Forest Service	U.S. Department of Agriculture Forest Service
NDEP	Nevada Department of Environmental Protection
NOI	notice of intent
NOT	notice of termination
NPDES	Nevada Pollutant Discharge Elimination System
Permits	Utah Pollutant Discharge Elimination System Construction General Permit for Discharges UTRC00000 and Nevada Construction Stormwater General Permit NVR100000
Plan	Stormwater Pollution Prevention Management
POD	plan of development
ROD	record of decision
ROW	right-of-way
SWPPP	Stormwater Pollution Prevention Plan
UDWQ	Utah Division of Water Quality
UPDES	Utah Pollutant Discharge Elimination System

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Stormwater Pollution Prevention Management Plan (Plan) describes the roles and responsibilities of the Company and the Construction Contractor(s) regarding preparation of the application for Utah Pollutant Discharge Elimination System (UPDES) Construction General Permit for Discharges UTRC00000 coverage and Nevada Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit NVR100000 (Permits), as well as for the Permits implementation and compliance for the Project. This Plan also identifies the selective measures related to stormwater management that are part of the Project record of decision (ROD); the Construction Contractor(s) will evaluate and determine which selective measures will be included in the stormwater pollution prevention plan (SWPPP).

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

2 PURPOSE

The purpose of this Plan is to provide direction to the Construction Contractor(s) for the development of a SWPPP. The Construction Contractor(s) will be responsible for preparing and implementing the SWPPP and obtaining coverage under the Permits. Further, the purpose of this Plan provides the Construction Contractor(s) with the stormwater management–related conservation measures required by the ROD so they can be implemented, as applicable, to prevent or minimize stormwater sediment and pollutant discharges from Project construction activities to water resources. The Construction Contractor(s) will determine which selective measures will be included in the SWPPP.

The purpose of the SWPPP is to identify and implement stormwater pollution prevention measures to reduce the quantity of impacted runoff and to deal with runoff in a manner that minimizes environmental impacts during construction of the Project. The SWPPP provides the Construction Contractor(s) with the required mechanisms and stabilization methods for reducing soil erosion and minimizing pollutants in stormwater that reach waterbodies during construction, but temporary stabilization will require regular maintenance and field inspection during construction activities to maintain effectiveness. The SWPPP will also describe the record keeping and reporting requirements for implementation of the SWPPP. The SWPPP will be a control document that the Construction Contractor(s) uses to identify potential impacts and to take corrective actions through inspections and maintenance.

3 ROLES AND RESPONSIBILITIES

The Construction Contractor(s) will be responsible for preparing the SWPPP and the application for Permit coverage to the Utah Division of Water Quality (UDWQ) and Nevada Department of Environmental Protection (NDEP) to ensure that all Permit applications and implementation requirements are met. The Construction Contractor(s) will use the preliminary SWPPPs included in Attachment A: Preliminary Stormwater Pollution Prevention Plan (Utah) and Attachment B: Preliminary Stormwater Pollution Prevention Plan (Nevada) as a template to prepare the SWPPP. The Company will be responsible for reviewing the SWPPP before the Construction Contractor(s) submit the applications for Permit coverage.

The Construction Contractor(s) will file Permit applications with the UDWQ and NDEP that includes 1) a notice of intent (NOI), 2) a SWPPP, and 3) the appropriate fee at least 30 days before the start of construction, in accordance with the Permit requirements. Coverage under the Permits will be approved by the UDWQ and NDEP before the Construction Contractor(s) begins any construction activity.

The Construction Contractor(s) will be signatory to the Permits as the operator(s). The Construction Contractor(s) must receive written notification from the UDWQ/NDEP that the Permits coverage has been granted prior to conducting construction activities. The Construction Contractor(s) is responsible for ensuring compliance with all terms and conditions of the Permits, including implementation of the SWPPP. The Construction Contractor(s) must implement the provisions of the SWPPP as written and amended, from commencement of construction activity until final stabilization is complete.

Further, the Construction Contractor(s) will be responsible for the Permits requirement to post a notice of Permit coverage in a conspicuous, safe, and publicly accessible place. The Permits includes specific posting requirements for the Construction Contractor(s) to implement.

4 REGULATORY FRAMEWORK

In compliance with criteria in the U.S. Environmental Protection Agency's (EPA) Clean Water Act, all construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more must obtain a National Pollutant Discharge Elimination System (NPDES) general permit for stormwater discharges (40 Code of Federal Regulations [CFR] 122 and 40 CFR 123).

NPDES permits are issued by the EPA or a similar authorized state entity. The EPA delegates the authority under the NPDES program to the individual states (except Tribal lands), and as such, the NPDES permit to be obtained in Utah is issued by the UDWQ and in Nevada by the NDEP. The States of Utah and Nevada issued a Construction General Permit as follows:

- UPDES Construction General Permit for Discharges UTRC00000
- NPDES Construction Stormwater General Permit NVR100000

Individual projects that disturb greater than 1 acre are required to apply for coverage under these Permits. Coverage for a project under these Permits is issued only after submittal of an NOI for construction activities, the required Permit fee, and a SWPPP that meets the requirements set forth in the Permits, including a description of how erosion and sediment transport will be minimized to adjacent waterbodies.

5 STORMWATER POLLUTION PREVENTION PLAN PREPARATION AND IMPLEMENTATION

The Construction Contractor(s) will be responsible for the preparation of a SWPPP that meets UDWQ and NDEP Permit requirements and for obtaining coverage under the Permits prior to the commencement of construction. The SWPPP must conform to the format set forth by the state. As a requirement of the Permits, the Construction Contractor(s) will be responsible for implementing the SWPPP and performing routine inspections throughout the duration of construction activities to ensure that all erosion and sediment control structures and environmental protection measures are performing correctly, to identify performance problems, and to correct any deficiencies within required time frames. The Construction Contractor(s) will incorporate inspection protocols and schedules into the SWPPP. The results of each inspection will be documented and retained in the inspection record by the Construction Contractor(s) and made available at the construction site to the Company, the UDWQ and the NDEP.

The primary intent of the erosion and sediment control measures that the Construction Contractor(s) will incorporate into the SWPPP is to control and minimize erosion at the source. For the Project, the main source of potential stormwater contamination will be erosion of soils from construction activities. It will be the responsibility of the Construction Contractor(s) to implement erosion control measures where required and/or necessary to prevent or minimize stormwater sediment and pollutant discharges from Project construction activities to water resources and to keep the Project in compliance with federal and state regulations.

Proper implementation of selective measures included in the SWPPP by the Construction Contractor(s) is imperative during all construction activities. Before the start of construction, the Construction Contractor(s) will be responsible for ensuring that all appropriate project employees are properly and fully trained in the content of the SWPPP, the proper installation methods, and maintenance and inspection of all erosion control measures to be used for the Project.

All SWPPP-related activities will be conducted by the Construction Contractor(s) in an environmentally sensitive and responsible manner in order to reduce the potential for sediment or contaminants to be conveyed as either direct or indirect discharge to wetlands or waters of the U.S., and so that other environmental impacts are minimized.

The Construction Contractor(s) will retain a copy of the SWPPP at appropriate Project location(s), and the SWPPP will be readily available to the federal land management agencies, Company, the UDWQ, the NDEP, and any other pertinent parties until site stabilization is accomplished.

The Construction Contractor(s) must retain a set of SWPPP site maps for the duration of the Project and for a minimum of 3 years postconstruction from the date of site stabilization and the notice of termination (NOT) is filed, or longer if required by NDEP or UDWQ. The SWPPP site maps would generally delineate the following items as required by the Permits (Note: there are some differences between what is required for Utah and Nevada):

a. Boundaries of the property;

b. Locations where construction activities will occur, including:

   (1) Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities and areas that will not be disturbed;

   (2) Approximate slopes before and after major grading activities (note any steep slopes);

(3) Locations where sediment, soil, or other construction materials will be stockpiled;

(4) Any water of the state crossings including the type of crossing, if feasible and known at the time the SWPPP site maps are prepared;

(5) Designated points where vehicles will exit onto paved roads;

(6) Locations of structures and other impervious surfaces upon completion of construction; and

(7) Locations of on-site and off-site construction support activity areas (e.g., on-site material, waste, borrow areas or equipment storage areas)covered by the permit.

c. Locations of all waters of the state within 1 mile downstream of the site's discharge point. Also identify if any are listed as impaired or high-quality water;

d. Type and extent of preconstruction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);

e. Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;

f. Stormwater and authorized non-stormwater discharge locations, including:

(1) Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets; and

(2) Locations where stormwater or authorized non-stormwater will be discharged directly to waters of the state.

g. Locations of all potential pollutant-generating activities;

h. Locations of temporary and permanent stormwater controls, including natural buffer areas and any shared controls utilized to comply with the permit;

i. Locations where polymers, flocculants, or other treatment chemicals will be used and stored;

j. Locations of areas where final stabilization has been accomplished and no further permit requirements apply; and

k. Location of trees and boundaries of environmentally sensitive areas and buffer zones to be preserved.

6 TRAINING

The Construction Contractor(s) will be responsible for training all appropriate personnel on the information and requirements contained within the SWPPP and this Plan by providing SWPPP training prior to the start of construction activities. The Construction Contractor(s) will also be responsible for holding the same training programs for new personnel who join the Project after the initial training has been provided. The training for new personnel will be held before those personnel start work on the Project.

The purpose of the training program(s) will be to review the proper installation methods and maintenance of all erosion and sediment control measures to be used for the Project as well as the required monitoring and inspection protocols. The monitoring/inspection program and all required maintenance and repair work will be conducted only by personnel who have completed the training program.

The Construction Contractor(s) will keep a record of all employees who complete the training program, maintain a copy of the training log at the construction site, make it available to the Company, the UDWQ, and the NDEP upon request, and maintain the record for a minimum of 3 years after completion of construction and site stabilization, or longer if required by NDEP or UDWQ.

7 PROJECT MODIFICATIONS

The Construction Contractor(s) will be responsible for maintaining an up-to-date SWPPP and will modify the SWPPP within 7 days whenever one of the following occurs:

- Whenever changes are made to the construction plans, stormwater controls, or other activities at the site that are no longer accurately reflected in the SWPPP;
- To reflect areas on the site map where operational control has been transferred (e.g., new general contractor or owner);
- If inspections or investigations by UDWQ/NDEP or its authorized representatives determine that SWPPP modifications are necessary for compliance with the permit;
- Where UDWQ/NDEP determines it is necessary to install and/or implement additional controls at the site in order to meet the requirements of the permit, the following must be included in the SWPPP:
- A copy of any correspondence describing such measures and requirements; and
- A description of the controls that will be used to meet such requirements.
- To reflect any revisions to applicable federal, state, or local requirements that affect the stormwater controls implemented at the site; and
- If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or a different area of application.

Additional details on Permit requirements for modifications are found in the Permits. The Company is responsible for reviewing the SWPPP and any modifications prior to submittal to the UDWQ and NDEP. Up-to-date copies of the SWPPP must be maintained by the Construction Contractor(s) at the construction site, available to the federal land management agencies, UDWQ, NDEP, and any other pertinent parties, and will be provided to the Company on a monthly basis. The SWPPP will be provided to the Company after Project construction closeout and final stabilization is complete.

8 SELECTIVE MEASURES AND BEST MANAGEMENT PRACTICES

This section describes practices that are intended to protect environmental resources that the Construction Contractor(s) will implement, as applicable, and include in the SWPPP.

8.1 Applicant-Committed Environmental Protection Measures

To minimize the potential impacts from the Project, a suite of Applicant-Committed Environmental Protection Measures (ACEPMs) have been developed to address potential conflicts with environmental resources and those that apply to the SWPPP. These ACEPMs can be found in Section 9 of the POD.

8.2 Best Management Practices

BMPs are practices used to minimize erosion, sedimentation, and the negative effects stormwater can have on a site. BMPs will be used by the Construction Contractor(s) in addition to the ACEPMs, and selective measures described above, as well as the requirements of the SWPPP. This section outlines the BMPs that will be used during the construction of the Project to control erosion and prevent or minimize the transport of sediment-laden stormwater off construction areas. These measures are detailed in the Project SWPPP.

The goal of the erosion and sediment control strategy is to retain sediment on-site to the maximum extent practicable. Erosion and sediment controls for construction activities will be properly installed and maintained in accordance with the manufacturers' specifications and good engineering practices. All BMPs outlined in the SWPPP will be installed and maintained by the Construction Contractor(s). All inspections, as detailed in the Project SWPPP, will be performed and documented by the Construction Contractor(s).

The Construction Contractor(s) will implement BMPs that are appropriate for the specific construction site conditions during construction to control erosion and prevent or minimize the transport of sediment-laden stormwater off construction sites. In addition to the BMPs in the list, the Construction Contractor(s) may propose other BMPs to the BLM and/or Forest Service (if applicable) but only after consultation with and concurrence by the BLM and/or Forest Service may the Construction Contractor(s) implement BMPs not listed below. The CIC will be responsible for providing BMP concurrence documentation to the Construction Contractor(s) and the Construction Contractor(s) will be responsible for depicting the BMPs in amended SWPPP mapping.

Erosion Prevention BMPs:

- Check Dam (CD)
- Construction Phasing (CP)
- Mulching (MU)
- Perimeter Controls (when used to help minimize unanticipated disturbances)
- Preserving existing vegetation (PV)
- Rolled Erosion Control Product (RECP)
- Rock Log (RL)
- Streambank Stabilization (SS)
- Surface Roughening (SR)
- Temporary Stream Crossing
- Wind Erosion Control (water truck, tackifier, etc.)

Sediment Control BMPs:

- Check Dam (CD)
- Construction Phasing (CP)
- Recovery of off-site sediment
- Rock Log (RL)
- Sediment Control Log (SCL)
- Silt Fence (SF)
- Vegetated Buffer Strips (VB)
- Vehicle Tracking Control (VTC)
- Decompaction
- Seeding

9 MAINTENANCE, INSPECTION, REPAIR, AND MONITORING

The Construction Contractor(s) will be required to conduct routine maintenance and emergency repairs on any structural controls, including the maintenance of erosion and sediment control measures and any required subsequent reporting. The Construction Contractor(s) will conduct inspections to identify areas contributing to a stormwater discharge and to evaluate whether industry standards are in place and functioning properly.

As part of the SWPPP, the Construction Contractor(s) will be required to develop an inspection schedule and conduct routine inspections to identify conditions that could lead to discharges of chemicals or contact of stormwater with storm drainages or surface waters. Schedules will be established by the Construction Contractor(s), for regular inspections of equipment and areas. Inspections of the construction site by qualified personnel will occur at least once every 7 days or once every 14 days as well as within 24 hours after any rainfall event of 0.5 inch or greater or the occurrence of runoff from snowmelt sufficient to cause a discharge. The SWPPP must specify which construction schedule will be used. Reporting requirements for measurements of rainfall amounts are described in the Permits. Inspection frequency should increase for sites discharging to sensitive waters as described in the Permits. Inspection frequency may be reduced under specific circumstances; for example, frozen conditions that are likely to last for at least 3 months, if certain criteria are met in the Permits.

During inspections, the Construction Contractor(s) also will determine if the industry standards identified in the SWPPP are adequate and whether additional control practices are needed. If additional control practices are needed and/or industry standards are not functioning properly, then the Construction Contractor(s) will consult with the landowner, the BLM or the Forest Service, as appropriate, and take the necessary or required corrective action and amend the SWPPP accordingly. All monitoring and inspection records that have been produced in association with this SWPPP will be retained by the Construction Contractor(s) for a period of at least 3 years from the date that Permit coverage expires, or until site stabilization and the NOT is filed, or longer if required by NDEP or UDWQ. Inspection reports can be provided to the agencies upon request.

10 POSTCONSTRUCTION STORMWATER MANAGEMENT

Areas disturbed by the Project construction will be reclaimed by the Construction Contractor(s) per Appendix C9: Reclamation, Revegetation and Monitoring Plan. Measures used by the Company to reduce pollutants in stormwater discharges after all construction has been completed will take into account local postconstruction stormwater management requirements, policies, and guidelines, as well as site-specific and seasonal conditions. During Project maintenance, any areas disturbed by the Project and observed to be eroding sediment into drainages will be assessed by the Company, in consultation with the BLM, Forest Service, or the landowner, as applicable, for the appropriate permanent measure to control sediment movement off the disturbed area. The Construction Contractor(s) will be responsible for ensuring that the appropriate permanent erosion and sediment control measure(s) are timely and correctly installed, maintained, monitored, and inspected until site stabilization is achieved.

Attachment A. Preliminary Stormwater Pollution Prevention Plan (Utah)

The Construction General Term SWPPP Template is Available for Accessible Reading and Download at:
DWQ-2021-002832.docx (live.com)

A: SWPPP Template (Utah) – Instructions

DWQ has developed this Storm Water Pollution Prevention Plan (SWPPP) template for construction sites permitted under the Construction General Storm Water Permit (CGP). The template gives you a framework to ensure that your SWPPP addresses the necessary elements required by the permit. It may be helpful to use this template with EPA's guidance on *Developing Your Storm Water Pollution Prevention Plan* (SWPPP Guide). Both are available on DWQ's construction storm water website at https://deq.utah.gov/water-quality/general-construction-storm-water-updes-permits

This template covers most of the SWPPP elements that the Utah CGP requires, however, you are encouraged to customize this template to reflect unique conditions at the site or address a requirement not covered in the provided sections.

Using the SWPPP Template

Each section of this template includes instructions and space for project information. You should read the instructions for each section before you complete that section. If you require additional clarification, the instructions often reference a permit section where you can find the exact wording for the requirement as well as other resources that may be useful. For a cleaner document you may want to delete instructions when finished. This template was developed in Word so that you can easily add tables and additional text. Some sections may require only a brief description or not apply at all to your project, while others may require several pages of explanation.

