

APPENDIX R
FRAMEWORK ROW PREPARATION AND
VEGETATION MANAGEMENT PLAN

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ACRONYMS

AC	alternating current
ACEC	Area of Critical Environmental Concern
Applicant	TransWest Express LLC, also TransWest
BA	Biological Assessment
BE	Biological Evaluation
BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
CFR	Code of Federal Regulations
CWA	Clean Water Act
DC	direct current
DEIS	Draft Environmental Impact Statement
ESA	Endangered Species Act of 1973
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act of 1976
FO	Field Office
IRA	Inventoried Roadless Area
IVM	integrated vegetation management
kV	kilovolt
MVCD	Minimum Vegetation Clearance Distance
NEPA	National Environmental Policy Act of 1969
NERC	North American Electric Reliability Corporation
NF	National Forest
NPS	National Park Service
NTP	Notice to Proceed
OHV	off-highway vehicle
Plan	ROW Preparation and Vegetation Management Plan
POD	Plan of Development
Project	TransWest Express Transmission Project, also TWE Project
Reclamation	Bureau of Reclamation
ROD	Record of Decision
ROW	right-of-way
SDAs	Special Designated Areas
TransWest	TransWest Express LLC, also Applicant
TWE Project	TransWest Express Transmission Project, also Project
URMCC	Utah Reclamation Mitigation and Conservation Commission
USFS	United States Forest Service
VQO	Visual Quality Objective
VRM	Visual Resource Management

R1.0 INTRODUCTION

R1.1 Plan Purpose

The purpose of this framework Right-of-Way (ROW) Preparation and Vegetation Management Plan (Plan) is to describe and recommend vegetation management actions to be carried out by TransWest Express LLC (TransWest or Applicant) and its Construction Contractor(s) that would meet regulatory requirements for ROW clearing and maintenance, fuels management, and to support restoration actions for implementation of the Reclamation Plan (Appendix Q) for the TransWest Express Transmission Project (TWE Project or Project).

Table R1 provides the best management practices (BMPs) and mitigation measures identified in the Draft Environmental Impact Statement (DEIS) which may be applicable to this Plan. These BMPs and mitigation measures have not been finalized at this time and may be updated, changed, or eliminated as the Plan is further developed.

TABLE R1 AGENCY SPECIFIC MEASURES IDENTIFIED IN THE DEIS

MEASURE CATEGORY	VEGETATION MANAGEMENT BMP, DESIGN FEATURES, AND STATE AND BLM FO-SPECIFIC STIPULATIONS, AND FOREST STANDARDS AND GUIDELINES
West-wide Energy Corridor	
General	GEN-1, GEN-3, GEN-11
Mitigation and Monitoring	MIT-1
Ecological Resources	ECO-1
Visual Resources	VIS-7
Public Health and Safety	PHS-4, PHS-7
Applicant Committed Environmental Mitigation Measures	
General Design Features (general, environmental training)	TWE-4
Project Design, Access, and Construction (general ROW, visual, access, vegetation management, restoration, erosion control, soils, clean-up)	TWE-11, TWE-18
Vegetation and Soils Management (vegetation management)	TWE-26, TWE-27, TWE-28
Ecological Resources (ecological, special status species and habitats)	TWE-33
Cultural Resources – Historic, Archeological, and Tribal Traditional (general, cultural)	TWE-37
Land Use and Visual Resources (land use, agriculture, ranching, access, gates)	TWE-42
Public Health and Safety (worker health and safety)	TWE-51, TWE-56
Hazardous Materials, Waste, and Wastewater Management (waste management)	TWE-60
Fire Protection	TWE-64
Additional Mitigation Measures Prescribed for the TWE Project	
Soil Resources	VG-2, VG-4

MEASURE CATEGORY	VEGETATION MANAGEMENT BMP, DESIGN FEATURES, AND STATE AND BLM FO-SPECIFIC STIPULATIONS, AND FOREST STANDARDS AND GUIDELINES
Visual Resources	VR-1
Special Designations	SDA-4
Colorado BLM Field Offices	
BLM White River Field Office	Habitats having Blue Mountain Deciduous Browse/Aspen/Serviceberry/Chokecherry Communities may be prohibited, but if allowed would be avoided to the extent possible and use of special restoration measures to promote recovery.
BLM White River Field Office	To protect outstanding scenic and natural landscape values at select areas (VRM Class II and III), if construction is permitted, special design and reclamation measures may be implemented including transplanting trees and shrubs, fertilization, mulching, special erosion control structures, irrigation, site recontouring, low profile equipment, and painting to reduce visual contrasts.
Utah BLM Field Offices	
BLM Vernal FO	For protection of Mexican spotted owl, eliminate access routes created by project by raking out scars, revegetation, and gating access points.
Wyoming BLM Field Offices	
BLM Rawlins Field Office	Off-highway vehicle use limited to designated roads and vehicle routes.
Utah National Forests	
Ashley NF	Maintain adequate downed material and standing snags for wildlife habitat as identified below: Aspen: 70% of maximum population potential or 1.3 snags/acre Douglas-fir: 50% of maximum population potential or 1 snag/acre Lodgepole pine: 40% of maximum population potential or 0.7 snag/acre (Spruce-Alpine fir) Ponderosa pine: 80% of maximum population potential or 2.7 snags/acre Riparian (any species): 70% of maximum population potential or 1.3 snags/acre
Ashley NF	Use logging systems and techniques capable of minimizing soil loss, compaction, and other resource impacts.
Ashley NF	Special harvesting techniques to protect riparian zones, such as directional felling and cable yarding, would be applied when needed to protect the riparian ecosystem. Prohibit landings and decking areas and limit temporary roads within riparian areas.
Dixie NF	Design and implement management activities to blend with the natural landscape. Do not go below Visual Quality Objectives (VQO) of modification. When project requires clearing of vegetation and/or soil disturbance, use irregular clearing edges and shaped to blend with the natural landscape.
Manti-La Sal NF	Manage down timber to provide habitat for wildlife and manage to provide at least two logs per acre in timber habitat types.
Uinta NF	Avoid removing sagebrush cover within 300 yards of foraging areas along riparian zones, meadows, lakebeds, and farmland.
Nevada BLM Offices	

MEASURE CATEGORY	VEGETATION MANAGEMENT BMP, DESIGN FEATURES, AND STATE AND BLM FO-SPECIFIC STIPULATIONS, AND FOREST STANDARDS AND GUIDELINES
BLM Las Vegas Field Office	In Mormon Mesa and Rainbow Garden ACECs for critical desert tortoise habitat, the following is required: reclamation to pre-disturbance conditions within reasonable timeframe, which may include salvage and transplant of cactus and yucca, recontouring of area, scarification of compacted soil, soil amendments, seeding and transplant of seedling shrubs. Subsequent revegetation measures may be required if monitoring indicates not successful the first time.

FO = Field Office; VQO = Visual Quality Objectives; BMP = best management practice; NF = National Forest; BLM = Bureau of Land Management; ACEC = Areas of Critical Environmental Concern

R1.2 Plan Updates

This framework Plan is based on Alternatives in the Final Environmental Impact Statement (FEIS) and will be updated for the Record of Decision (ROD) Plan of Development (POD) based on the selected Agency Preferred Alternative and preliminary design and engineering. For the Notice to Proceed (NTP) POD the Plan will be updated as needed based on detailed final design and engineering.

R1.3 Agency Regulations

Federal and state agency regulations are presented in the following sections. Additional regulations may apply where special management areas are crossed by the TWE Project. These will be identified in the updated Plan for the ROD POD.

R1.3.1 All Lands

Relevant regulations applicable to all lands include:

- Clean Water Act (CWA) Sections 303(d) and 404
- North American Electric Reliability Corporation (NERC) Reliability Standard, FAC-003-2 (NERC 2011, 2013)
- Endangered Species Act (ESA) of 1973, as amended Section 7(a)(2)

R1.3.2 Bureau of Land Management

Relevant regulations applicable to Bureau of Land Management (BLM) lands include:

- Federal Land Policy and Management Act (FLPMA) of 1976 Sec. 101(a)(8)
- BLM Integrated Vegetation Management Handbook H1740-2 (BLM 2008)
- BLM Terms and Conditions of Right-of-Way Grants and Temporary Use Permits 43 Code of Federal Regulations (CFR) Part 2881.2
- BLM Field Office Resource Management Plans

R1.3.3 U.S. Forest Service

Relevant regulations applicable to United States Forest Service (USFS) lands include:

- FLPMA Sec. 101(a)(8)
- Forest Service Manual 2000 Zero Code 2070 – Servicewide (USFS 2008)
- National Forest Resource Management Plans

R1.3.4 National Park Service

Relevant regulations applicable to National Park System (NPS) lands include:

- FLPMA Sec. 101(a)(8)
- NPS Director’s Order 14 Resource Damage Assessment and Restoration Handbook (NPS 2003)
- NPS Resource Management Plans

R1.3.5 Bureau of Reclamation

Relevant regulations applicable to Bureau of Reclamation (Reclamation) lands include:

- FLPMA Sec. 101(a)(8)

R1.3.6 Utah Reclamation Mitigation and Conservation Commission

Relevant regulations applicable to Utah Reclamation Mitigation and Conservation Commission (URMCC) lands include:

- FLPMA Sec. 101(a)(8)

R1.4 Approved Areas of Disturbance

This Plan is applicable to the ROW; temporary work areas; access roads; and other facilities associated with the TWE Project. Any project-related ground disturbing activities outside these areas would require prior approval by the appropriate landowners or agencies. TransWest will document that appropriate cultural resources and biological surveys have been conducted, as determined necessary by the appropriate federal and state agencies. All construction activities outside of authorized areas are subject to all applicable survey and permit requirements, and landowner easement agreements.

R1.5 Responsible Parties

TransWest would have the overall responsibility of directing and monitoring vegetation management activities for the TWE Project. The Construction Contractor(s) may retain the services of a company that specializes in vegetation management to implement the protocols identified in this Plan during and following construction.

R2.0 ROW PREPARATION ACTIONS

The requirements for ROW Preparation will be determined based on information provided in the FEIS, Biological Assessment (BA), Biological Opinion (BO), Biological Evaluation (BE), and agency consultation, as well as terms and conditions contained within the ROW grant(s) or special use authorizations. Updated information on ROW Preparation will be included in the ROD POD version of this Plan. All actions described below are subject to change in future versions of this Plan.

ROW preparation typically includes general site preparation involving flagging of the ROW boundaries, temporary work areas, and exclusion areas. It also typically includes identification of plants to preserve in place, weed problem areas, salvage plants, and identification of storage areas for windrowed plant and soil materials. Monitoring would also be established during pre-construction activities, as described in the Reclamation Plan (Appendix Q). Pre-construction actions focus on protection of sensitive resources identified for preservation. Disturbance related to Project construction may begin after all ROW preparation and pre-construction actions have been completed. Pre-construction actions which may apply to the Project are described below.

R2.1 Additional Plans

This Plan is applicable to the construction of transmission structures, temporary work areas, staging areas, and access roads associated with the TWE Project. Any Project-related ground disturbing activities outside these areas would require prior approval by the appropriate land owners or agencies. TransWest would document that appropriate cultural resources and biological surveys have been conducted, as determined necessary by the appropriate federal and state agencies. As may be required in the ROW grant(s) or special use authorizations, all suitable habitat areas for ESA listed species, BLM sensitive, USFS sensitive, and state-listed species would be identified and marked with flagging or other appropriate means to avoid direct impacts during construction activities, as described in the Flagging, Fencing, and Signage Plan (Appendix I). All construction or reclamation activities outside of authorized areas are subject to all applicable survey and permit requirements and landowner easement agreements. All ROW preparation actions will be subject to stipulations identified in the following Protection Plans in the POD:

- Avian Protection Plan (Appendix B)
- Flagging, Fencing, and Signage Plan (Appendix I)
- Noxious Weed Management Plan (Appendix N)
- Reclamation Plan (Appendix Q)
- Stormwater Pollution Prevention Plan (Appendix T)
- Water Resources Protection Plan (Appendix W)
- Wildlife and Plant Conservation Measures Plan (Appendix X)

R3.0 VEGETATION MANAGEMENT

Procedures for vegetation management includes information on preserving existing vegetation to the degree possible, salvaging live plants, vegetation clearing, and salvaging dead or cut plants for mulching. These procedures are described further below.