Tips for completing the SWPPP template

- If there is more than one key player affecting storm water for your project, consider coordinating development of your SWPPP with the other key players.
- Make sure you inform subcontractors about limitations or special requirements if their work intersects with SWPPP requirements. You might write a section of your SWPPP specifically for a subcontractor and deliver that section to the sub-contractor before his work commences.
- Modify this SWPPP template so that it addresses the requirements in your construction general permit and meets the needs of your project. Be sure to include important aspects of the SWPPP that go beyond the boundaries of the project.
- EPA's guidance on Developing Your Storm Water Pollution Prevention Plan (SWPPP Guide) can be accessed here: https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf

Storm Water Pollution Prevention Plan

for:

Insert Project Name
Insert Project Site Location/Address
Insert City, State, Zip Code
Insert Project Site Telephone Number (if applicable)

Operator:

Insert Company or Organization Name
Insert Name
Insert Address
Insert City, State, Zip Code
Insert Telephone Number
Insert Fax/Email

Primary SWPPP Contact

Insert Company or Organization Name
Insert Name
Insert Address
Insert City, State, Zip Code
Insert Telephone Number
Insert Fax/Email

SWPPP Preparation Date:

__/__/__

UPDES Permit Tracking Number*:

UTR_____

**This is the unique number assigned to your project after you have applied for coverage under the Utah Pollutant Discharge Elimination System (UPDES) construction general permit. If this template is filled out first, you can leave the tracking number blank until after you have applied for coverage.*

Contents

Appendix I – Construction General Permit

SECTION 1: CONTACT INFORMATION/ RESPONSIBLE PARTIES

Instructions (CGP 7.3.1./7.3.7.):

- Identify the staff members that are part of the project's storm water team as well as their responsibilities. The storm water team is comprised of individuals who are responsible for the development of the SWPPP, any later modifications to it, installing and maintaining storm water controls, conducting site inspections, and making corrective actions where required.
- Each member of the storm water team must have ready access to either an electronic or paper copy of the 2019 CGP and the SWPPP.
- Starting January 1, 2021: A SWPPP writer for a site greater than 5 acres, with a perennial surface water within 50 feet of the project, or with a steep slope (70% or 35 degrees or more) must hold a certification to demonstrate that they are a "qualified person" per CGP Part 7.2. A certification page is located in Section 11.
- The following personnel, at a minimum, must receive training on their responsibilities (CGP Part 7.3.7/6.1):
  - ✓ Personnel who are responsible for the design, installation, maintenance, and/or repair of storm water controls (including pollution prevention measures);
  - ✓ Personnel responsible for the application and storage of treatment chemicals;
  - ✓ Personnel who are responsible for conducting inspections (must hold a certification) as required in Part 4.1.; and
  - ✓ Personnel who are responsible for taking corrective actions as required in Part 5.
- A sample training log is provided in Appendix F. Certifications can also be recorded in this appendix.
- For more on training, see *SWPPP Guide*, Chapter 8.

1.1 Storm Water Team

Name and/or Position, and Contact	Responsibilities, Qualifications, and Training
Insert name of responsible person Insert Company Name Insert Position Insert Telephone Number Insert Email	Insert Responsibility, Qualifications, and Trainings
Insert name of responsible person Insert Company Name Insert Position Insert Telephone Number Insert Email	Insert Responsibility, Qualifications, and Trainings
Insert name of responsible person Insert Company Name Insert Position Insert Telephone Number Insert Email	Insert Responsibility, Qualifications, and Trainings

[Insert or delete rows as necessary.]

SECTION 2: NATURE OF CONSTRUCTION ACTIVITIES

2.1 Construction Site Estimates

Instructions (CGP 7.3.2.b.-c.):

- Estimate the area to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas.

The following are estimates for the construction site.

Total project area (lot size): acres
Construction site area to be disturbed: acres

2.2 Construction Activity Descriptions

Instructions (CGP 7.3.2.a., d. & g.):

- Briefly describe the nature of the construction activity and approximate time frames.
- For more information see CGP Part 7.3.2 and *SWPPP Guide*, Chapter 3.A.

Describe the general scope of the work for the project, major phases of construction, etc:
INSERT TEXT HERE
Describe any on-site and off-site construction support activity areas:
INSERT TEXT HERE
Typical site business days and times:
INSERT TEXT HERE

2.3 Phase/Sequence of Construction Activity

Instructions (CGP 7.3.2.e.):

- Describe the intended construction sequencing and timing of major activities, including any opportunities for phasing grading and stabilization activities to minimize the overall amount of disturbed soil that will be subject to potential erosion at one time. Also, describe opportunities for timing grading and stabilization so that all or a majority of the soil disturbance occurs during a time of year with less erosion potential (i.e., during the dry or less windy season).
- For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 2. It might be useful to develop a separate, detailed site map for each phase of construction.

Phase I

- Describe phase and activities
- Duration of phase (start date, end date)
- List BMPs associated with this phase
- Describe stabilization methods for this phase (describe any temporary stabilization methods that will be used before final stabilization)

Phase II

- Describe phase and activities
- Duration of phase (start date, end date)
- List BMPs associated with this phase
- Describe stabilization methods for this phase (describe any temporary stabilization methods that will be used before final stabilization)

[Repeat as needed]

2.4 Maps

Instructions (CGP 7.3.3.):

- Attach site maps. For most projects, a series of site maps is recommended. The first should show the undeveloped site and its current features. An additional map or maps should be created to show the developed site or for more complicated sites show the major phases of development.

These maps should include the following:

- Boundaries of the property
- Locations of earth-disturbing activities, including demolition, and note any phasing;
- Direction(s) of storm water flow and approximate slopes before and after major grading activities;
- Type and extent of pre-construction cover (vegetative cover, pavement, etc.);
- Locations of stockpiles and material storage;
- Water crossings and all water of the state within one mile downstream of the site's discharge point;
- Designated points where vehicles enter onto paved roads;
- Locations of structures and other impervious surfaces upon completion of construction;
- On-site and off-site construction support activity areas covered by the permit;
- Storm water and authorized non-storm water discharge locations to inlets or waters of the state;
- Locations of all potential pollutant-generating activities;
- Locations of storm water controls, including natural buffer areas; and
- Locations where polymers, flocculants, or other treatment chemicals will be used and stored.
- For more information, see *SWPPP Guide*, Chapter 3.C.

The SWPPP site map(s) are filed in Appendix A

SECTION 3: WATER QUALITY

3.1 Discharge Information

Instructions(CGP 1.4.):

- A Municipal Separate Storm Sewer System (MS4) is a storm water conveyance system owned and operated by a state, city, town, county, district, association, or other public body. If you discharge to one of these systems mark "yes" and identify which MS4.You must submit your SWPPP to this MS4 for review. A list of MS4s that are currently designed under a Utah municipal storm water permit can be found here: https://documents.deq.utah.gov/water-quality/stormwater/DWQ-2018-006843.xlsx

Does your project/site discharge storm water into a Municipal Separate Storm Sewer System (MS4)? ☐ Yes ☐ No

List the MS4 that receives the discharge from the construction project: INSERT TEXT HERE

3.2 Receiving Waters

Instructions (CGP 3.1.):

- In the below table, list the name of the first surface water(s) that would receive discharges from your site. Multiple rows are provided in case your site discharges in multiple locations which flow to different surface waters. For discharges that enter a storm sewer system prior to discharge, the first surface water to which you discharge is the water body that receives the storm water discharge from the storm sewer system. You may need to contact the storm sewer system owner to find out where it discharges to.
- See http://wq.deq.utah.gov for impairment or quality information. Use this to identify the status in column 2 of Table 1. Select the waterbody you wish to look-up and find the results from the 20XX Assessment on the left hand side.
- For more information on TMDLs and impaired waters visit https://deq.utah.gov/water-quality/watershed-monitoring-program/approved-tmdls-watershed-management-program or www.epa.gov/tmdl/impaired-waters-and-stormwater.
- If any of the surface waters you listed are impaired, provide specified information about pollutants causing the impairment in column 3 of Table 1. Your SWPPP should specifically include measures to prevent the discharge of these pollutants.
- If any of the surface waters you listed are identified as a Category 1 or 2 water (a Category 1 water is only found within Forest Service boundaries) provide the category in column 3 of Table 1.
- For more information, see CGP Part 3.1 and 3.2 and *SWPPP Guide*, Chapter 3.B.

Names of Receiving Waters

Name of Receiving Water (first surface water that receives storm water or where storm system discharges to)	Is the water impaired or high quality?	If high quality: Is it Category 1 or 2? If impaired: List pollutants that the waterbody is impaired for
1.	☐ Not high quality/impaired ☐ Impaired, has approved TMDL ☐ Impaired, no TMDL ☐ High quality	
2.	☐ Not high quality/impaired ☐ Impaired, has approved TMDL ☐ Impaired, no TMDL ☐ High quality	

[Insert or delete rows as necessary.]

3.3 Impaired Waters

Instructions (CGP 3.2.):

- If you discharge to an impaired water as listed in the above table, provide information on additional efforts that will be taken to control the release of impairment causing pollutants. This is especially important for projects discharging to a surface water with an EPA approved TMDL for sediment or nutrients and an extra effort must be provided to prevent sediment from leaving the site.

Description of additional precautions taken if you are discharging to an impaired surface water. State if no impairment causing pollutants are on site:
INSERT TEXT HERE

3.4 High Water Quality

Instructions (CGP 3.2.):

- If you discharge to a high quality water as listed in the above, provide information on additional efforts that will be taken to control the release of pollutants. Per CGP Part 1.1.7, you can discharge to a Category 1 water if your discharge is temporary and limited and where best management practices will be employed to minimize pollution effects. Discharge to Category 2 waters is allowed only if the discharge will not lower the water quality of the water body.

Description of additional precautions taken to minimize pollution effects if you are discharging to a high quality surface water:
INSERT TEXT HERE

SECTION 4: POLLUTION PREVENTION STANDARDS

4.1 Potential Sources of Pollution

Instructions (CGP 7.3.2.f.):

- Identify and list all potential sources of sediment, which may reasonably be expected to affect the quality of storm water discharges from the construction site.
- Identify and describe all potential sources of pollution or pollutant-generating activity (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal), other than sediment, which could be exposed to rainfall or snowmelt, and may reasonably be expected to discharges from the construction site.

  For more information, see *SWPPP Guide*, Chapter 3.A.

Pollutant-Generating Activity		

[Include additional rows as necessary.]

4.2 Non-Storm Water Discharges

Instructions (CGP 7.3.4.):

- Identify all allowable sources of non-storm water discharges and how they will be controlled. A list of allowable non-storm water discharges are found in the CGP Part 1.2.3.
- For more information, see *SWPPP Guide*, Chapter 3.A.

Check allowable non-storm water discharges that are present and describe the measures used to reduce them or prevent them from contributing pollutants to discharges:

Authorized Non-Storm Water Discharges	Present	Comments/Controls
Discharges from emergency fire-fighting activities	☐ Y ☐ N	
Fire hydrant flushing	☐ Y ☐ N	
Properly managed landscape irrigation (excludes fertilizer injector systems)	☐ Y ☐ N	
Properly managed vehicle and equipment wash water with no soaps, solvents, or detergents	☐ Y ☐ N	
Water used to control dust	☐ Y ☐ N	
Drinking water, includes uncontaminated water line flushing	☐ Y ☐ N	
External building washdown with no soaps, solvents, detergents, or hazardous substances	☐ Y ☐ N	
Pavement wash waters with no detergents or toxic or hazardous materials. Must have a sediment basin, sediment trap, of similarly effective control prior to discharge.	☐ Y ☐ N	
Uncontaminated air conditioning or compressor condensate	☐ Y ☐ N	
Uncontaminated, non-turbid discharges of ground water (from natural sources) or spring water	☐ Y ☐ N	
Uncontaminated foundation or footing drains	☐ Y ☐ N	

4.3 Dewatering Practices

Instructions (CGP 1.2.5. and 2.3.7.):

If you will be discharging storm water that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, it must be permitted by UPDES permit UTG070000 (Construction Dewatering and Hydrostatic Testing Permit) unless it can be managed onsite through percolation or evaporation. The permit can be found at https://deq.utah.gov/water-quality/current-updes-permits in the bottom table. Call DWQ at 801-536-4300 for more information.

- Include schedule and general locations of dewatering. Dewatering locations must be on the site map.

☐ Check box if section not applicable to this site (Note: If not applicable skip to next section)

Describe the general scope of dewatering practices for the project and any BMPs used to manage the dewatering practices:

INSERT TEXT HERE

4.3.1: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)

BMP Description:

Installation Schedule/Instructions:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

4.4 Natural Buffers or Equivalent Sediment Controls

Instructions (CGP Part 7.3.5.b.(1), 2.2.1, and Appendix A):

This section only applies if a surface water is located within 50 feet your construction activities. If this is the case, review CGP Part 2.2.1. and Appendix A of the CGP for information on how to comply with the buffer requirements.

- Describe the compliance alternative that was chosen to meet the buffer requirements, and include any required documentation supporting the alternative selected. The compliance alternative selected must be maintained throughout the duration of permit coverage. However, if you select a different compliance alternative during your period of permit coverage, you must modify your SWPPP to reflect this change.
- If you qualify for one of the exceptions in CGP Part A.2.2., include documentation related to your qualification for such exceptions.
- Review Appendix A of the CGP for step-by-step instructions and examples on how to comply with the different buffer alternatives.

Buffer Compliance Alternatives

Are there any surface waters within 50 feet of your project's earth disturbances?

☐ YES ☐ NO

(Note: If "no", no further documentation is required. Delete the rest of Section 4.3 below this point.)

List the water body: INSERT TEXT HERE

Check the compliance alternative that you have chosen:

☐ I will provide and maintain a 50-foot undisturbed natural buffer around the surface water.

☐ It is infeasible to provide and maintain a full 50-foot undisturbed natural buffer. I will provide and implement erosion and sediment controls to achieve the required sediment load reduction for my conditions.

- Reason that a 50' buffer could not be maintained: INSERT TEXT HERE
- Width of buffer that will be retained: INSERT TEXT HERE
- Additional controls used to achieve equivalent sediment load reduction of a 50' buffer: INSERT TEXT HERE
- Description of the calculations and assumptions used to determine sediment load reductions: INSERT TEXT HERE

☐ The project qualifies as "small residential lot" disturbing less than an acre. The natural buffer is preserved in accordance with CGP A.2.3., storm water is treated by site erosion and sediment controls before discharge, natural buffers are shown on the site map, and buffer areas are marked on site. Select one of the 2 alternatives for small residential lots:

☐ Alternative 1: Using Table A-1 in CGP for requirements

- Width of buffer that will be retained: INSERT TEXT HERE
- Additional controls to be used: INSERT TEXT HERE

☐ Alternative 2: Using Tables A-2 through A-7 in CGP for requirements

- Width of buffer that will be retained: INSERT TEXT HERE
- Sediment Risk Level Determined: INSERT TEXT HERE
- Additional controls to be used: INSERT TEXT HERE

☐ I qualify for one of the exceptions in Part A.2.2. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

☐ There is no discharge of storm water through the area between the disturbed portions of the site and the surface water that is located within 50 feet.

☐ No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.

☐ For a linear project, site constraints (e.g., limited right-of-way) make it infeasible for me to meet any of the compliance alternatives.

- Reason it is infeasible: INSERT TEXT HERE
- Buffer width retained or supplemental controls used: INSERT TEXT HERE

☐ Buffer disturbances are authorized under a CWA Section 404 permit.

- Describe earth disturbances in buffer area: INSERT TEXT HERE

(Note: This exception does not apply to portions upland of the Section 404 permitted work.)

☐ Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail).

- Describe earth disturbances in buffer area: INSERT TEXT HERE

SECTION 5: EROSION AND SEDIMENT CONTROLS – BMPS

5.1 List of Erosion and Sediment BMPs on Site

Instructions (CGP Part 2.2. and 7.3.5):

- Identify best management practices (BMPs) that will be implemented on site to control erosion and sediment transport from storm water.
- Use the below CGP requirements and the pollutant generating activates identified in SWPPP section 4.1. to determine where BMPs are necessary. Fill out the rightmost column with BMPs you are selecting. Some requirements may not apply to your site.
- For each BMP you must provide a description of the control, any design specifications, routine maintenance specifications, a schedule for storm water control implementation/installation, and the staff responsible for maintaining the BMP. These details are listed in the BMP section below the table.
- BMPs are listed as examples, you may use BMPs not listed.
- Details and design specifications can be provided in this section or in Appendix H if they are large.
- Perimeter control maintenance must include removal of sediment before it has accumulated to one-half the above-ground height of the control.
- For more information, see *SWPPP Guide*, Chapter 4.
- BMP guidance may be found in your MS4's or other local jurisdiction's design manual, guidance manuals listed in Appendix D of the *SWPPP Guide*, or EPA's National Menu of BMPs https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#constr

CGP Requirement	Example BMPs	EPA SWPPP Guide Section	BMPs Selected (Name and Reference Number if applicable)
Preserve vegetation where possible and direct storm water to vegetated areas when feasible (CGP 2.2.2.)	Phasing to minimize disturbance, signs/fences to protect areas not being disturbed.	Chapter 4, ESC Principle 1	
Install sediment controls along perimeter areas that receive pollutant discharges (CGP 2.2.3.).	Silt fence, fiber rolls, earth berms	Chapter 4, ESC Principle 7	
Minimize sediment track-out (CGP 2.2.4.)	Restrict access, stabilize exits, track-out pads, tire washing station, clean-up sediments	Chapter 4, ESC Principle 9	
Manage stockpiles with perimeter controls and locate away from storm water conveyances (CGP 2.2.5.)	Sediment barriers downgradient, proper location, covered stockpiles, diverting storm water from stockpiles	Chapter 4, ESC Principle 4	

Minimize dust (CGP 2.2.6.)	Water application, mulching, chemical dust suppression techniques		
Minimize steep slope disturbance (CGP 2.2.7.)	Erosion control blankets, tackifiers, protect slopes from disturbance	Chapter 4, ESC Principle 5	
Preserve topsoil (CGP 2.2.8.)	Stockpile topsoil	Chapter 4, ESC Principle 1	
Minimize soil compaction where final cover is vegetation (CGP 2.2.9.)	Restrict vehicle access, recondition soils before seeding		
Protect storm drain inlets (CGP 2.2.10.)	Inserts, rock-filled bags, covers	Chapter 4, ESC Principle 6	
Slow down runoff with erosion controls and velocity dissipation devices (CGP 2.2.11.)	Check dams, riprap	Chapter 4, ESC Principle 3	
Appropriately design any sediment basins or impoundments (CGP 2.2.12.)	Design to 2-year 24-hour storm or 3,600 cubic feet per acre drained, include design specifications	Chapter 4, ESC Principle 8	
Follow requirements for any treatment chemicals (polymers, flocculants, coagulants, etc.)	Store in leak proof containers and cover, proper training, minimize use		
Stabilize exposed portions of site with 14 days of inactivity (CGP 2.2.14).	Seeding, erosion control blankets, gravel, hydromulch	Chapter 9	

5.1.1: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)

BMP Description/Instructions:

Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

5.1.2: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

5.1.3: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

5.1.4: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

5.1.5: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

[Repeat as needed]

5.2 Linear Site Perimeter Control Exemption

Instructions (CGP 7.3.5.b.(2)):

- For areas where perimeter controls are not feasible on a linear construction site, include a description of why it is not feasible and other practices that will be implemented to minimize discharges of pollutants from the site.

☐ Check box if section not applicable to this site (Note: If not applicable skip to next section)

If the site is linear and perimeter controls are not feasible, describe other practices in use:
INSERT TEXT HERE

5.3 Final Stabilization

Instructions (CGP 7.3.5.b.(6) and 2.2.14.b.):

- Describe procedures for final stabilization. If final cover is vegetation, you must establish uniform perennial vegetation that provides 70% or more of the vegetative cover that existed prior to earth-disturbing activities. Exception: Arid, semi-arid, and drought stricken areas are required to be seeded/planted so that the before mentioned vegetative requirement is expected to be met within 3 years. Establishment of vegetation is not required, however additional erosion controls may be needed.
- You can amend or add to this section as areas of your project are finally stabilized.
- Update your site plans to indicate areas that have achieved final stabilization.

Description of final stabilization practices and schedule:

Type of stabilization (vegetation/landscaped, graveled, paved, etc.)	Location	Implementation Schedule

SECTION 6: BMPS - POLLUTION PREVENTION/OPERATIONAL CONTROLS

6.1 Spill Prevention and Response

Instructions CGP Part 7.3.5.b.(7):

- Describe the spill prevention and control plan. Include ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control.
- Some projects/site may be required to develop a Spill Prevention Control and Countermeasure (SPCC) plan under a separate regulatory program (40 CFR 112). If you are required to develop an SPCC plan, or you already have one, you should include references to the relevant requirements from your plan.
- The plan must include the materials and method of containment and for flowing liquid, cleanup, disposal and follow the minimum spill controls below.
- For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 6.

Describe spill procedures and materials available for expeditious containment, clean-up and disposal of spills:
INSERT TEXT HERE OR REFERENCE DOCUMENT

Identify the employee responsible for detection and response of spills and leaks:
INSERT TEXT HERE

Any discharges in 24 hours equal to or in excess of the reportable quantities listed in 40 CFR 117, 40 CFR 110, and 40 CFR 302 will be reported to the National Response Center and the Division of Water Quality (DWQ) as soon as practical after knowledge of the spill is known to the permittees. The permittee shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and measures taken and/or planned to be taken to the Division of Water Quality (DWQ), 288 North 1460 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870. The Storm Water Pollution Prevention Plan must be modified within14 calendar days of knowledge of the release to provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

Agency	Phone Number
National Response Center	(800) 424-8802
Division of Water Quality (DWQ) 24-Hr Reporting	(801)-231-1769 (801) 536-4123
Utah Department of Health Emergency Response	(801) 580-6681

Material	Media Released To	Reportable Quantity
Engine oil, fuel, hydraulic & brake fluid	Land	25 gallons
Paints, solvents, thinners	Land	100 lbs (13 gallons)
Engine oil, fuel, hydraulic & brake fluid	Water	Visible Sheen
Antifreeze, battery acid, gasoline, engine degreasers	Air, Land, Water	100 lbs (13 gallons)
Refrigerant	Air	1 lb

6.2 Pollution Prevention Controls

Instructions (CGP Part 2.3. and 7.3.5):

- Describe the key good housekeeping and pollution prevention (P2) BMPs that will be implemented to control pollutants in storm water (CGP Part 2.3).
- Use the below CGP requirements and the pollutant generating activates identified in SWPPP section 4.1. which were not addressed with the erosion and sediment BMPs to determine where BMPs are necessary.
- For each BMP you must provide a description of the control, any design specifications, routine maintenance specifications, a schedule for storm water control implementation/installation, and the staff responsible for maintaining the BMP.
- BMPs are listed as examples, you may use BMPs not listed.
- Details and design specifications can be provided in this section or in Appendix H.
- For more information, see *SWPPP Guide*, Chapter 5.
- Consult your state's or local jurisdiction's design manual or resources in Appendix D of the *SWPPP Guide*.
- For more information or ideas on BMPs, see EPA's National Menu of BMPs https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#constr

CGP Requirements	Example BMPs	EPA SWPPP Guide Section	BMPs Selected (Name and Reference Number if applicable)
Equipment and vehicle fueling (CGP 2.3.1)	Spill kits, SPCCP, drip pans, locate activities away from conveyances, use secondary containment	Chapter 5, P2 Principle 4	
Equipment and vehicle washing (CGP 2.3.2.)	Locating away from surface waters and storm water conveyances, directing wash waters to a sediment basin or sediment trap, using filtration	Chapter 5, P2 Principle 5	

	devices		
Storage, handling, and disposal of building products and waste (CGP 2.3.3.)	Cover (plastic sheeting / temporary roofs), secondary containment, leakproof containers, proper dumpsters, secured portable toilets, locate away from storm water conveyances	Chapter 5, P2 Principle 1 and 2	
Washing of stucco, paint, concrete, form release oils, curing compounds, etc. (CGP 2.3.4.)	Leak proof containers, lined pits, locate away from storm water conveyances	Chapter 5, P2 Principle 3	
Properly apply fertilizer (CGP 2.3.5)	Follow manufacture specifications, document deviations in applications, avoid applications to frozen ground, before heavy rains, or to storm water conveyances		

6.2.1.: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)

BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

6.2.2.: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)

BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

6.2.3.: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

6.2.4: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

6.2.5: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

6.2.6: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

[Repeat as needed]

SECTION 7: SPECIAL CONDITIONS

Instructions:

The conditions listed below require additional details or actions added to your SWPPP. If they do not apply you may delete them from this SWPPP.

7.1 Emergency Related Projects

Instructions (CGP 1.1.5):

- For emergency activities that require immediate authorization but last longer than 30 days, a SWPPP may be submitted within 30 days of starting work.
- To be an emergency related project it must be considered a public emergency and the cause must be documented along with the description of necessary construction to reestablish effected public services.

Emergency-Related Project? ☐ Yes ☐ No

DESCRIBE THE NATURE OF THE PUBLIC EMERGENCY AND WHY IMMEDIATE AUTHORIZATION WAS NECESSARY.

7.2 UIC Class 5 Injection Wells

Instructions (CGP 7.3.8.):

- If you are using any of the following storm water controls at your site as they are described below, you must document any contact you have had with DWQ for implementing the requirements for underground injection wells in the Safe Drinking Water Act and DEQ's implementing regulation at UAC R317-7.
- There may be additional local requirements related to such structures
- For the State UIC Contact at DWQ call (801) 536-4300.

☐ Check box if section not applicable to this site (Note: If not applicable skip to next section)

Class V UIC Wells on site (all must be reported to DWQ for inventory):

- ☐ Infiltration trenches (if storm water is directed to any shaft or hole that is deeper than its widest surface dimension or has a subsurface fluid distribution system)
- ☐ Commercially manufactured pre-cast or pre-built subsurface detention vault/infiltration system
- ☐ Drywell, seepage pit, or improved sinkhole (if storm water is directed to any shaft or hole that is deeper than its widest surface dimension or has a subsurface fluid distribution system)

Description of your Class V Injection Well and any local requirements:

INSERT DESCRIPTION AND ANY DWQ OR LOCAL REQUIREMENTS

Description of any additional BMPs used in conjunction with the UIC well.	
7.2.1: (Place name of BMP here – reference to detailed instructions in Appendix H if necessary)	
BMP Description/Instructions:	
Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	
Design Specifications and Drawings:	

7.3 Chemical Treatment

☐ Check box if section not applicable to this site (Note: If not applicable skip to next section)

Soil Types
List all the soil types (including soil types expected to be found in fill material) that are expected to be exposed during construction and that will be discharged to locations where chemicals will be applied: INSERT TEXT HERE

Treatment Chemicals
List all treatment chemicals that will be used at the site and explain why these chemicals are suited to the soil characteristics: INSERT TEXT HERE

Describe the dosage of all treatment chemicals you will use at the site or the methodology you will use to determine dosage: INSERT TEXT HERE

Provide information from any applicable Safety Data Sheets (SDS): INSERT TEXT HERE

Describe how each of the chemicals will stored: INSERT TEXT HERE

Include references to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems: INSERT TEXT HERE

Special Controls for Cationic Treatment Chemicals *(if applicable)*
If you have been authorized by DWQ to use cationic treatment chemicals, identify the specific controls and implementation procedures you are required to implement to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards or harm aquatic life: INSERT TEXT HERE

Schematic Drawings of Storm Water Controls/Chemical Treatment Systems

Provide schematic drawings of any chemically-enhanced storm water controls or chemical treatment systems to be used for application of treatment chemicals: INSERT TEXT HERE

Training

Describe the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to the use of treatment chemicals: INSERT TEXT HERE

SECTION 8: INSPECTIONS & CORRECTIVE ACTIONS

8.1 Inspections

Instructions (CGP Part 4.2-4.4.3):

- Select an inspection schedule. These are minimum frequencies, you may inspect more frequently. If so describe what your schedule would be.
- For more on this topic, see *SWPPP Guide*, Chapters 6 and 8.
- Also, see suggested inspection form in Appendix B of the *SWPPP Guide*.

Minimum Inspection Schedule Requirements:

Standard Frequency:
☐ Once every 7 calendar days.
☐ Once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. Rain gauge/weather station used: Gauge or station for rainfall depth
Increased Frequency (if applicable):
☐ *Sites discharging to impaired or high quality waters:* Once every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.
Decreased Frequency (if applicable):
☐ *Arid areas:* once a month and within 24 hours of a 0.5 inch storm event or greater.
☐ *Semi-arid areas*: once a month and within 24 hours of a 0.5 inch storm event or greater during the dry season: List months for dry season (also select the inspection schedule followed outside of the dry season).
☐ *Frozen conditions with work suspended – must have 3 months of continuous expected frozen conditions based on historical averages:* no inspections List months of suspended inspections(also select the inspection schedule followed when not frozen)
☐ *Frozen conditions with continued activities - must have 3 months of continuous expected frozen conditions based on historical averages*: once per month List months of frozen conditions (also select the inspection schedule followed when not frozen)
Other:
☐ Describe alternative frequency: List alternative schedule, must meet minimum requirements

Inspection Reports are filed in Appendix C

8.2 Corrective Actions

Instructions:

- A sample corrective action report is provided in Appendix D.
- Whenever a storm water control requires repair or replacement (beyond routine maintenance), a control necessary for permit compliance was never installed or was installed incorrectly, your discharges cause an exceedance of applicable water quality standards, or a prohibitive discharge has occurred, you must log corrective actions taken.
- This log should describe actions taken, date completed, whether a SWPPP modification was required.
- In some cases corrective actions may be documented on the inspection form. This is an acceptable alternative as long as corrective actions that occur outside of inspections are also documented.

Correction Action Report is filed in Appendix D.

8.3 Delegation of Authority

Instructions:

- Identify the individual(s) or specifically describe the position where the construction site operator has delegated authority for the purposes of signing inspection reports, certifications, or other information in Section 1.1 of the SWPPP.
- Each inspection report must be signed in accordance with CGP Part 9.16 of the permit.
- If a delegation letter is necessary, see Appendix E of this template and keep a signed copy with this SWPPP.
- For more on this topic, see *SWPPP Guide*, Chapter 7.

See the signed delegation of authority forms in Appendix E.

SECTION 9: RECORDKEEPING

9.1 Recordkeeping

Instructions (CGP 7.3.10. and 9.10.):

- The following is a list of records you must have accessible on site (electronically or paper) for inspectors to review:
  - ✓ A copy of the construction general permit (Appendix I)
  - ✓ The signed and certified NOI form or permit application form (Appendix B)
- Copies of the SWPPP and all reports required by the permit must be retained for at least three years from the date that the site is finally stabilized.
- For more on this subject, see *SWPPP Guide*, Chapter 6.C.

9.2 Log of Changes to the SWPPP

Instructions (CGP Part 7.5.3):

- Create a log here of changes and updates to the SWPPP. You should include additions of new BMPs, replacement of failed BMPs, significant changes in the activities or their timing on the project, changes in personnel, changes in inspection and maintenance procedures, updates to site maps, and so on.
- Instead of using the table, SWPPPs can also be redlined to show changes as long as the redlines are initialed and dated.

Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

SECTION 10: CERTIFICATION

Instructions:

- The SWPPP should be signed and certified by the owner and/or the general contractor. Attach a copy of the NOI and a copy of the General Storm Water Permit for Construction Activity. You can get a copy of the General Storm Water Permit for Construction Activity on the same web page that this template was obtained (https://deq.utah.gov/water-quality/general-construction-storm-water-updes-permits)

Owner

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Title:
Signature:	Date:

General Contractor

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Title:
Signature:	Date:

SECTION 11: SWPPP PREPARER CERTIFICATION

Instructions:

– Starting January 1, 2021: A SWPPP writer for a site greater than 5 acres, with a perennial surface water within 50 feet of the project, or with a steep slope (70% or 35 degrees or more) must hold a certification to demonstrate that they are a "qualified person" per CGP Part 7.2..

SWPPP Preparer

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Title:
Signature:	Date:

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – NOI

Appendix C – Inspection Reports

Appendix D –Corrective Action Report

Appendix E – Subcontractor Certifications/Agreements/Delegation of Authority (see CGP 9.16(1)b.)

Appendix F – Training Logs and Certifications (see CGP 6)

Appendix G – Additional Information (i.e., Other permits such as dewatering, stream alteration, wetland; and out of date swppp documents)

Appendix H – BMP Instruction and Detail Specifications

Appendix I – Construction General Permit

Appendix A: Site Maps

Include any site maps in this appendix. For site map requirements review SWPPP section 2.5.

Appendix B: NOI

Include a copy of your NOI in this appendix. The NOI must be signed.

Appendix C: Inspection Reports

Place all completed inspection reports in this appendix. You may also put blank inspection reports here to be completed.

You are encouraged to create your own inspection forms for each site. Inspection reports must have the following information:

1) The inspection date.
2) The UPDES ID number (UTRXXXXX).
3) Name and title of personnel making the inspections.
4) Summary of inspection findings and any necessary corrective actions:
    a. Are storm water controls properly installed and operational? If failed then why?
    b. Presence of any conditions that could lead to spills or leaks.
    c. Locations where new or modified controls are necessary.
    d. Signs of visible erosion or sediment depositing related to your discharges.
    e. Any incidents of noncompliance.
    f. Visual quality of any discharges occurring.
5) Rainfall amount if the inspection was trigger by a precipitation event.
6) If it was unsafe to inspect any areas of the site, a description of the area and reason.

Appendix D: Corrective Action Report

An example corrective action report has been included in this appendix. Review SWPPP section 8.2 for corrective action requirements. You can also create your own form or include corrective actions on your inspection form.

Appendix D – *Sample* Corrective Action Report

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

Appendix E: Subcontractor Certifications/Agreements/Delegation of Authority (CGP 9.16.(1)b.)

A sample subcontractor agreement form and delegation of authority form have been included in this appendix. If these are used, keep complete signed forms here.

SUBCONTRACTOR CERTIFICATION
STORM WATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Storm water Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at request.

Each subcontractor engaged in activities at the construction site that could impact storm water must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

_____

_____

Signature: _____

Title: _____

Date: _____

Delegation of Authority

I, _____, hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the UPDES "General Permit for Storm Water Discharges Associated with Construction Activity" (CGP), at the construction site:

_____, Permit No. UTR_____

The designee is authorized to sign all reports required by the Permit and other information requested by the Director of the Utah Division of Water Quality, or by an authorized representative of the Executive Secretary.

Name of Person or Position: _____

Owner/Operator:_____

Mailing Address: _____

City, State, Zip Code: _____

Phone Number: _____

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Part 9.16 of the CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Part 9.16.b. of the CGP.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Title: _____

Signature: _____

Date: _____

Appendix F: Training Logs and Certifications (see CGP 6)

A sample training log has been included in this appendix to keep track of trainings that have been provided. At a minimum, storm water team members that require training should be provided with the following if it relates to their duties (CGP Part 6.3.):

- The permit deadlines associated with installation, maintenance, and removal of storm water controls and with stabilization;
- The location of all storm water controls on the site required by this permit and how they are to be maintained;
- The proper procedures to follow with respect to the permit's pollution prevention requirements; and
- When and how to conduct inspections, record applicable findings, and take corrective actions

Certifications for SWPPP inspectors or writers can also be placed in this appendix.

Appendix F – *Sample* SWPPP Training Log

Storm Water Pollution Prevention Training Log

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours): _____

Storm Water Training Topic: *(check as appropriate)*

- ❑ **Erosion Control BMPs**
- ❑ **Emergency Procedures**
- ❑ **Sediment Control BMPs**
- ❑ **Good Housekeeping BMPs**
- ❑ **Non-Storm Water BMPs**

Specific Training Objective:_____

_____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Appendix G: Additional Information

Use this appendix for additional information such as other permits (dewatering, stream alteration, etc.) or out of date SWPPP documents.

Appendix H: BMP Instruction and Detail Specifications

Use this appendix if complete BMP specifications are not provided in Section 5 or 6 of the SWPPP.

Appendix I: Construction General Permit

If all storm water team members access the CGP via the internet while on site the following link to access the Construction General Permit is sufficient:

http://construction.stormwater.utah.gov

Otherwise, include a printed out copy of the Construction General Permit in this appendix.

Attachment B. Preliminary Stormwater Pollution Prevention Plan (Nevada)

The Construction SWPPP Template is Available for Accessible Reading and Download at:
nvr100000-const-swppp-template-2017.pdf

Stormwater Pollution Prevention Plan (SWPPP)

Table of Contents

Site / Owner / Operator

Provide site, owner, and operator information.

Site	
ID Number	CSW-
Name	
Address Line 1	
Address Line 2	
City	
State	
Zip Code	
Contact Name	
Phone Number	
Email Address	

Owner	
Name	
Address Line 1	
Address Line 2	
City	
State	
Zip Code	
Contact Name	
Phone Number	
Email Address	

Operator 1	
Name	
Address Line 1	
Address Line 2	
City	
State	
Zip Code	
Contact Name	
Title	
Phone Number	
Email Address	
If there is more than one operator, identify the areas and phases over which Operator 1 has control.	

Operator 2	
Name	
Address Line 1	
Address Line 2	
City	
State	
Zip Code	
Contact Name	
Title	
Phone Number	
Email Address	
Identify the areas and phases over which Operator 2 has control.	

Operator 3	
Name	
Address Line 1	
Address Line 2	
City	
State	
Zip Code	
Contact Name	
Title	
Phone Number	
Email Address	
Identify the areas and phases over which Operator 3 has control.	

Stormwater Team

List the name, title, and individual responsibilities for each member of the stormwater team. The stormwater team is responsible for overseeing the development of the SWPPP, any modifications to the SWPPP, and compliance with the requirements of the *Construction Stormwater General Permit NVR100000* (hereinafter referred to as the "Permit"). The team may include members who are not employed by the operator (such as third party consultants).

Stormwater Team Member 1	
Name	
Title	
Responsibilities	

Stormwater Team Member 2	
Name	
Title	
Responsibilities	

Stormwater Team Member 3	
Name	
Title	
Responsibilities	

Stormwater Team Member 4	
Name	
Title	
Responsibilities	

Stormwater Team Member 5	
Name	
Title	
Responsibilities	

Nature of Construction Activities

Describe the nature of the construction activities, including the size of the property and the total area expected to be disturbed by construction activities, construction support activity areas covered by the Permit, and the maximum area expected to be disturbed at any one time.

Nature of Construction Activities	
What is the size of the property?	acres
What is the total area expected to be disturbed by construction activities?	acres
What is the maximum area expected to be disturbed at any one time?	acres

Describe the construction support activity areas covered by the Permit. Construction support activities covered by the Permit are described in Permit section *1.2.1.2* and defined on page 40 of the Permit.

Emergency-Related Construction Activities

For earth-disturbing activities in response to a public emergency, document the cause of the public emergency, provide information substantiating its occurrence, and describe the construction necessary to reestablish affected public services.

Cause of the Public Emergency
Describe the cause of the public emergency (e.g., natural disaster, extreme flooding conditions, etc.).

Substantiating Information
Provide information substantiating the occurrence of the public emergency (such as a state disaster declaration or similar state or local declaration). Attach supporting documentation to the end of the SWPPP.