R3.1 Preserve in Place

The Preserve in Place activity includes the preservation of existing vegetation to the degree possible to reduce visual impacts and/or if mature plant specimens are present to enhance habitat recovery and quality. This activity would be implemented in construction areas where recontouring is not required, wherever practicable and consistent with NERC standards, and the original contour would be maintained to avoid excessive root damage and allow for re-sprouting. Preservation of specimens may also be requested by the appropriate land management agency or recommended by the Construction Contractor(s) on a case-by-case basis. Eligible specimens would include mature trees and shrubs, succulents, or diverse vegetation groupings that would provide seed and a suitable microclimate for seedling germination. Flagging or fencing of specimens (e.g., Joshua trees) to be preserved would be done before ground is disturbed. The Construction Contractor(s) would ensure construction activities would not disturb the specimens. If it is determined that construction activity would be detrimental to the plant, then salvage should be considered if the specimen meets the qualifications described in Appendix Q - Reclamation Plan.

R3.2 Plant Salvage

Where required by the ROW grant(s) or special use authorizations, plants would be salvaged from the ROW and other areas in the Project footprint to the extent feasible so they can be replanted after construction activities are complete. Salvaged material would be replanted as soon as possible to avoid loss of plants. Salvaged material would be replanted in sites that match the original one to the extent possible to ensure adaptability. Plant salvaging and replanting is required in the Mormon Mesa and Rainbow Garden Areas of Critical Environmental Concern (ACECs) for Critical Desert Tortoise Habitat (BLM Las Vegas Field Office) and BLM White River Field Office. Specific methods for replanting salvaged plants are described in the Reclamation Plan (Appendix Q).

R3.3 Vegetation Clearing in ROW

NERC has established reliability standard FAC-003-2 to prevent vegetation related outages from occurring on bulk transmission systems, which could lead to cascading outages (NERC 2011). This mandatory standard was developed in response to serious outages and operational problems, which have resulted from interference between overgrown vegetation and transmission lines over the past 10 to 20 years. FAC-003-2 requires having and implementing a documented vegetation management program, designed to control vegetation on transmission ROWs. Vegetation management for the TWE Project is based on meeting NERC reliability requirements through the integrated vegetation management (IVM), which includes the wire-border zone approach to vegetation management (ANSI 2006; Ballard et al. 2007; NERC 2011). There would be three levels of ROW clearing within the TWE Project transmission line ROW, which are defined and described below.

- Level 1 – Standard ROW Vegetation Management
- Level 2 – Selective ROW Wire-Border Zone Vegetation Management
- Level 3 – Selective ROW Clearance-Based Vegetation Management