Necessary Construction
Describe the construction necessary to reestablish affected public services.

Sequence and Estimated Dates of Construction Activities

Provide a schedule of the estimated start dates and the duration of the activity for installation of stormwater control measures, construction activities, cessation of construction activities, and stabilization of areas of exposed soil.

Installation of Stormwater Control Measures	
What is the estimated start date for the installation of stormwater control measures?	_____/_____/_____
What is the estimated duration of the installation of stormwater control measures?	
When will the stormwater control measures be made operational?	
Explain the sequence and schedule for installation of stormwater control measures.	

Construction Activities	
What is the estimated start date of construction activities?	_____/_____/_____
What is the estimated duration of construction activities?	
Describe the intended sequence of construction activities. Construction activities include clearing and grubbing, grading, site preparation (i.e., excavating, cutting, and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization.	

Cessation of Construction Activities		
What is the estimated start date for the cessation of construction activities?	_____/_____/_____	
Will the cessation of construction activities be temporary or permanent?	◯ Temporary	◯ Permanent
If the cessation of construction activities will be temporary, provide the estimated duration of the cessation of construction activities.		
Will the cessation of construction activities occur on the entire site (100%) or in designated portions of the site?	◯ 100%	◯ Designated Portions
If the cessation of construction activities will occur in designated portions of the site, identify the designated portions of the site where the cessation of construction activities will occur.		

Stabilization of Areas of Exposed Soil	
What is the estimated start date for the *temporary* stabilization of areas of exposed soil?	_____/_____/_____
What is the estimated duration of the *temporary* stabilization of areas of exposed soil?	
What is the estimated start date for the *final* stabilization of areas of exposed soil?	_____/_____/_____
What is the estimated duration of the *final* stabilization of areas of exposed soil?	
Note: The dates for stabilization shall reflect the applicable deadlines in Permit section *3.6 Site Stabilization Requirements, Schedules, and Deadlines*.	

Departures from Initial Projections
If departures from initial projections for any of the activities on pages 6 and 7 of this SWPPP are necessary, identify and describe such departures. Alternatively, documentation describing such departures may be attached to the end of the SWPPP.

Site Description

Provide the following construction site information.

Site Description		
Project Name		
Project Address		
Project City		
Project County		
Project APN		
Describe the site and its intended use after the Notice of Termination is filed (e.g., low density residential, shopping mall, highway, etc.)		
What is the total area of the site?		acres
What is the estimated total area of the site expected to be disturbed by construction activities, including off-site supporting activities, borrow and fill areas, and staging and equipment storage areas?		acres
What percentage of the site is impervious before and after construction?	Before:	%
	After:	%
Describe the soils at the site, including the potential for erosion.		
For areas where it is infeasible to maintain a 50-foot buffer in accordance with Permit section *3.5.1*, provide the reasons why the 50-foot buffer cannot be maintained, identify and describe the alternative additional erosion and sediment controls that were selected for the site, document the natural buffer width retained on the property, and attach any relevant documentation to the end of the SWPPP.		
Identify and describe all on-site and off-site material storage areas, including overburden, stockpiles of dirt, borrow areas, etc.		
Attach a general location map to the end of the SWPPP. The map should contain enough detail to identify the following items: • the location of the construction site and one-mile radius • the waters of the State of Nevada, including tributaries, within a one-mile radius of the site		

Site Map(s)

Attach a site map or series of maps to the end of the SWPPP.

Site Map(s)	
Attach, to the end of the SWPPP, a legible site map or series of maps completed to scale. The map(s) should show the entire site and identify all of the items listed below. Check the box next to each item to confirm that the item is identified on the map(s).	
☐	Topography of the site, existing types of cover (e.g., forest, pasture, pavement, structures), and drainage pattern(s) of flow onto, over, and from the site both before and after major grading activities
☐	Areas of soil disturbance and areas that will not be disturbed
☐	Boundaries of the property
☐	Locations where construction activities will occur, noting any phasing
☐	Locations where sediment or soil will be stockpiled
☐	Locations of any crossings of surface waters
☐	Designated points on the site where vehicles will exit onto paved road
☐	Locations of construction support activity areas covered by the Permit
☐	Locations of temporary and permanent stormwater control measures identified in this SWPPP
☐	Locations where stabilization control measures are expected to occur
☐	Areas protected by buffers (i.e., either the 50-foot buffer or other buffer areas retained on site when within 50 feet of perennial water) consistent with Permit section *3.5.1*, as well as the boundary line of all such buffers
☐	Locations of on-site material, waste, borrow areas or equipment storage areas, and other supporting activities (per Permit section 1.2.1.2)
☐	Locations of all potential pollutant-generating activities identified on pages 14-15 of this SWPPP
☐	Locations of all surface waters and any impaired waters within ¼ mile of the site
☐	Stormwater discharge locations, using arrows to indicate discharge directions, including: • locations where stormwater and/or allowable non-stormwater discharges are discharged to a Water of the U.S. • locations of any discharges to municipal separate storm sewer systems (MS4s) from the construction site
☐	Areas where final stabilization has been accomplished and no further construction permit requirements apply
☐	Location of trees and boundaries of environmentally sensitive areas and buffer zones to be preserved

Receiving Waters

Identify the receiving waters.

Receiving Waters
Identify the name of the receiving water(s) and the areal extent and description of wetland or other special aquatic sites at or near the site which will be disturbed or which will receive discharges from disturbed areas of the construction site.

Impaired Water		
Is any discharge point from the construction site within ¼ mile of impaired water?	◯ Yes	◯ No
If any discharge point from the construction site is within ¼ mile of impaired water, identify any common construction-related pollutants, such as sediment, sediment-related parameters, and nutrients (including nitrogen and phosphorous), listed on the 303(d) list that may potentially be discharged from the construction site and describe additional or enhanced control measures to minimize discharges of these pollutants. The 303(d) list can be found on the Nevada Division of Environmental Protection (NDEP), Bureau of Water Quality Planning (BWQP) website (https://ndep.nv.gov/water/rivers-streams-lakes/water-quality-standards/303d-305b-water-quality-integrated-report).		

Stormwater Control Measures

Describe the stormwater control measures that will be used during construction activity.

Stormwater Control Measures
Identify and describe all control measures as required by Permit section *3.0* that will be implemented and maintained as part of the construction project to reduce and control pollutants in stormwater discharges from the construction site. Include control measures used at support activity areas.
Control Measure 1
Control Measure 2
Control Measure 3
Control Measure 4
Control Measure 5
Control Measure 6

Stormwater Control Measures for Major Construction Activities
For each major construction activity at the site, describe the appropriate control measures and the general timing (or sequence) during the construction process that the measure will be implemented and identify the operator responsible for implementation of the control measures. Fill out one table for each major construction activity.

Construction Activity 1
Identify the type of construction activity.
Describe the control measure(s) used for this activity.
Describe the general timing/sequence during the construction process that the measure(s) will be implemented.
Which operator is responsible for implementation of this control measure?

Construction Activity 2
Identify the type of construction activity.
Describe the control measure(s) used for this activity.
Describe the general timing/sequence during the construction process that the measure(s) will be implemented.
Which operator is responsible for implementation of this control measure?

Construction Activity 3
Identify the type of construction activity.
Describe the control measure(s) used for this activity.
Describe the general timing/sequence during the construction process that the measure(s) will be implemented.
Which operator is responsible for implementation of this control measure?

Construction Activity 4
Identify the type of construction activity.
Describe the control measure(s) used for this activity.
Describe the general timing/sequence during the construction process that the measure(s) will be implemented.
Which operator is responsible for implementation of this control measure?

Construction Activity 5
Identify the type of construction activity.
Describe the control measure(s) used for this activity.
Describe the general timing/sequence during the construction process that the measure(s) will be implemented.
Which operator is responsible for implementation of this control measure?

Construction Activity 6
Identify the type of construction activity.
Describe the control measure(s) used for this activity.
Describe the general timing/sequence during the construction process that the measure(s) will be implemented.
Which operator is responsible for implementation of this control measure?

Potential Pollutant Sources

Identify and describe any pollutant sources expected to be associated with the project.

Potential Pollutant Sources
Identify all potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the construction site. Also identify the location of and describe any pollutant sources, including any non-stormwater discharges expected to be associated with the project, from areas other than construction (i.e., support activities including stormwater discharges from dedicated asphalt or concrete plants and any other non-construction pollutant sources such as fueling and maintenance operations, materials stored on-site, waste piles, equipment staging yards, etc.).

Potential Pollutant Source 1
What is the location of the potential pollutant source?
Describe the potential pollutant source.

Potential Pollutant Source 2
What is the location of the potential pollutant source?
Describe the potential pollutant source.

Potential Pollutant Source 3
What is the location of the potential pollutant source?
Describe the potential pollutant source.

Potential Pollutant Source 4
What is the location of the potential pollutant source?
Describe the potential pollutant source.

Potential Pollutant Source 5
What is the location of the potential pollutant source?
Describe the potential pollutant source.

Potential Pollutant Source 6
What is the location of the potential pollutant source?
Describe the potential pollutant source.

Potential Pollutant Source 7
What is the location of the potential pollutant source?
Describe the potential pollutant source.

Spill Prevention & Response

Describe procedures to prevent and respond to spills, leaks, and other releases. Other existing spill prevention plans, such as the Spill Prevention Control and Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the Clean Water Act (CWA), or spill control programs otherwise required by NDEP permits for the construction activity, may be referenced provided that a copy of that other plan is kept onsite with the SWPPP. Attach a copy of any referenced plan(s) to the end of the SWPPP.

Container Labeling

Describe procedures for plainly labeling containers (e.g., "Used Oil", "Pesticides", etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response as spills or leaks occur.

Preventive Measures

Describe preventive measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling.

Spill/Leak Stoppage, Containment, and Cleaning
Describe procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases.
Identify the name or position of the employee(s) responsible for detecting and responding to spills or leaks.

Spill/Leak Notification
Describe procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under 40 Code of Federal Regulations (CFR) Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period. Contact information shall be in locations that are readily accessible and available.
Facility Personnel
Emergency Response Agencies
Regulatory Agencies

Waste Management

Describe procedures for handling and disposing of all wastes generated at the site.

Waste Management Procedures
Describe procedures for handling and disposing of all wastes generated at the site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

Documentation Requirements

Provide the following information.

Notice of Intent (NOI)

Attach, to the end of the SWPPP, a copy of the signed electronic NOI certification page submitted to the NDEP.

Approval Letter

Attach, to the end of the SWPPP, a copy of the approval letter received from the NDEP.

Permit

Attach a copy of the Permit to the end of the SWPPP.

Significant Spills/Leaks/Releases

Describe any incidences of significant spills, leaks, or other releases that resulted in discharges of pollutants in stormwater to a regulated MS4 or waters of the State of Nevada that meet the definition of Waters of the U.S. Include the date of occurrence, the circumstances leading to the release, actions taken in response to the release, and measures taken to prevent recurrence of such releases.

Structural Control Measure Repairs

Attach, to the end of the SWPPP, documentation of repairs made to structural control measures. Such documentation shall include the date(s) of discovery of areas in need of repair/replacement, date(s) that the structural control measure(s) returned to full function, and the justification for any extended repair schedules.

Inspection Reports

Attach, to the end of the SWPPP, all inspection reports including post-storm event inspections.

Corrective Action
Describe any corrective action taken at the site. Include events and dates when problems were discovered and modification occurred.

Buffer Documentation
If the site's disturbance area is located within 50 feet of perennial water, attach buffer documentation to the end of the SWPPP.

Employee Training Records
Attach records of employee training to the end of the SWPPP. Records should include the date training was received.

Plans Required By Other Agencies
The SWPPP may incorporate by reference the appropriate elements of plans required by other agencies. Attach, to the end of the SWPPP, a copy of the requirements incorporated by reference.

DeMinimis Discharges
For DeMinimis discharges, describe the discharge, provide the beginning and end dates of the discharge, and attach a copy of the sampling analysis report to the end of the SWPPP.

DeMinimis Discharge 1	
Start Date	**Description**
_____/_____/_____	
End Date	
_____/_____/_____	

DeMinimis Discharge 2	
Start Date	**Description**
_____/_____/_____	
End Date	
_____/_____/_____	

DeMinimis Discharge 3	
Start Date	**Description**
_____/_____/_____	
End Date	
_____/_____/_____	

Post-Construction Stormwater Management
Describe the stormwater management control measures that will be installed during the construction process to control pollutants in stormwater discharges after construction has been completed.

Inspection, Maintenance, and Corrective Action

Describe the procedures operators will follow for maintaining their stormwater control measures, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Permit sections *3.0 Effluent Limitations Applicable to All Discharges from Construction Sites*, *4.0 Effluent Limitations Applicable to Sites Using Constructed Stormwater Conveyance Channels or Sediment Basins* , and *5.0 Inspections*.

Inspection Procedures
Describe the procedures operators will follow for conducting site inspections.
Identify the personnel responsible for conducting inspections.
Provide the inspection schedule that will be followed based on whether the site is subject to Permit section *5.2 Routine Site Inspection Procedures*, or whether the site qualifies for the reduced inspection frequency in Permit section *5.3 Reduced Inspection Schedule*. If the site qualifies for a reduced inspection schedule in accordance with Permit section *5.3 Reduced Inspection Schedule*, include the beginning and ending dates of the reduced inspection period.

Routine Facility Inspection Documentation
Attach all documented findings of each routine site inspection to the end of the SWPPP. Routine facility inspection documentation requirements are outlined in Permit section *5.4 Routine Facility Inspection Documentation*.

Inspection Results
Attach, to the end of the SWPPP, records of actions taken based on inspection results in accordance with Permit section *5.5 Inspection Results*.

Inspection or Maintenance Checklists
Attach any inspection or maintenance checklists or other forms that will be used to the end of the SWPPP.

Maintenance Procedures
Describe the procedures operators will follow for maintaining their stormwater control measures.

Corrective Action Procedures
Describe the procedures operators will follow for taking any necessary corrective actions.

Additional Information

Provide the following additional information.

Discharges To Water Quality Impaired Waters		
Does the facility discharge to a surface water contained in the current 303(d) *Impaired Water Body* listing issued by the NDEP BWQP that is impaired for (1) sediment or a sediment-related parameter, such as total suspended solids (TSS) or turbidity, and/or (2) nutrients, including impairments for nitrogen and/or phosphorous?	○ Yes	○ No

If yes, make one of the following demonstrations (check the appropriate box to indicate which one has been selected) and attach such data and technical information to the end of the SWPPP:

☐	That the site will employ measures to prevent the discharge of stormwater pollutant(s) for which the waterbody is impaired; or
☐	That the discharge from the site has no potential to contain the pollutants causing impairment; or
☐	That the discharge is not expected to cause or contribute to an exceedance of an applicable water quality standard.

Control Measure Addition/Repair/Modification
If it is determined, based on an inspection of control measures performed in accordance with the inspection requirements of Permit section *5.0 Inspections*, that installation of additional control measures, or significant repair or modification of existing control measures, is necessary, and implementation before the next storm event is impracticable, document the reason(s) for the delay in the area below.
Identify and describe the modifications made to control measures.

Permit Requirement Waiver
If the project is waived from complying with a specific requirement in Permit section *3.0 Effluent Limitations Applicable to All Discharges from Construction Sites* in accordance with Permit section 3.1.1, document this fact in the area below.

Departures from Design Specifications
Explain any departures from design specifications for the installation of all stormwater control measures.

Culvert Stabilization
If culverts are present on the site, describe the measures implemented to sufficiently minimize the threat of erosion at culvert locations to prevent the formation of rills and gullies during construction.

Unique Construction Disturbances
If the project involves construction approved under a CWA Section 404 permit or construction of a water-dependent structure or water access area (e.g., pier, boat ramp, trail), document this fact in the area below and on the site map.

Linear Construction Projects
For linear construction projects where it is infeasible to comply with the requirements of Permit section *3.5.1.2*, document the rationale for why it is infeasible to do so, and describe any buffer width retained and/or supplemental erosion and sediment controls installed.
For linear projects with rights-of-way that restrict or prevent the use of perimeter controls required by Permit section *3.5.2 Install Perimeter Controls*, identify the areas where it is impracticable to maximize the use of perimeter controls and explain why it is impracticable to do so.

Track-Out
If site conditions make it infeasible to install structural controls to prevent track-out (e.g., linear project along a paved right-of-way), explain why such controls cannot be installed and describe the alternative measures that will be used to prevent, monitor, and remove track-out sediment from paved roadways.

Sediment or Soil Stockpiles
If it is infeasible to place sediment or soil stockpiles away from stormwater conveyances, such as curb and gutter systems, and streets leading to such conveyances, explain why it is infeasible to do so.

Non-Vegetative Stabilization Methods
Describe all non-vegetative methods of stabilization employed at the site.

Discharges to Impaired Waterbodies Without Established Total Maximum Daily Loads
If the site discharges to a water quality-impaired water (contained in the current 303(d) impaired water body listing) for which a Total Maximum Daily Load has not been established, describe the condition for which the water has been listed and include a demonstration that the Best Management Practices that are selected for implementation will be sufficient to ensure that the discharges will not cause or contribute to an exceedance of an applicable State water quality standard.

Sediment Basin Discharges
If the use of outlet structures that withdraw water from the surface of the sediment basin in order to minimize the discharge of pollutants is determined to be infeasible, explain why it is infeasible and attach any supporting documentation to the end of the SWPPP.

Additional Discharge Requirements
Where NDEP determines it is necessary to impose additional requirements on the discharge, attach a copy of any correspondence describing such requirements to the end of the SWPPP, and describe the stormwater control measures that will be used to meet such requirements.

Signature Requirements

Print out the completed SWPPP and sign and date below in accordance with Permit section *7.23 Signature Requirements*. All operators shall also sign and certify the SWPPP in accordance with the Permit signature requirements. Digital signatures are not accepted.

Adherence Statement	
"I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."	
Name (print)	**Title**
Signature	**Date**
	_____/_____/_____

Operator 1	
Name (print)	**Title**
Signature	**Date**
	_____/_____/_____

Operator 2	
Name (print)	**Title**
Signature	**Date**
	_____/_____/_____

Operator 3	
Name (print)	**Title**
Signature	**Date**
	_____/_____/_____

Appendix C11. Spill Prevention, Control, and Countermeasure Management Plan - DRAFT

Cross-Tie 500-kV Transmission Project Plan of Development

Appendix C11. Spill Prevention, Control, and Countermeasure Management Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Attachments

Abbreviations

BLM	Bureau of Land Management
CFR	Code of Federal Regulations
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
kV	kilovolt
Plan	Spill Prevention, Control, and Countermeasure Management Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Spill Prevention, Control, and Countermeasure Management Plan (Plan) was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

2 PURPOSE

The purpose of this Plan is to provide direction for the development of a spill prevention, control, and countermeasure plan(s) (SPCC plan[s]), should one or more be required for the Project, which will prevent oil releases, regulated under 40 Code of Federal Regulations (CFR) 112 – Oil Pollution Prevention, from reaching waters of the U.S. or adjoining shorelines by doing the following:

- Reducing the potential for a spill of regulated oil
- Preventing the off-site migration of any spillage
- Protecting areas that are environmentally sensitive

This management plan provides direction to prevent a spill of regulated oil from adversely impacting wetlands, surface waterbodies, and groundwater wells, as well as mitigation measures to be used during the construction and operation and maintenance phases of the Project. This management plan is consistent with the requirements of the U.S. Environmental Protection Agency (EPA) spill prevention, control, and countermeasure regulations for applicable regulated oil.

Any SPCC plan required for the Project will be developed by the Construction Contractor(s) and will contain all required information to ensure compliance with 40 CFR 112. Under 40 CFR 112, an SPCC plan is required for any facility if the aggregate aboveground oil storage capacity is greater than 1,320 U.S. gallons, including only those containers with capacities of 55 gallons or more.

3 RESPONSIBILITY OF IMPLEMENTATION

The Company will have oversight responsibility to ensure that the Construction Contractor(s) develop an SPCC plan(s), as necessary, consistent with EPA requirements and the mitigation measures contained in this management plan, and that the SPCC plan(s) is implemented accordingly. The Company will develop, as necessary, a separate SPCC plan(s) for Project operations and maintenance that will be consistent with EPA requirements and the mitigation measures contained in this management plan. The Company will implement the SPCC plans accordingly.

The Construction Contractor(s) will prepare an SPCC plan(s) for Project facilities if the applicability criteria for 40 CFR 112 are met and will include the mitigation measures identified in the management plan. The Construction Contractors(s) will develop an SPCC plan(s) pursuant to applicable regulations. The Construction Contractor(s) will submit each SPCC plan to the Company for review and comment and will also submit any SPCC plan on federally administered land to the Compliance Inspection Contractor/applicable federal land management agency for review and comment.

4 REGULATORY COMPLIANCE

Materials other than those covered under the 40 CFR 112 regulatory definition of oil are not covered by this management plan and are addressed as needed by Appendix C12: Hazardous Materials Management Plan. The 40 CFR 112.2 regulatory definition of oil includes 'oil' of any kind or in any form, including, but not limited to fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.

An SPCC plan will address regulated oil only at Project facilities where the applicability criteria identified in 40 CFR 112 are met, namely non-transportation-related facilities with an aggregate aboveground oil storage capacity exceeding 1,320 gallons of oil, including only those containers with capacities of 55 gallons or more.

Major legislation pertaining to spills of regulated oil include, but are not limited to, the following regulations and laws:

- Occupational Safety and Health Administration (29 CFR 1900–1910, 1926)
  - 28 CFR 1900–1910 Occupational Safety and Health Act
  - 29 CFR 1910.1200 Hazard Communication
  - 29 CFR 1926 Safety and Health Regulations for Construction
- Clean Water Act (40 CFR 100–149)
  - 40 CFR 110 Discharges of Oil
  - 40 CFR 112 Oil Pollution Prevention
  - 40 CFR 129 Toxic Pollutant Effluent Standards
  - 40 CFR 131 Water Quality Standards
  - 40 CFR 141–149 Safe Drinking Water Act
- Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (40 CFR 300–399)
  - 40 CFR 300 National Oil and Hazardous Substances Pollution Contingency Plan
  - 40 CFR 302 Designation, Reportable Quantities, and Notification
  - 40 CFR 355 Emergency Planning and Notification

- Solid and Hazardous Wastes (40 CFR 239–299)
  - 40 CFR 279 Standards for the Management of Used Oil
- Hazardous Materials Transportation Act (49 CFR 100–99)
  - 49 CFR 130 Oil Spill Prevention and Response Plans
  - 49 CFR 171 General Information, Regulations, and Definitions
  - 49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
  - 49 CFR 177 Carriage by Public Highway

5 SPCC PLAN CONTENTS

The Construction Contractor(s) will prepare any SPCC plan consistent with 40 CFR 112.7 – General Requirements for Spill Prevention, Control, and Countermeasure Plans. See Attachment A: Spill Prevention, Control, and Countermeasure Plan Table of Contents Base Format.

6 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

Applied Project-wide, applicant committed environmental protection measures have been developed in accordance with federal land management agency and/or state standards and will address many of the concerns associated with spill prevention and management. The measures that address construction and operation and maintenance of Project facilities regarding spill prevention and management can be found in Section 9 of the POD.

7 EMERGENCY CONTACTS

Agency	Contact Information
Federal	
National Response Center (Washington, D.C.) U.S. Environmental Protection Agency	800-424-8802
Region 8 Emergency Response Center	303-293-1238 800-424-8801
BLM Fillmore Field Office Authorized Officer or Designee	435-743-3100
BLM Bristlecone Field Office Authorized Officer or Designee	To be determined
Forest Service Authorized Officer or Designee	To be determined
Forest Service Humboldt-Toiyabe National Forest	To be determined

Agency	Contact Information
Hazmat OnScene Coordinator	David Risley, Forest Remediation Geologist (Phone) 775-352-1223 (Cell) 208-283-8130 (Email) David.risley@usda.gov
State of Utah	
Utah Department of Environmental Quality, Division of Solid and Hazardous Waste	801-538-6170
Utah Department of Environmental Quality, Division of Environmental Response and Remediation	801-536-4100
Utah Department of Environmental Quality, Division of Water Quality	801-538-6146
State of Nevada	
Nevada Division of Environmental Protection, Bureau of Corrective Actions	775-687-9368
Nevada Division of Environmental Protection, Bureau of Water Pollution Control	775-687-9418

Attachment A. Spill Prevention, Control, and Countermeasure Plan Table of Contents Base Format

INTRODUCTION

The Construction Contractor(s) will prepare an SPCC plan if the applicability criteria for 40 CFR 112 are met, namely, that the oil is non-transportation-related and the aggregate aboveground oil storage capacity is greater than 1,320 gallons, including only those containers with capacities of 55 gallons or more.

The following SPCC plan table of contents is the base format to be used for the development of the SPCC plan (Construction Contractor(s) will review and revise as needed). The Construction Contractor(s) will develop an SPCC plan(s) consistent with 40 CFR 112 requirements and will detail equipment, workforce, procedures, and steps to prevent, control, and provide adequate countermeasures to a regulated oil spill.

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Appendix C12. Hazardous Materials Management Plan - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C12. Hazardous Materials Management Plan

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Attachment

Figure

Table

Abbreviations

BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
EPA	U.S. Environmental Protection Agency
Forest Service	U.S. Department of Agriculture Forest Service
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NRC	National Response Center
Plan	Hazardous Materials Management Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-way
SDS	safety data sheets
SPCC	Spill prevention, control, and countermeasures
UC	Utah Code
UDOT	Utah Department of Transportation
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

The Hazardous Materials Management Plan (Plan) is intended to reduce the risks associated with the use, storage, transportation, production, and disposal of hazardous materials (including hazardous substances and waste). The term "hazardous materials," as presented in this Plan, refers to hazardous substances, hazardous waste, marine pollutants, elevated temperature materials, and materials designated as hazardous for transportation as defined in 49 Code of Federal Regulations (CFR) 171.8.

This Plan identifies treatments and measures required to avoid, minimize, and mitigate Project-related impacts; by preventing unnecessary degradation of the environment; by ensuring that emergency preparedness and response activities comply with federal, state, or other agency requirements.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (Forest Service) records of decision and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

In the event that the Project requires the preparation of a spill prevention, containment, and countermeasure (SPCC) plan to comply with 40 CFR 112, that will be addressed in Appendix C11: Spill Prevention, Control, and Countermeasure Management Plan.

2 PURPOSE

The goals and purpose of this Plan are to 1) minimize the potential for a spill of fuel or other hazardous material, 2) contain any spillage to the smallest possible area, 3) protect areas that are environmentally sensitive, and 4) provide the requirements that will be met as part of the implementation of this Plan.

This Plan includes the following components:

- Legal requirements that apply to specific types of hazardous materials (Section 3)
- Implementation of this Plan including certifications, designation of coordinators and responsible persons, and facilities descriptions and inventory of materials (Section 4)
- Spill prevention procedures related to the transportation, storage, and disposal of hazardous materials (Section 5)
- Identification of design features of the Project for environmental protection that, will be followed to reduce risks associated with hazardous materials (Section 6)
- Spill control, response, and cleanup methods (Section 7)

- An overview of the notification and documentation procedures to be followed in the event of a spill (Section 8)

- Operations and maintenance considerations (Section 9).

In general, hazardous materials (including any equipment used for cleanup) will be stored in state-approved containers until the hazardous materials can be properly transported and disposed of at an approved treatment, storage, or disposal facility. Persons responsible for handling or transporting hazardous materials for the Project will be trained in the proper use/management of the materials and should be familiar with all applicable laws, policies, procedures, and mitigation measures related to such handling or transportation.

It is the responsibility of the Construction Contractor(s) to maintain records of proper training/certification for any individual(s) who may potentially handle hazardous materials for the Project. TransCanyon, LLC, (the Company) reserves the right to audit any subcontractors to ensure compliance. Sample hazardous materials management forms or documents are provided in Attachment A: Sample Hazardous Materials Management Plan Forms. The Construction Contractor(s) is required to develop all applicable hazardous materials management forms or documents necessary for the proper documentation of hazardous materials handling.

3 REGULATORY COMPLIANCE

Major legislation pertaining to hazardous materials includes the Comprehensive Environmental Response, Compensation, and Liability Act; Resource Conservation and Recovery Act; Clean Air Act; and Clean Water Act.

Numerous other federal, state, and local regulations also govern the use, storage, transportation, production, and disposal of hazardous materials. The Project will also be in compliance with Forest Service temporary construction permit requirements on National Forest System lands. It is the responsibility of the Company and the Construction Contractor(s) to comply with all applicable laws and regulations regarding the transport, handling, and storage of hazardous materials. Some of the key regulations associated with these laws are identified below.

3.1 Occupational Safety and Health Administration (29 CFR 1900–1910)

- 28 CFR 1900–1910 Occupational Safety and Health Act

- 29 CFR 1904 Recording and Reporting Occupational Injuries and Illness

- 29 CFR 1910.1200 Hazard Communication

- 29 CFR 1926 Safety and Health Regulations for Construction

3.2 Clean Water Act (40 CFR 100–149)

- 40 CFR 110 Discharges of Oil

- 40 CFR 112 Oil Pollution Prevention

- 40 CFR 116 Designation of Hazardous Substances

- 40 CFR 117 Determination of Reportable Quantities for Hazardous Substances

- 40 CFR 122 The National Pollutant Discharge Elimination System Permit Program
- 40 CFR 125 Criteria and Standards for the National Pollutant Discharge Elimination System
- 40 CFR 129 Toxic Pollutant Effluent Standards
- 40 CFR 131 Water Quality Standards
- 40 CFR 141–149 Safe Drinking Water Act

3.3 Clean Air Act (40 CFR 50–99)

- 40 CFR 50 National Ambient Air Quality Standards
- 40 CFR 61–63 National Emissions Standards for Hazardous Air Pollutants

3.4 Toxic Substances Control Act (40 CFR 700–799)

- 40 CFR 710 Toxic Substances Control Act Chemical Inventory Regulations
- 40 CFR 761 Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

3.5 Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (40 CFR 300– 399)

- 40 CFR 300 National Oil and Hazardous Substances Pollution Contingency Plan
- 40 CFR 302 Designation, Reportable Quantities, and Notification
- 40 CFR 355 Emergency Planning and Notification
- 40 CFR 370 Hazardous Chemical Reporting: Community Right-to-Know
- 40 CFR 372 Toxic Chemical Release Reporting: Community Right-to-Know

3.6 Solid and Hazardous Waste (40 CFR 239–299)

- 40 CFR 201–211 Noise Abatement Programs
- 40 CFR 243 Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
- 40 CFR 260 Hazardous Waste Management System: General
- 40 CFR 261 Identification and Listing of Hazardous Waste
- 40 CFR 262 Standards Applicable to Generators of Hazardous Waste
- 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste
- 40 CFR 273 Standards for Universal Waste Management

- 40 CFR 279 Standards for the Management of Used Oil

3.7 Hazardous Materials Transportation Act (49 CFR 100– 199)

- 49 CFR 130 Oil Spill Prevention and Response Plans
- 49 CFR 171 General Information, Regulations, and Definitions
- 49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
- 49 CFR 177 Carriage by Public Highway

3.8 Utah-Specific Regulations

- Utah Code (UC) Title 19 Chapter 2 – Air Conservation Act
- UC Title 19 Chapter 4 – Safe Drinking Water Act
- UC Title 19 Chapter 5 – Water Quality Act
- UC Title 19 Chapter 6 – Hazardous Substances
- UC Title 19 Chapter 10 – Environmental Institutional Control Act
- UC Title 54 Chapter 8c – High Voltage Overhead Lines
- UC Title 54 Chapter 18 – Siting of High Voltage Power Line Act

3.9 Nevada-Specific Regulations

- Nevada Administrative Code (NAC) 445B.00-445B.395 – Air Pollution Control
- NAC 445A – Water Pollution Control
- NAC 445A.118-445A.2234 – Water Quality Standards
- NAC 459.952-459.9542 – Highly Hazardous Substances
- NAC 590.700-590.790 – Cleanup of Petroleum Discharges
- NAC 233B – Administrative Procedures Act

4 HAZARDOUS MATERIALS MANAGEMENT PLAN IMPLEMENTATION

The following sections provide specific requirements for the Construction Contractor(s) to implement. The Construction Contractor(s) will provide the Company and the Compliance Inspection Contractor (CIC) with all information identified; the CIC will in turn provide this information to the BLM. In addition, the Construction Contractor(s) will complete any other required county, state, or federal documentation and provide copies of this documentation to the Company and to the BLM as applicable.

4.1 Acknowledgments and Designation of Coordinator/Responsible Person

4.1.1 Certifications

The Construction Contractor(s) will review this Plan and acknowledge in writing to the Company that all the information provided in this Plan is accurate and complete to the best of their knowledge. The Construction Contractor(s) also will acknowledge that they can implement the Plan as written. If the Plan cannot be implemented as written, Section 4.1.2 of this Plan will be enacted.

4.1.2 Amendments

The Construction Contractor(s) will agree to make all necessary and appropriate amendments to this Plan and submit any and all such amendments to the Company, the BLM and/or the Forest Service (depending on underlying land management responsibilities), and the appropriate regulatory entity within seven days of finding that an amendment is necessary.

Amendments to this Plan will be necessary under any of the following circumstances:

- Applicable laws or regulations are revised
- A 100 percent or more increase in the amount of a previously disclosed hazardous material
- Any handling of a previously undisclosed hazardous material subject to inventory requirements
- A change in formulation of a previously disclosed hazardous material
- A change of business address, name, or ownership
- The list of emergency coordinators changes
- The list of emergency equipment changes

The Construction Contractor(s) will provide the business address, name, ownership, list of emergency coordinators, and list of emergency equipment to the Company and the CIC prior to the start of construction.

4.1.3 Emergency Coordinator

The Construction Contractor(s) will identify an emergency coordinator and two alternates for hazardous materials management and emergency response (see Attachment A for the form titled Certifications, Acknowledgments, and Designation of Emergency Coordinator). Business, residential, and/or mobile phone numbers will be provided for all three persons to allow for contact on a 24-hour basis. Primary and alternate emergency response coordinators will be knowledgeable of the hazardous materials and processes involved in the construction of the Project and will have the authority to commit Construction Contractor(s) resources to implement this Plan. The emergency coordinators will also have stop-work authority in case of noncompliance or danger to human health or the environment.

4.2 Facilities Description and Inventory of Material

4.2.1 Site Map

The Construction Contractor(s) will provide the CIC and the Company with site map(s)/facility map(s) that contain storage and safety precautions for hazardous materials and hazardous waste. All maps must be provided on standard 8.5 × 11–inch paper and will, at a minimum, indicate the following:

- Orientation and scale
- Total land area in acres
- Access and egress points
- Buildings and/or temporary trailers
- Parking areas
- Adjacent land uses (if business, indicate business name)
- Surrounding roads, storm drains, and waterways (including streams and wetlands)
- Locations of hazardous materials and hazardous waste storage areas
- Underground and aboveground tanks
- Containment or diversion structures (dikes, berms, retention ponds)
- Shutoff valves and/or circuit breakers
- Location of emergency response materials and equipment
- Location of safety data sheets (SDS), the hazardous materials management plan, and the SPCC plan
- Location of emergency assembly area(s)

4.2.2 Inventory and Inspection

The Construction Contractor(s) will maintain a complete inventory of all hazardous materials. The Construction Contractor(s) will be responsible for consulting with the relevant regulatory agencies if they handle extremely hazardous substances, as identified in the U.S. Environmental Protection Agency's (EPA's) *Extremely Hazardous Substance List and Threshold Planning Quantities; Emergency Planning and Release Notification Requirements: Final Rule* (*Federal Register* 52:13378). The Construction Contractor(s) will identify on each site map(s)/facility map(s) all sources of potential spills, including tank overflow, rupture, or leakage.

SPCC information must be recorded for all containers with a capacity of 55 gallons or greater that contain hazardous chemicals, including oil, petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste. This information will be maintained by the Construction Contractor(s)'s safety officer (or designated personnel) and be readily available to the Emergency Coordinator. A sample of an SPCC inventory sheet is included in Attachment A.

The Construction Contractor(s) will inspect all hazardous materials storage facilities on a regular basis, but not less than weekly. The Construction Contractor(s) will keep records of all inspections on file and indicate if conditions are acceptable or unacceptable and document that all unacceptable conditions have been resolved. The Construction Contractor(s) will provide the CIC and the Company with copies of the inspection records, and the CIC will be responsible for providing this information to the BLM. A sample of a Weekly Hazardous Materials/Waste Inspection Log is included in Attachment A. The Construction Contractor(s) will be responsible for developing all hazardous material forms in support of this Plan and to coordinate Company review of these forms.

5 SPILL PREVENTION PROCEDURES

Construction, operation, and maintenance of the Project will require the use of certain hazardous materials, such as fuels, oils, explosives, and herbicides. By definition, hazardous materials (substances and waste) have the potential to pose a significant threat to human health and the environment based on their quantity, concentration, or chemical composition. When stored, used, transported, and disposed of properly, as described below, the risks associated with these materials can be reduced substantially. The Construction contractor(s) will be responsible to comply with the requirements for construction in the subsections below, and the Company will be responsible for compliance for operations and maintenance. Information regarding spill prevention related to compliance with 40 CFR 40 112 is detailed in Appendix C11: Spill Prevention, Control, and Countermeasures (SPCC) Management Plan.

5.1 Overview of Hazardous Materials Proposed for Use

The direction provided below pertains to all vehicle refueling and servicing activities, as well as the storage, transportation, production, handling, and disposal of hazardous materials/waste. This direction is intended to prevent the discharge of fuels, oils, gasoline, and other harmful substances to waterways, groundwater aquifers, and/or other environmental resource areas during Project construction and operations and maintenance.

Hazardous materials used during Project construction may include petroleum products, such as gasoline, diesel fuel, and hydraulic fluid; lubricating oils and solvents; cleansers; explosives; and other substances. Some of these materials will be used routinely at multipurpose yards and as needed on the ROW to operate and maintain equipment during construction, except within 328 feet of riparian or sensitive areas as defined in Section 5.2. Explosives used for blasting rock, if that is necessary for the Project, are addressed in Appendix C14: Blasting Plan Methodology.

Smaller quantities of other materials, such as pesticides and fertilizers, paints, and chemicals, may be used on the Project. Pesticides and herbicides are hazardous materials and will be used according to labeling and in accordance with Appendix C2: Weed Management Plan.

The Construction Contractor(s) will maintain an inventory of all hazardous materials used and SDSs for all materials. The Construction Contractor(s) will maintain copies of the required SDS for each hazardous chemical and will ensure that the SDSs are readily accessible to all employees during each work shift when employees are in their work area(s). The SDSs will provide basic emergency response information for small and large releases of the hazardous materials. In the case that bulk hazardous materials are used, the Emergency Response Guidebook, produced by the U.S. Department of Transportation (USDOT), is an acceptable reference. The Construction Contractor(s) should have a well-developed hazardous material program in place and work to use nonhazardous substances in routine construction and maintenance activities to the extent possible.

5.2 Refueling and Servicing

Construction vehicles, helicopters, and equipment will be fueled and serviced in designated areas at least 328 feet from the edge of perennial and intermittent streams, wetlands (including dry or seasonal), and sensitive areas. Refueling locations generally should be flat to minimize the chance of a spilled substance reaching a stream. In most cases, smaller rubber-tired vehicles will be refueled and serviced at local gas stations or multipurpose yards. Tracked vehicles typically will be refueled and serviced on-site. In some cases, pickup trucks or tankers will be used to refuel and service construction vehicles on the ROW. Every effort will be made to minimize the threat of a fuel spill during refueling and servicing. Fuel/service vehicles will carry a suitable absorbent material to collect approximately 20 gallons of spilled materials. In addition, the Construction Contractor(s) will inspect all vehicles for leaks prior to being brought on-site and regularly throughout the construction period.

Washing of construction vehicles, such as concrete trucks, will be allowed only in designated areas at least 328 feet from riparian or sensitive areas (as defined above). Washing areas will be contained with berms/barriers to prevent migration of wastewater and/or sediments into streams and waterways. Waste concrete material will be removed and properly disposed of once it has hardened. Additionally, all preventive measures identified in Appendix C2: Weed Management Plan will be followed, specifically relating to vehicle washing procedures to prevent the spread of noxious weeds. Wash stations will be identified in POD Appendix A: Detailed Route Alignment Figures.

5.3 Transportation of Hazardous Materials

The Construction Contractor(s)' procedures for loading and transporting fuels and other hazardous materials will meet the minimum requirements established by the USDOT, the Utah Department of Transportation (UDOT), Nevada Department of Transportation (NDOT) and other pertinent regulations. Prior to transporting hazardous materials, appropriate shipping papers will be completed by the Construction Contractor(s). Transportation of hazardous materials will be performed by a hazardous material transport firm in accordance with USDOT regulations. In addition, the Construction Contractor(s) will ensure all handling or packaging of hazardous materials and all paperwork for transport of hazardous materials is performed by properly trained personnel in accordance with USDOT, UDOT, and NDOT regulations.

At all times, all hazardous materials used for the Project will be properly stored and transported in approved USDOT containers with their contents clearly labeled. Smaller containers will be used on-site to transport needed amounts of hazardous materials to a specific location. Transfer of materials from large to small containers will be performed using appropriate equipment, including pumps, hoses, and safety equipment; hand-pouring techniques will not be used. These smaller (service) containers also will be clearly labeled (Section 5.4.2). Special provisions apply to the transportation of explosives; see Appendix C14: Blasting Plan for more information.

5.4 Storage of Hazardous Materials

Hazardous materials will be stored only in designated multipurpose yards. Precautions will be taken to ensure contamination of maintenance sites by fuels, motor oils, grease, etc., does not occur and such materials are contained and properly disposed of off-site. Inadvertent spills of hazardous materials will be documented, cleaned up, removed immediately, and if necessary, reported (refer to Section 5.4.1 for hazardous materials container requirements). The Construction Contractor(s) is required to submit spill reports to the Company for all spills, regardless of size.

Multipurpose yards will be located at least 328 feet from the edge of drainage areas with a secondary containment system that must contain 110 percent of the aggregate tank capacity (for storage containers above 55 gallons).

5.4.1 Physical Storage Requirements Storage Containers

Containers holding hazardous materials will be compatible with the materials stored. If the container is damaged or leaks, the hazardous material must be transferred to a container in good condition. The Construction Contractor(s) will inspect containers weekly at a minimum to verify the integrity of the containers and any containment systems. Containers used for transportation must comply with USDOT, UDOT, and NDOT requirements.

5.4.1.1 Incompatible Materials

Hazardous materials will not be placed in containers that previously held an incompatible hazardous material.

5.4.1.2 Ignitable or Reactive Materials

Containers holding hazardous materials that are reactive or may ignite must be stored at least 50 feet inside the boundary of a multipurpose yard. These storage areas will be cleared of all flammable material to a distance of 100 feet with NO SMOKING signs posted throughout the area. All used and discarded hazardous materials will be disposed of in an approved facility. Glass jugs or bottles will not be used as containers for gasoline or other flammable materials.

5.4.1.3 Container Management

Containers holding hazardous materials will be kept closed at all times, except when it is necessary to add or remove contents. Before the handling and/or transportation of containers carrying hazardous materials, the containers should be inspected to ensure they are sealed so that no material spillage occurs.

5.4.1.4 Secondary Containment

Secondary containment will consist of bermed or diked areas that are lined and capable of holding 110 percent of the aggregate volume of the stored material and will be provided for liquid hazardous materials stored on-site.

5.4.1.5 Security

Hazardous waste and materials will be stored in secure areas to prevent damage, vandalism, or theft. All storage containers will remain sealed when not in use, and storage areas will be secured (gated, locked, and/or guarded) at night and/or during non-construction periods.

5.4.1.6 Explosives

Storage of explosives is discussed in Appendix C14: Blasting Plan.

5.4.2 Container Labeling Requirements

The Construction Contractor(s) will comply with the following labeling requirements for any container (including tanks) used on-site to store accumulated hazardous waste. Figure 1 shows an example of a hazardous waste label for on-site storage. The containers will be labeled with the following information and as required in 40 CFR 262:

- The accumulation start date and/or the date the 90-day storage period began
- The words Hazardous Waste
- The composition and physical state of the waste
- Warning words indicating the particular hazards of the waste, such as flammable, corrosive, or reactive
- The name and address of the facility that generated the waste

HAZARDOUS WASTE

Contents: _____
Physical State (gas, liquid, solid): _____
Accumulation Start Date: _____
Hazards:_____
Name and Address of Generator: _____
_____
_____
Contact Person: _____
Telephone: _____

HANDLE WITH CARE!
CONTAINS HAZARDOUS OR TOXIC WASTES

Figure 1. Sample Hazardous Waste Label for On-Site Storage

5.5 Disposal of Hazardous Waste

Hazardous waste will be collected regularly and disposed of in accordance with all applicable laws and regulations. The Construction Contractor(s) will determine details on the proper handling and disposal of hazardous waste and will assign responsibility to specific individuals for the proper handling and disposal of hazardous waste prior to construction of the Project.

Every effort will be made to minimize the production of hazardous waste during the Project, including minimizing the amount of hazardous materials needed for the Project; using alternative nonhazardous substances when available; recycling usable material, such as oils, paints, and batteries to the maximum extent possible; and filtering and reusing solvents and thinners whenever possible.

Any generator of hazardous waste must apply for an EPA identification number. The identification number is needed to complete the Uniform Hazardous Waste Manifest to ship waste off-site. A generator can accumulate hazardous waste on-site for a period of up to 90 days without having to obtain a permit as a storage facility.

5.6 Contaminated Containers

Containers that once held hazardous materials must be considered as potentially hazardous waste due to the possible presence of residual hazardous material. Regulations specify certain requirements, listed below, for the container to be handled as a nonhazardous waste:

- The containers must be empty, which means as much of the contents have been removed as possible using the practices commonly employed to remove materials from that type of container so none will pour out in any orientation.
- A container that held compressed gas is empty when the pressure in the container approaches atmospheric.
- If empty containers are less than five gallons, they may be disposed of as a nonhazardous solid waste or scrapped.
- If the empty containers are greater than five gallons, they must be handled in the following manner:
- returned to the vendor for reuse;
- sent to a drum recycler for reconditioning; or
- used or recycled on-site.
- All these actions must occur within one year of the container being emptied.

5.7 Waste Oil Filters

Used metal canister oil filters can be managed as nonhazardous waste if

- they are thoroughly drained of "free flowing" oil (oil exiting drop-by-drop is not considered "free flowing");
- the filters are accumulated, stored, and transferred in a closed, rainproof container;
- the filters are transferred for the purposes of recycling; and
- the filters are not terne-plated (an alloy of tin and lead).

Terne-plated oil filters are a hazardous waste because they exhibit the hazardous characteristics of lead. Terne-plated oil filters that are not recycled must be managed as a hazardous waste.

5.8 Used Lubricating Oil

Lubrication oil is considered used oil, as listed below:

- Any oil that has been refined from crude oil and as a result of use has been contaminated with physical or chemical impurities.
- Any oil that has been refined from crude oil and, as a consequence of extended storage, spillage, or contamination with nonhazardous impurities, such as dirt, rags, and water, is no longer useful to the original purchaser.

- Spent lubricating fluids that have been removed from a truck, heavy equipment, automobile, or bus.

Used oil may be a hazardous waste if:

- the concentrations of polychlorinated biphenyls exceed 50 parts per million;
- total halogens exceed 1,000 parts per million; and
- it is mixed with a hazardous waste.

Used oil not being recycled must be managed as a hazardous waste unless it is determined to be nonhazardous through laboratory analysis.

6 APPLICANT COMMITTED ENVIRONMENTAL PROTECTION MEASURES

Applied Project-wide, applicant committed environmental protection measures have been developed in accordance with federal land management agency and/or state standards and will address many of the concerns associated with hazardous materials management. The measures that address construction and operation and maintenance of Project facilities regarding hazardous materials management can be found in Section 9 of the POD.

7 OTHER SPECIFIC REQUIREMENTS AND METHODS

This section outlines the physical and procedural steps to be taken by the Construction Contractor(s) in the event of a spill. The Construction Contractor(s) will be responsible for and oversee all cleanup activities, including providing necessary materials and labor, and performing all reporting and documentation as required. All spills, regardless of quantity, will be reported to the CIC and the Company. Additional information regarding emergency response management is detailed in Appendix C13: Emergency Preparedness and Response Management Plan. Additional methods for the prevention of water contamination is included in Appendix C3: Water Resources Protection Plan and Appendix C11: Spill Prevention, Control, and Countermeasures (SPCC) Management Plan.

7.1 Physical and Procedural Response Measures

Physical response actions are intended to ensure all spills are immediately and thoroughly contained and cleaned up. However, the first priority in responding to any spill is personal and public safety. Prior to the start of construction activities in any given location, the Construction Contractor(s) will notify construction personnel of evacuation procedures to be used in the event of a spill emergency, including evacuation routes. In general, the first person on the scene will do the following:

- Attempt to identify the source, composition, and hazard of the spill
- Notify appropriately trained personnel immediately
- Isolate and stop the spill, if possible, and begin cleanup (if it is safe)
- Initiate evacuation of the area, if necessary
- Initiate reporting actions

Persons should only attempt to cleanup or control a spill if they have received proper training and possess the appropriate personal protective equipment and cleanup materials. Untrained individuals should notify the appropriate response personnel. In addition to these general measures, persons responding to spills will consult Appendix C13: Emergency Preparedness and Response Management Plan and the SDS or USDOT Emergency Response Guidebook (to be maintained by the Construction Contractor(s) during all construction activities), which outlines physical response guides for hazardous materials spills.

In general, the Construction Contractor(s) will seek expert advice to properly clean up major spills. For spills on land, berms will be constructed to fully contain the spilled material and prevent migration of hazardous materials toward waterways. Dry materials will not be cleaned up with water or buried. Contaminated soils will be collected using appropriate machinery, stored in suitable containers, properly manifested, and disposed of in appropriately designated and approved areas off-site by the appropriate local, state, or federal government agency. Where appropriate, contaminated soil will be replaced with clean backfill. After contaminated soil is recovered, all machinery used will be decontaminated and recovered soil will be treated as hazardous waste. Contaminated cleanup materials (absorbent pads, etc.) and vegetation will be treated and disposed of in a similar manner. For spills, cleanup may be verified by sampling and laboratory analysis in accordance with federal, state, and local regulations.

If spilled materials reach waterbodies, appropriate materials, such as booms and skimmers, will be used to contain and remove contaminants. Other actions will be taken, as needed, to clean up contaminated waters. If construction activity occurs in a wetland with standing water or a flowing stream, absorbent booms will be placed on the water surface either around or downstream of the construction zone prior to construction. For example, during construction of a stream crossing, an absorbent boom will be placed in a flowing stream just downstream of the construction site. In addition to this measure, when construction is occurring within 328 feet (100 meters) of flowing streams and “wet” wetlands, cleanup materials, including absorbent spill pads and plastic bags, will be placed on-site.

7.1.1 On-Site Equipment

Emergency spill response kits will be maintained at all locations where hazardous materials are stored, in sufficient quantities based on the amount of materials stored on-site. Spill response equipment should be compatible with types of materials stored on-site. Spill response equipment should be inventoried regularly to ensure spill response equipment is adequate for the type and quantities of materials being used. The following equipment are examples of spill response equipment for use in cleanup situations:

- Shovels
- Absorbent pads/materials
- Booms and skimmers
- Personal protective equipment
- Medical first-aid supplies
- Bung wrench (non-sparking)
- Phone list with emergency contact numbers
- Storage containers
- Communications equipment

In addition, radios or other communications equipment will be maintained in construction vehicles and other easily accessible locations.

7.2 Employee Spill Prevention/Response Training and Education

The Construction Contractor(s) and subcontractors will provide spill prevention and response training to appropriate construction personnel prior to the start of construction. These requirements are detailed in the regulations of the federal Occupational Safety and Health Act of 1970 (29 CFR 1926). These regulations include specific details on the duties and responsibilities of both employers and construction personnel with respect to environmental compliance and hazardous materials. Occupational Safety and Health Administration 2254-09R 2015 specify straining requirements intended to inform personnel of site-specific environmental compliance and safety procedures. Training of personnel should be completed at least once a year, and new employees to the Project will be trained before they start work. All training events should be documented by the Construction Contractor(s), including the date and names of those personnel in attendance. These records will be maintained with the SPCC plan and/or this Plan. At a minimum, this training will include the following:

- An overview of regulatory requirements
- Methods for the safe handling/storage of hazardous materials
- Spill prevention procedures
- Emergency response procedures
- Use of personal protective equipment
- Use of spill cleanup equipment
- Procedures for coordinating with emergency response teams
- Procedures for notifying agencies
- Procedures for documenting spills
- Identification of sites/areas requiring special treatment, if any

8 NOTIFICATION AND DOCUMENTATION PROCEDURES

Notification and documentation procedures for spills that occur during Project construction, operation, or maintenance will conform to applicable federal, state, and local laws and regulations. Adherence to such procedures will be the top priority of the Construction Contractor(s) once initial safety and spill response actions have been taken. The following sections describe the notification and documentation procedures and should be implemented in conjunction with the response procedures listed in this Plan. Additional emergency procedures measures are included in Appendix C13: Emergency Preparedness and Response Management Plan. An emergency contact list with applicable agencies, contact names, and numbers is included as Attachment A in Appendix C13: Emergency Preparedness and Response Management Plan.

8.1 Required Notification

Notification will begin as soon as possible after discovery of a spill. The individual who discovers the spill will contact the Construction Contractor's supervisory personnel and the CIC. The Construction Contractor(s) will also notify the Company if there is a spill, and if the spill is located on federal lands, the Construction Contractor(s) will also notify the associated federal agency. If the Construction Contractor(s) determines the spill may seriously threaten human health or the environment, they will orally report the discharge as soon as possible, but no later than 24 hours from the time they becomes aware of the circumstances, as directed below. A written report must be submitted to the appropriate local, state, and federal agency(s) and the Company within 15 days. Prior to initiating notification, the Construction Contractor(s) (or individual initiating notification) should obtain as much information on the spill as possible (Table 1).

Table 1. Standard Spill Information Requested by Agencies

When notifying a regulatory agency, the following information should be provided:
• Current threats to human health and safety, including known injuries, if any • Spill location, including landmarks and nearest access route • Global positioning system (GPS) coordinates, if available • Reporter's name and phone number • Time spill occurred • Type and estimated amount of hazardous materials involved • Potential threat to property and environmental resources, especially streams and waterways • Status of response actions

The following mandatory notifications will be made by the Construction Contractor(s). Select and notify the appropriate government agencies based on geographic location of the spill site:

- State(s) department of environmental quality (or similar) (24 hours)
- If spill threatens human health, call 911 and the appropriate county response center
- National Response Center (NRC) (800) 424-8802. The NRC should be notified of a reportable spill as required by 40 CFR 110, 40 CFR 117, and/or 49 CFR 171

The Construction Contractor(s) will verify and update these emergency phone numbers before and during construction. The Construction Contractor(s) (or other person in charge) will notify the CIC of all spills or potential spills in construction areas. The CIC will immediately notify the BLM once they are made aware of the spill.

When a spill poses a direct and immediate threat to health and safety and/or property, the land-management agency and landowners potentially affected by a spill will be notified directly by the Construction Contractor(s). Failure to report a spill could result in substantial penalties and fines (up to $25,000 per day).

8.1.1 Reporting Criteria

The Construction Contractor(s) are required to report all hazardous materials spills to the CIC and the Company. The Utah Department of Environmental Quality (UDEQ) or Nevada Division of Environmental Protection (NDEP) must be notified by the Construction Contractor(s) as soon as possible, but no later than the end of the first working day of the release if the spill amount exceeds thresholds identified by the

UDEQ, NDEP, or federal hazardous materials environmental regulations. The Construction Contractor(s) will verify reporting requirements for the State of Utah and State of Nevada for hazardous waste/material/substance prior to the start of construction.

8.2 Documentation

Maintaining detailed and organized records during a spill incident is an important and prudent task. A single Construction Contractor(s) representative should be designated to manage the records for an incident. If extensive spill response and cleanup operations are required, the Construction Contractor(s) may choose to assign an individual to assist in the documentation process. This person will track and manage all expenditures and will help supplement the information provided in the daily logbook. A sample daily spill log is provided in Attachment A.

9 OPERATIONS AND MAINTENANCE

During the Project's operation and maintenance phase, the Company will ensure its facilities, personnel, and contractors comply with federal, state, and local laws and regulations pertaining to the use, storage, transport, and disposal of hazardous materials and adhere to required emergency response and cleanup procedures in the event of a hazardous material spill. The Company and all operations and maintenance contractors will adhere to this Plan and properly train employees for handling, packaging, and transporting hazardous materials and responding to hazardous materials spills or emergency events.

Attachment A. Sample Hazardous Materials Management Plan Forms

CERTIFICATIONS, ACKNOWLEDGEMENTS, AND DESIGNATION OF EMERGENCY COORDINATOR

The Construction Contractor(s) responsible for managing the material yards will complete and submit the following information:

General Information			
Business Name			
Facility Street Address			
City	County	ZIP Code	Phone
Mailing Address (if different)			
City	County	ZIP Code	Phone
Emergency Coordinator			
Primary Emergency Coordinator	Business Phone	24-hour Phone	Pager/Cellular Phone
1st Alternate	Business Phone	24-hour Phone	Pager/Cellular Phone
2nd Alternate	Business Phone	24-hour Phone	Pager/Cellular Phone

Note: Certification is only necessary if an SPCC plan is required (Appendix C11: Spill Prevention, Control, and Countermeasures [SPCC] Management Plan).

WEEKLY HAZARDOUS MATERIALS/WASTE INSPECTION LOG

For each item listed below, the Construction Contractor(s) will indicate whether existing conditions are acceptable (A) or unacceptable (U). Resolution of all unacceptable conditions must be documented. The Construction Contractor(s) will inspect all storage facilities on a regular basis, but not less than weekly. The Construction Contractor(s) will keep records of all inspections on file.

A or U	Item
Storage Areas for Fuels, Lubricants, and Chemicals	
General	
	Material yard and storage areas secured
	National Fire Protection Association 704 system symbol posted in storage area or at material yard entrance
	Storage areas properly prepared and signed
	No evidence of spilled or leaking materials
	Incompatible materials separated
	All containers labeled properly
	All containers securely closed
	All containers upright
	No evidence of container bulging, damage, rust, or corrosion
	Material safety data sheets (SDS) available
	Hazardous Materials Management and Spill Prevention Plan available
Secondary Containment Areas	
	Containment berm intact and capable of holding 110 percent of material stored
	Lining intact
	No materials overhanging berms
	No materials stored on berms
	No flammable materials used for berms
Compressed Gases	
	Cylinders labeled with contents
	Cylinders secured from falling
	Oxygen stored at least 25 feet away from fuel
	Cylinders in bulk storage separated from incompatible materials for fire barriers or by appropriate distance
Hazardous Waste Management	
Waste Container Storage	
	No evidence of spilled or leaking waste
	Adequate secondary containment for all waste
	Separate containers for each waste stream – no piles
	Waste area not adjacent to combustibles or compressed gases
	All containers securely closed
	Bungs secured tightly
	Open-top drum hoops secured
	All containers upright
	No evidence of container bulging or corrosion
	No severe container damage or rust
	Containers are compatible with waste (e.g., plastic liner for corrosives, metal liner for solvents)
	No smoking and general danger/warning signs posted

A or U	Item
Waste Container Labeling	
	Containers properly labeled
	Name, address, and U.S. Environmental Protection Agency identification number or identification number of generators listed
	Accumulation start date listed
	Storage start date listed
	Chemical and physical composition of waste listed
	Hazardous properties listed
Nonhazardous Waste Areas	
	No litter in material yard
	No hazardous waste with trash (e.g., contaminated soil, oily rags, or other oily materials)
	Completely empty oil and aerosol containers for disposal as nonhazardous waste
Emergency Response Equipment	
	Shovels
	Absorbent material
	Personal protective equipment (e.g., Tyvek suit, gloves, goggles, and booties, as appropriate)
	Fire-fighting equipment
	First aid supplies (e.g., medical supplies, squeeze bottle eye wash)
	Communication equipment
	Bung wrench (nonsparking)
Corrective Actions Taken (required for all unacceptable conditions)	

Date: _____ Company (print): _____

Inspected by (print): _____
Signature: _____

DAILY HAZARDOUS MATERIAL SPILL LOG

For each spill, the Construction Contractor(s) will provide the following information. If no spill occurs during the construction workday, then the Construction Contractor(s) will indicate *not applicable* or *no spills occurred*, and sign and date the log. The Construction Contractor(s) will keep records of all daily spill logs on file.

Item	
Date:	**Time:**
Location of Spill (provide milepost, station number, or UTM)	
Type and Amount of Material Spill	
Resources Affected by the Spill	
List of response actions taken, including relative success	
List of all agencies notified (include name of individual notified, time, and date)	

Please attach the following:

1. Copies of letters, permits, or other communications received from government agencies throughout the duration of the spill
2. Copies of all outgoing correspondence related to the spill
3. Photographs of the response effort (and surrounding baseline photographs if relevant)

Date: _____ Company (print): _____

Inspected by (print): _____

Signature: _____

Appendix C13. Emergency Preparedness and Response Plan Guidelines - DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C13. Emergency Preparedness and Response Plan Guidelines

Prepared by:

TransCanyon, LLC
400 East Van Buren Street, Suite 350
Phoenix, Arizona 85004

July 2023

CONTENTS

Attachments

Figures

Abbreviations

BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
NFS	National Forest System
Plan	Emergency Preparedness and Response Plan Guidelines
POD	Plan of development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-Way

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

The Emergency Preparedness and Response Plan Guidelines (Plan) is intended to provide an overview of methods to be implemented if the need for emergency management becomes necessary for Project. This Plan discusses responsibilities, response coordination, and emergency communication protocols to be used during its implementation and development of a site-specific Plan by the Construction Contractor(s).

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use permit.

More specific emergency procedures for fire and hazardous materials are included in Appendix C8: Fire Precaution and Response Plan, Appendix C12: Hazardous Materials Management Plan, and Appendix C14: Blasting Management Plan.

2 PURPOSE

The purpose of this document is to provide guidelines for the development of a Site Specific Emergency Preparedness and Response Plan. These guidelines provide an overview of considerations in preparing for and effectively responding to emergencies and for the clear communication between the Company; the Construction Contractor(s); the Compliance Inspection Contractor (CIC); the BLM; and the Forest Service. The primary objective is to prevent, minimize, and respond to adverse impacts on human health and safety, property, and the environment that could occur from emergencies during the construction, operation, maintenance, and reclamation of the Project.

3 REGULATORY COMPLIANCE

Health and safety guidelines related to high-voltage transmission lines are provided by a number of sources, including the National Electric Safety Code, American National Standards Institute, American Medical Association Council on Scientific Affairs, American Conference of Governmental Industrial Hygienists, various state regulations, other organizations, and the Company. The Occupational Safety and Health Administration also provides regulations for construction activities.

4 RESPONSIBILITIES

The Company and the Construction Contractor(s) are responsible for the effective response to and management of any emergency situation or event related to the construction, operation, maintenance, and reclamation of the Project. The Construction Contractor(s) will be responsible for developing a Site Specific Emergency Preparedness and Response Plan and using the information and direction contained in this Plan, and for submitting it to the Company and the land management agencies for review and approval prior to construction commencement.

5 RESPONSE COORDINATION

As part of the Site Specific Emergency Preparedness and Response Plan, the Construction Contractor(s) will develop a chain of command prior to the start of construction that will be followed in the event of an emergency to ensure a coordinated and effective response. In the establishment of a chain of command, considerations such as the level of activation and the participation necessary to respond to specific situations are to be taken into account. The following are factors for the establishment of a chain of command:

- Type of event (natural, environmental, electrical supply/outage, external forces [e.g., trespassers])
- Severity
- Geographic area (location and spatial extent)
- Multiple or combination of events
- Anticipated duration
- Multi-division/discipline response required
- Federal, state, and local government agency coordination

The chain of command will be provided to the CIC, the BLM, the Forest Service, the appropriate Interagency Communication Center, and the Company prior to the start of construction.

Standard emergency response procedures are to be included within the Site Specific Emergency Preparedness and Response Plan developed by the Construction Contractor(s) prior to construction and will be implemented and coordinated with the BLM, the Forest Service, the appropriate Interagency Communication Center, appropriate state and local government agencies, and the Company for the following potential events, or similar events:

- Downed transmission lines, structures, or equipment failure
- Release of hazardous materials
- Fires
- Sudden loss of power
- Natural disasters
- Serious personal injury

Ultimately, the number and type of resources and coordination required for response to a specific hazard or emergency is determined by type, severity, location, and duration of the event. Most events require managing the response on-site and will require a level of organization and response to match the severity and duration of the event, which will be determined at the time of the event. An emergency management organization document will be developed by the Construction Contractor(s) immediately upon the onset of an emergency event and will provide for increasing levels of resources and the coordination necessary to support immediate or escalating emergency events. The emergency management organization document will be available to the Company, the CIC, the BLM, the Forest Service, and the Company if the emergency occurs on BLM-administered land or National Forest System (NFS) land.

In the event of an emergency, the health and safety of workers and the public are the first priority, and if needed, appropriate emergency medical and response crews and equipment will be contacted and dispatched as soon as possible. Crews will also be dispatched quickly to repair or replace any damaged Project equipment identified during operation and maintenance activities. All reasonable efforts will be made to protect plants, wildlife, and other resources during these activities, but repairs of the Project will have priority under emergency conditions.

Reclamation procedures following completion of repair work will be the same as those prescribed for construction as described in Appendix C9: Reclamation, Revegetation, and Monitoring Plan, and conducted in coordination with the BLM, the Forest Service, or the landowner. For more information on operation and maintenance emergency management, and emergency maintenance access, see Appendix B7: Operation and Maintenance Plan.

6 EMERGENCY COMMUNICATIONS

Effective communication and exchange of information is essential in every emergency response. Misdirected, incorrect, or untimely information can be detrimental and can increase the threat to life or property. As an emergency event escalates, the rapid increase of information exchange can create confusion.

Prior to the start of construction, the Construction Contractor(s) will coordinate with the Company, the CIC, and the land management agencies to develop an emergency communications protocol and include this as part of the Site Specific Emergency Preparedness and Response Plan. Private landowners will also be notified using the protocols identified in the Site Specific Emergency Preparedness and Response Plan. The emergency communications protocol will include a communications diagram that will illustrate the communication exchanges necessary to respond to an emergency event in an organized manner. A general diagram of the emergency communication sequence is provided in Figure 1.

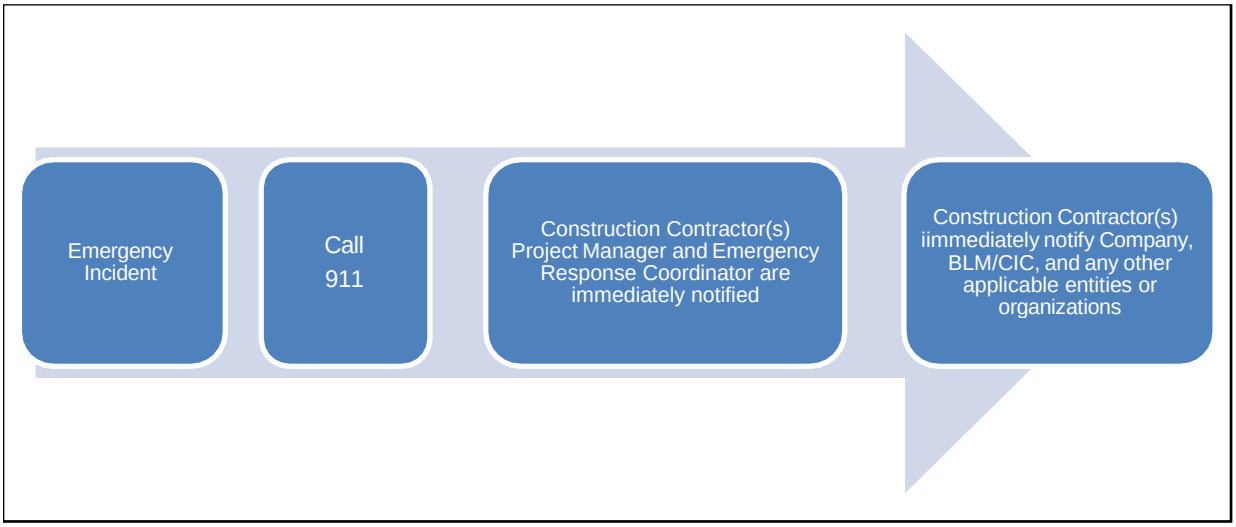

Figure 1. Diagram of Emergency Communications Protocol

6.1 Emergency Contact List

In case of emergency, call 911 first. Additional potential emergency contacts are included in Attachment A: Emergency Contact List. These contacts should be called as appropriate, depending on the situation.

The Emergency Contact List will be completed by the Construction Contractor(s) and verified in coordination with the Company and the BLM or the Forest Service for emergency situations on federal land prior to the commencement of construction and included as part of the Site Specific Emergency Preparedness and Response Plan. The Emergency Contact List in the Site Specific Emergency Preparedness and Response Plan will be updated throughout the Project by the Construction Contractor(s) to ensure accurate contact information.

Attachment A. Emergency Contact List

Emergency Contact List

Below are emergency contact numbers for the Project. The Construction Contractor(s) will verify and update the emergency numbers before and during Project construction. After verification of emergency phone numbers and before construction, the Construction Contractor(s) will distribute this list to the Company, the CIC, the BLM, the Forest Service, and the appropriate Interagency Communication Center. If the emergency contacts change throughout the course of the Project, the Construction Contractor(s) will redistribute the updated contact list to the same entities identified above. In the event of any emergency on BLM-administered and/or NFS land, the appropriate Dispatch Center will be notified prior to the BLM or Forest Service Authorized Officer or designated representative.

In case of emergency or fire, call 911 first

Contact	Phone Number
Fire Notification Numbers*	
Bureau of Land Management (BLM) Fire Contact	To be determined
U.S. Forest Service Authorized Officer or designated representative	To be determined
Company Construction Manager	To be determined
Utah/Nevada	
Richfield Interagency Fire Center – for wildland fires in Juab or Millard Counties, Utah	435-896-8404 and 911
Ely Interagency Communication Center – for fires in Bristlecone Field Office jurisdiction, or Humboldt-Toiyabe National Forest	775-289-1925 and 911
Hazardous Spill Response and Notification—Call 9-1-1*	
Directly after 911 notification, the following mandatory notifications will be made by the CIC. Notify the appropriate government agency/agencies based on geographic location of the spill site.	
National Response Center for hazardous spills	800-424-8802
Project Emergency Response Coordinator	To be determined
Project Emergency Response Coordinator First Alternate	To be determined
Project Emergency Response Coordinator Second Alternate	To be determined

Contact	Phone Number
Utah	
Juab and Millard Counties - Central Utah Public Health Department	435-896-5451
Utah Department of Environmental Quality	801-536-0200
Utah Division of Water Quality	801-536-4300
Utah Division of Emergency Services and Homeland Security	801-538-3400
If after hours and the spill is located in Utah, call the Utah Department of Environmental Quality (24 hours)	801-536-4123 (or 911)
Nevada	
White Pine County Public Health	775-293-6558
Nevada Department of Environmental Protection	775-687-4670
Nevada Division of Water Resources	775-684-2800
Nevada Division of Emergency Management	—
Poison Control	
National Poison Control	800-222-1222 (Provides connection to all U.S. counties)
Poison Control Center	800-456-7707
Ambulance Services	
Nephi	801-372-2206
Leamington	435-857-2445
Delta	435-864-4555
Baker	911
Ely	775-289-4833

Contact	Phone Number
County Sheriffs and Highway Patrol	
Millard	435-743-5302 or 911
Juab	435-623-1344 or 911
White Pine	775-289-8808 or 911
Highway Patrol	801-965-4518 or 911
County Hospitals	
Millard – Fillmore Community Hospital	435-743-5591
Juab – Central Valley Medical Center	435-623-3000
White Pine – William Bee Ririe Hospital	775-289-3001
Other Numbers	
BLM Authorized Officer or designated representative	To be determined
U.S. Forest Service Authorized Officer or designated representative	To be determined
Construction Contractor(s) Emergency Response Coordinator	To be determined
Construction Contractor(s) Project Manager	To be determined
Company Project Manager	To be determined
Company Environmental Manager/Field Supervisor	To be determined
Company Construction Manager	To be determined

* Agency notifications will be made by the Company's Environmental Manager, Environmental Field Supervisor, or Emergency Response Coordinator.

Appendix C14. Blasting Management Plan – DRAFT

Cross-Tie 500-kV Transmission Project

Plan of Development

Appendix C14. Blasting Management Plan

Prepared by:

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400 East Van Buren Street, Suite 350
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July 2023

CONTENTS

Attachments

Abbreviations

BLM	Bureau of Land Management
CIC	Compliance Inspection Contractor
Company	TransCanyon, LLC
Forest Service	U.S. Department of Agriculture Forest Service
Plan	Blasting Management Plan
POD	Plan of Development
Project	Cross-Tie 500-kV Transmission Project
ROW	Right-of-way
USDOT	U.S. Department of Transportation

1 INTRODUCTION

TransCanyon LLC (TransCanyon or the Company) is proposing to construct and operate the Cross-Tie 500-kilovolt (kV) Transmission Project (Project) on federal, state, and private lands in Juab and Millard Counties in Utah and White Pine County in Nevada. The Project is proposed as an approximately 214-mile, 1500-megawatt, 500-kV high-voltage alternating current overhead transmission project that would be constructed between the existing Clover Substation near Mona, Utah and the existing Robinson Summit Substation near Ely, Nevada.

This Blasting Management Plan (Plan) identifies procedures, methods, and mitigation measures to mitigate risks and potential impacts associated with blasting, should blasting be required during construction of the Project. If blasting is required during the construction of the Project, this Plan provides Project-specific guidance for the development of the required Construction Contractor(s)–prepared blasting plan(s) to avoid, minimize, and mitigate Project- related impacts; by protecting public and worker safety; by preventing unnecessary degradation of the environment; by ensuring that blasting activities comply with federal, state, or other agency requirements. The Construction Contractor(s) are responsible for the complete implementation of this Plan.

This Plan was prepared as part of the plan of development (POD). It will be updated as necessary to meet any stipulations of the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (Forest Service) record of decisions and the BLM right-of-way (ROW) grant and Forest Service special use permit before issuance of the notices to proceed and commencement of construction.

2 PURPOSE

The purpose of this Plan is to address safety and prevent adverse impacts on human health, property, and the environment that could result from the use of explosives during Project construction. Blasting may be used to break up rock, enabling excavation of Project-related facilities, specifically for foundations and possibly for the construction of portions of access roads, using traditional techniques. Blasting is used where rock needs to be removed and alternative methods (such as excavation) are insufficient. Blasting will be used only in areas where traditional excavation and earthmoving equipment and practices are unable to accomplish the excavation.

This Plan provides Project-specific blasting procedures, mitigation measures, and other stipulations and methods to be implemented, as applicable, for blasting activities. Precise locations where blasting may be required will be identified based on site-specific geotechnical investigations. The mechanism for providing site-specific blasting details will be blasting plans. The Construction Contractor(s) will prepare blasting plans for each area determined to require blasting prior to the commencement of blasting activities. Attachment A: Blasting Plan Table of Contents provides the table of contents for site-specific blasting plans. The Construction Contractor(s) will develop blasting plans and submit them to the Company and/or other relevant jurisdictional agencies/organizations as applicable for review and comment. If blasting is to occur on federal lands, the Company will submit the blasting plan(s) to the appropriate land management agency and Compliance Inspection Contractor (CIC) for final review and approval. Review and comment of blasting plans does not relieve the Construction Contractor(s) from responsibility or liability for the accuracy and adequacy of the blasting plans when implemented in the field. Blasting plans will be approved and stamped by a licensed professional engineer of the appropriate discipline.

3 REGULATORY COMPLIANCE AND PROCEDURES

The Construction Contractor(s) will prepare and implement blasting plans, as applicable, in compliance with all applicable federal, state, and local laws and regulations and obtain all required federal, state, and local blasting-related permits. Failure to comply with such laws could result in a substantial financial penalty and/or imprisonment. No blasting operations will be undertaken until such permits have been obtained. All approved permits and a copy of the site-specific blasting plan will be available at the affected Project construction site for inspection by the CIC. If no permits are required, the Construction Contractor(s) will prepare appropriate documentation demonstrating that no such permits are needed and will have a copy of that documentation available for inspection by the CIC at the affected construction site.

The Construction Contractor(s) will employ qualified, experienced, and licensed blasting personnel to perform blasting using current and professionally accepted methods, products, and procedures to maximize safety during blasting operations. Blasting procedures will be carried out according to, and in compliance with, applicable laws and will be closely monitored by the CIC.

4 BLASTING PLAN GUIDANCE

The Construction Contractor(s) will address safety and will design all specific blasting and blasting-related activities in each blasting plan. Each blasting plan will contain site-specific details developed by the Construction Contractor(s), which will identify conditions and procedures prior to occurrence of any particular blast; the details of the drilling and blasting patterns; the controls proposed to use for all blasting and blasting-related activities; requirements for prior notification of nearby residents, ranches, farms, businesses and/or the public; and the specific mitigation measures or other stipulations to minimize environmental impacts. Every blast must be designed to meet existing conditions of the rock formation and overburden and to produce the desired result. A trial blast is typically performed in the field to validate theoretical blast designs or to provide additional information for final blast designs.

Each blasting plan will include a description of the pre-blast survey process and how pre-blast surveys will be implemented, with specific direction provided regarding the assessment of the conditions of sensitive biological resources, structures, wells, springs, and utilities. The results of the pre-blasting survey will be summarized in a conditions report that will include photographs. The pre-blast survey will be completed prior to the commencement of blasting. Each blasting plan will also describe the post-blasting inspection process.

The Construction Contractor(s) will submit each site-specific blasting plan for review to the Company, the appropriate land management agency, and the CIC when planning blasting activities on federal lands, as well as any other relevant jurisdictional organization. A minimum of two weeks prior to any blasting-related activities, a site-specific blasting plan would be submitted to the Company, the appropriate land management Agency, and the CIC. If at any time changes to locations, procedures or methods identified in the blasting plan are proposed, and prior to implementing any proposed changes, the Construction Contractor(s) will obtain all required approvals for modifications to federal, state, and local blasting-related permits and submit the proposed changes to the Company, which will then submit them to the appropriate land management agency for review and approval. The CIC and the appropriate land management agency will be notified at least 72 hours in advance of any required blasting so the area can be cleared of any members of the public or other authorized public land users. During periods of high or extreme fire danger, the Construction Contractor(s) will consult with the CIC, who will in turn coordinate with the land management agency Fire Management Officer and or the Unit Duty Officer at least one week in advance of proposed blasting to determine the need for any special restrictions or delay in the blasting schedule.

Each blasting plan shall be developed pursuant to Attachment A: Blasting Plan Table of Contents.

4.1 Overview of Blasting Principles

4.1.1 Locations

The Construction Contractor(s) will avoid blasting in potential rockslide/landslide areas to the maximum extent possible and will consult with a geologist before blasting in such areas. Abandoned mine features would also be mapped and avoided.

A common practice for fusing conductor wire together is the use of implosive sleeves, which use explosive materials. The Construction Contractor(s) will be knowledgeable about this practice and will coordinate with the CIC as to the timing and safety requirements for use of these practices, particularly with regard to the locations of these practices.

4.1.2 Materials

The Construction Contractor(s) will determine the specific materials needed for blasting operations. These materials will be included on the hazardous materials list for the Project, and their use and storage will comply with applicable federal, state, and local laws and regulations.

5 SAFETY PROCEDURES

Safe storage and use of explosive materials will be a top priority during construction. The safety measures discussed in this section are intended to prevent theft or vandalism of the explosive materials, protect against fire, and prevent personal injury and property damage. These measures are intended as general guidelines, and specific safety requirements will be identified by the Construction Contractor(s) prior to construction. These specific safety requirements will be included in each site-specific blasting plan.

5.1 Transportation of Explosives

The Construction Contractor(s) is responsible to ensure the transportation of explosives will comply with all applicable federal, state, and local laws, including 49 Code of Federal Regulations Chapter III. These regulations are administered by the U.S. Department of Transportation (USDOT) and govern the packaging, labeling, materials compatibility, and safety of transported explosives, as well as driver qualifications. In general, these regulations require vehicles carrying explosive materials to be well maintained, properly marked with placards, and have a non-sparking floor.

Materials in contact with the explosives will be non-sparking, and the load will be covered with a fire- and water-resistant tarpaulin. Vehicles also must be equipped with fire extinguishers and a copy of the USDOT 2020 Emergency Response Guidebook (USDOT 2020). Every effort will be made to minimize transportation of explosives through congested or heavily populated areas.

Prior to loading an appropriate vehicle for carrying explosives, the vehicle shall be fully fueled and inspected to ensure its safe operation. Refueling of vehicles carrying explosives shall be avoided. Smoking and other ignition sources shall be prohibited during the loading, transporting, or unloading of

explosives. In addition, the following specific restrictions apply to transport of other items in vehicles carrying explosives:

- Tools may be carried in the vehicle, but not in the explosives' cargo compartment.
- Detonation devices can, in some cases, be carried in the same vehicle as the explosives, but they must be stored in a specially constructed compartment(s).
- Batteries and firearms shall never be carried in a vehicle with explosives.
- Vehicle drivers must comply with the specific laws and regulations related to the materials being transported.

Vehicles carrying explosives shall not be parked or left unattended except in designated parking areas with approval of the state Fire Marshal. When traveling, vehicles carrying explosives will avoid congested areas to the maximum extent possible.

5.2 Storage

Explosives must be stored in an approved structure (magazine) and kept cool, dry, and well ventilated. The Construction Contractor(s) will provide the respective states' Bureau of Alcohol, Tobacco, Firearms, and Explosives office with a list of dates and locations for the explosives and blasting-agent storage facilities to be used on the Project at least 14 days before the establishment of such storage facilities.

At a minimum, the following storage requirements will be implemented:

- Explosives must be stored in an approved structure (magazine), and storage facilities will be bullet, weather, theft, and fire resistant.
- Magazine sites will be located in remote (out-of-sight) areas with restricted access; will be kept cool, dry, and well ventilated; and will be properly labeled and signed.
- Detonators will be stored separately from other explosive materials.
- The most stringent spacing between individual magazines will be determined according to the guidelines contained in the Bureau of Alcohol, Tobacco, Firearms, and Explosives publication or state or local explosive storage regulations.
- Both the quantity and duration of temporary on-site explosives storage will be minimized.

The Construction Contractor(s) will handle and dispose of explosives' storage boxes in accordance with relevant federal, state, and local laws.

On National Forest System Lands, the following would apply:

1. **Applicable Legal Framework.** The purchase, storage, and handling of explosives by the holder under this permit are regulated by United States Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), under 27 CFR Part 555. Inspections of magazines authorized by this permit are subject to all ATF inspection requirements at 27 CFR Part 555 and shall be conducted by ATF. Property records and inventories of these magazines shall be reconciled by ATF in accordance with ATF requirements at 27 CFR Part 555 during ATF's routine periodic inspections.

2. **Documentation of Inspections.** All required inspections, including inspections required every seven days, shall be documented in a log. The log shall indicate the inspection type, date of inspection, and the date all deficiencies identified in any inspection report were corrected. A current copy of the log; corresponding inspection reports, if any; and a copy of the holder's current ATF-issued federal explosives license or federal explosives permit, if applicable, shall be included annually in the operating plan for review by the authorized officer.

3. **Loss or Theft of Explosive Material.** Any loss or theft of explosive material shall be reported to ATF or the Department of the Army (DOA), as appropriate, local law enforcement authorities, and the Forest Service within 24 hours of discovery.

4. **Minimum Standards for Locks and Keys.**

   ATF Requirements. Locks and keys for authorized magazines and key security shall meet ATF requirements at 27 CFR Part 555.

   Replacement and Documentation. Locks and keys shall be replaced periodically at least every ten years. In the case of deterioration or a potential breach in security, such as lost keys, any affected keys and locks shall be replaced immediately. Periodic lock and key replacement shall be documented in a log. The log shall include the date of the most recent replacement. A current copy of the log shall be included annually in the operating plan for review by the authorized officer.

   Key Control for Magazines Containing Explosives Not Purchased From DOA. Key control for magazines authorized by this permit containing explosives not purchased from DOA shall at a minimum provide for appointment of a custodian, maintenance of a list of personnel authorized to use and issue keys, a locked container for key storage, and documentation of locks and keys on a key control register and inventory.

5.3 Blasting Notification and Safety Procedures

The Construction Contractor(s) will identify all notification and safety measures required by regulation and will develop best practices, which will include the following:

- A minimum of two weeks prior to any blasting-related activities, a site-specific blasting plan would be submitted to the Company, the appropriate land management Agency, and the CIC.

- The Construction Contractor(s) will publish a proposed blasting schedule in the local newspaper one week before any blasting occurs. The notification will identify the location, dates, and times blasting will occur. This schedule will also be provided to the CIC (prior to the newspaper notifications), and the CIC will distribute the schedule to BLM field offices, as applicable. No blasting shall occur outside of the published schedule, except in emergency situations.

- The Construction Contractor(s) will post warning signs at all entry points for the Project at least two weeks prior to the scheduled blasting event. Warning signs shall include information on blasting, including the general hours blasting might take place, and the audible signals to be used to warn of impending blasting and to indicate that the site is all clear.

- Residences, farms, ranches, businesses, and other utilities located 0.5 mile or closer to a proposed blasting site will be notified in writing at least 72 hours before any blasting occurs of the day and time of the blast.

- The Construction Contractor(s) will restrict access to areas where blasting will take place at least 30 minutes prior to blasting. The Construction Contractor will place clearly visible temporary signs warning of an impending blast and for unauthorized personnel to keep out along access roads and trails leading to the specific blast area, at least 0.25 mile from the blast area (further if required by the size of the blast), and at least 30 minutes before the time of the blast.

- The Construction Contractor shall patrol the unsafe area of the blast site five minutes prior to blasting to ensure no unauthorized personnel are present. If unauthorized personnel are located within the unsafe area, they shall be escorted to a safe distance from the blast. No blasting will occur when unauthorized personnel are located in the unsafe blasting area.

- An audible warning signal, capable of carrying for 0.5 mile, shall be given at least two minutes prior to blasting. An "all-clear" signal will be given once it has been determined that the area is safe.

- The Construction Contractor(s) will coordinate blasting in the vicinity of pipelines with the pipeline operator and will follow operator-specific procedures, as needed.

- The Construction Contractor(s) will be responsible for damages that result solely from the blasting activity.

A determination that the blasting area is all clear of danger will be derived once the blasting area has been inspected for undetonated or misfired explosives. The blasting area will be inspected for hazards, such as falling rock and rockslides. Once the area has been inspected and these issues have been addressed, the all-clear signal as described above will sound and persons will be able to safely re-enter the blast zone.

Additional safety precautions will be developed to address site-specific conditions at the time of the blast. Special attention will be given to preventing potential hazards in the blasting area resulting from flying rock, destabilized walls or structures, presence of low-flying aircraft, and dispersion of smoke and gases.

The Construction Contractor(s) will notify the CIC, the appropriate land management agency, and any other appropriate agencies/entities 72 hours prior to scheduled blasting and comply with the permit requirements for notification by appropriate counties, including any requirements for dust and flyrock abatement. If changes are needed to the notification process, changes will be made to facilitate protection of public safety and environmental resources.

5.4 Fire Safety

The presence of explosive materials on the Project site could potentially increase the risk of fire during construction. Special precautions will be taken to minimize this risk, in conjunction with the implementation of Appendix C8: Fire Precaution and Response Plan, including the following:

- Prohibiting ignition devices within 50 feet of explosives storage areas.

- Posting clearly visible signs prohibiting ignition devices within 50 feet of explosives storage areas.

- Properly maintaining magazine sites so they are clear of fuels and combustible materials, well ventilated, and fire-resistant.

- Protecting magazines from wildfires that could occur in the immediate area.

- Posting Construction Contractor(s) fire suppression personnel and equipment at the blast site during high-fire danger periods.

- Prohibiting blasting during extreme fire danger periods.

During periods of high or extreme fire danger, the Construction Contractor(s) will consult with the CIC, who will in turn coordinate with the federal land management agency Fire Management Officer and/or the Unit Duty Officer at least 1 week in advance of proposed blasting to determine the need for any special restrictions or delay in the blasting schedule.

Additional fire safety measures are included in the POD Appendix C8: Fire Precaution and Response Plan which will be and implemented by the Construction Contractor(s). If additional measures are identified to address site-specific conditions and these will be included in each blasting plan, as applicable.

5.5 Applicant Committed Environmental Protection Measures

Applied Project-wide, Project applicant committed environmental protection measures have been developed in accordance with federal land management agency and/or state standards and will address many of the concerns associated with blasting. The measures that address construction and operation and maintenance of Project facilities regarding blasting can be found in Section 9 of the POD.

These measures serve as the baseline for inclusion in this Plan and the required blasting documentation identified in Attachment A: Blasting Plan Table of Contents to be developed by the Company's Construction Contractor(s).

5.6 Selective Measures

Selective measures are applied in select areas to further address concerns associated with blasting that the design features and/or the ACEPMs of the Project for environmental protection do not address. Following is a description of selective measures that relate to blasting during the construction and maintenance of Project facilities and will be incorporated in specific blasting plans, as applicable, prepared by the construction contractor(s):

- Consider other materials such as DEXPAN (Non-Explosive Demolition Agent), expanding cement as another option for explosives.

- At a minimum, explosive storage facilities will be weather-resistant, fire-resistant, bullet-resistant, and theft-resistant.

- Potential rockslide/landslide areas will be avoided to the maximum possible and a blasting geologist will be consulted prior to blasting in these areas.

- Blasts will be designed to minimize ground vibrations that can cause slope instability and impacts to wells and/or springs.

- Blasting within 500 feet of wells and/or springs will be avoided to the maximum extent possible.

- Prior to blasting activities, underground utilities will be located and marked to determine their location in relation to the ROW.

- The Company and/or its contractor will perform pre- and post-blast inspections of existing structures that may sustain damage due to blasting operations.

- The Company and/or its contractor will take proper precautions to minimize or avoid damaging structures or utilities located within 150 feet of blasting operations. Precautions may include rippling the charge detonations further apart or reducing the amount of charge material that detonates simultaneously.

- To prevent or minimize the amount of rock particles cast into the air following detonation, blasting mats will be used.

- A signaling system will be used to alert individuals of an impending blast. The signaling system will include the following components:

  – A warning signal: 5 minutes prior to the blasting signal, a 1-minute series of long audible signals will be sounded at the blast site

  – A blasting signal: 1 minute prior to the blast, a series of short, audible signals will be sounded at the blast site

  – An all-clear signal: a prolonged, audible signal will be sounded at the blast site following the post-blast inspection of the blast area

- To inform construction personnel of the signaling protocol, signs explaining the protocol will be posted at the staging areas and other appropriate locations. If any damage to structures occurs due to blasting operations, the Company and/or its contractor will repair the damage as quickly as possible after becoming aware of the damage. In the event of damage to any water supply systems, the Company and/or its contractor will provide an alternative water source until the original water supply system is restored.

- The Company shall use electric caps only unless otherwise agreed in writing. When blasting is necessary in slash areas, a watchperson equipped with a size 0 or larger shovel with an overall length of not less than 46 inches and a filled backpack can (4 or 5 gallon) with hand pump shall remain in the immediate area for an hour after blasting has been completed.

6 LITERATURE CITED

U.S. Department of Transportation (USDOT). 2020. *2020 Emergency Response Guidebook*. Available at: ERG2020-WEB.pdf (dot.gov). Accessed August 18, 2020.

Attachment A. Blasting Plan Table of Contents

BLASTING PLAN TABLE OF CONTENTS

Each site-specific blasting plan prepared by the Construction Contractor(s) would include, at a minimum, the following information in the following format:

1. Purpose
2. Scope of the Blasting
3. Definitions
4. Responsibilities
   - 4.1. Management Organization
   - 4.2. Authority Responsibility
   - 4.3. Blaster in Charge (licensed in Utah and Nevada)
5. Location of Blasting Area
   - 5.1. Description of Blasting Area
   - 5.2. Description of Bedrock and Geological Problems
   - 5.3. Description of Adjacent Utility Facilities
6. Environmental Considerations
7. Safety Considerations
   - 7.1. General
   - 7.2. Warning Signs and Signals
   - 7.3. Procedures around Adjacent Utility Facilities
   - 7.4. Traffic Control
   - 7.5. Emergency Blast Initiation
   - 7.6. Safety Publications
   - 7.7. Fire Prevention
   - 7.8. Safety Hazards
   - 7.9. Emergency Services and Communication (Reference POD Appendix C13: Emergency Preparedness and Response Plan Guidelines)
   - 7.10. Minor or Nonemergency Medical Care
   - 7.11. First Aid
8. Risk Management
   - 8.1. Protection of Adjacent Utility Facilities
   - 8.2. Lightning
   - 8.3. Flyrock (Note: Flyrock would be controlled with blasting mats.)
   - 8.4. Carbon Monoxide
   - 8.5. Ground Vibrations
   - 8.6. Seismically Sensitive Receptors
   - 8.7. Preblast Survey and Inspection
   - 8.8. Blast Damage Complaints
   - 8.9. Airblast

9. Blast Design Concept
    - 9.1. Station limits of proposed shot
    - 9.2. Plan and section views of proposed drill pattern, including free face, burden, blasthole spacing, blasthole diameter, blasthole angles, lift height, and sub-drill depth
    - 9.3. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming
    - 9.4. Initiation sequence of blastholes, including delay times and delay system
    - 9.5. Manufacturers' data sheets for all explosives, primers, and initiators to be employed
10. Procedures
    - 10.1. Delivery of Explosives
    - 10.2. Storage of Explosives and Blasting Agents
    - 10.3. Blast Hole Drilling
    - 10.4. General Handling of Explosives
    - 10.5. Blast Hole Loading
    - 10.6. Notification
    - 10.7. Initiation of Blast
    - 10.8. Misfire Management
    - 10.9. Test Blasting
11. Records
12. Attachments

Appendix D. Mitigation Plan(s)

(if needed, to be provided in a future revision of the POD)

Appendix D.1. Greater Sage-Grouse Mitigation Plan

(dependent on Agency Preferred Alternative)