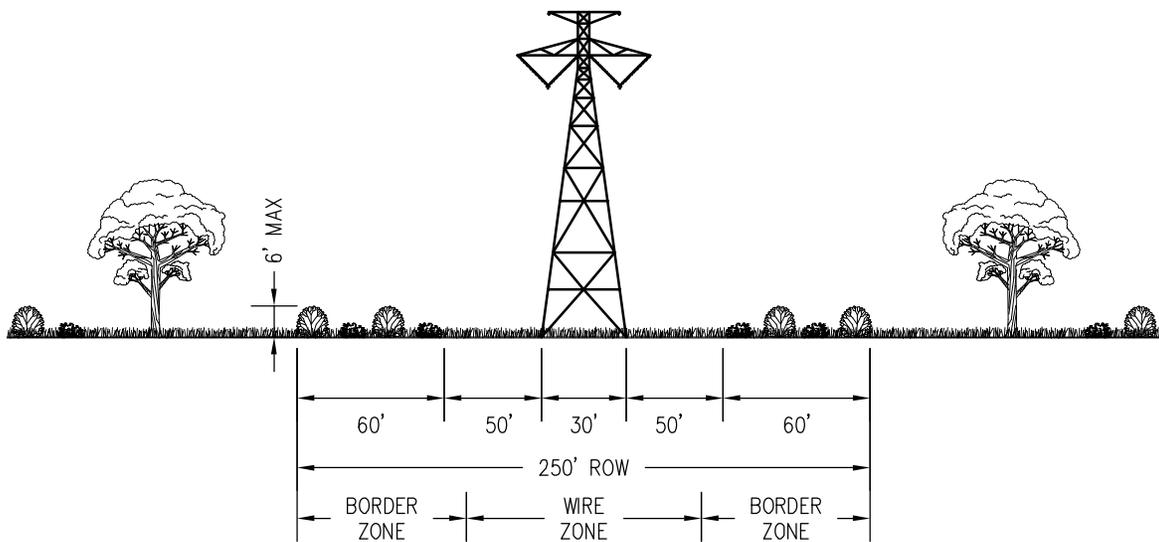
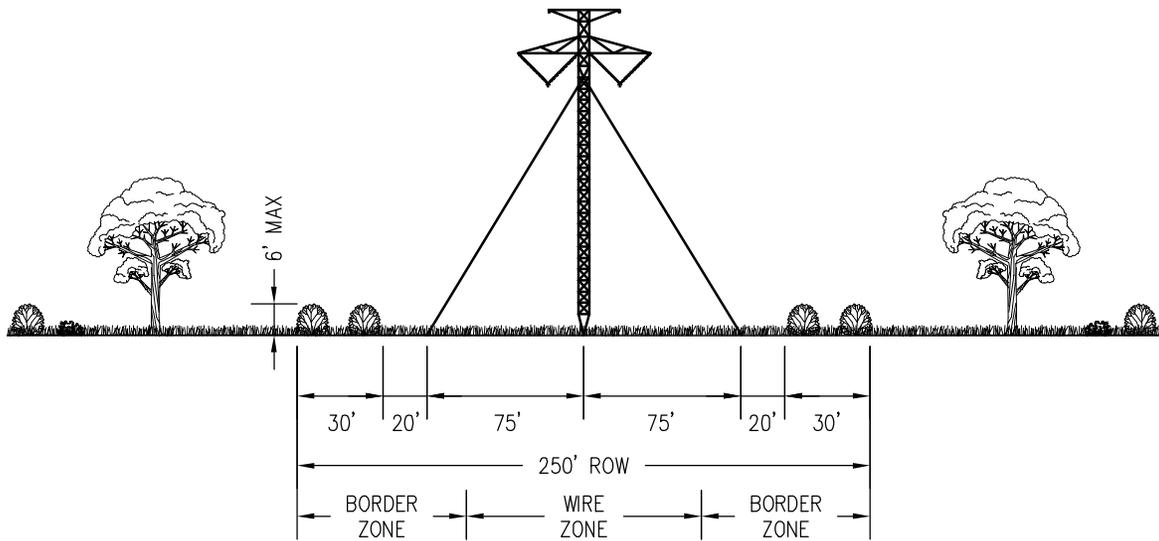
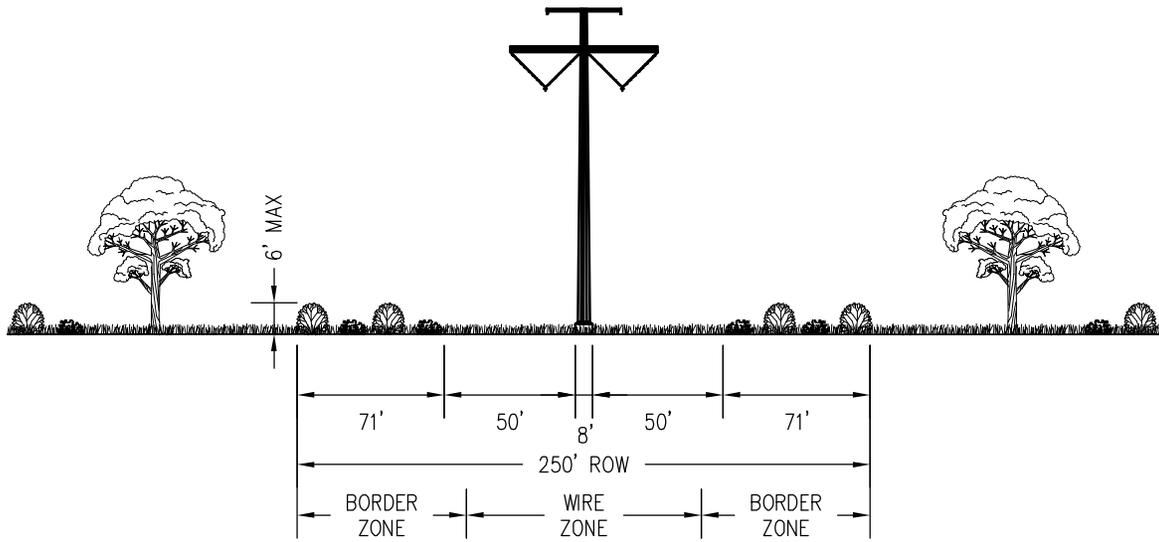
R3.3.1 Level 1 – Standard ROW Vegetation Management

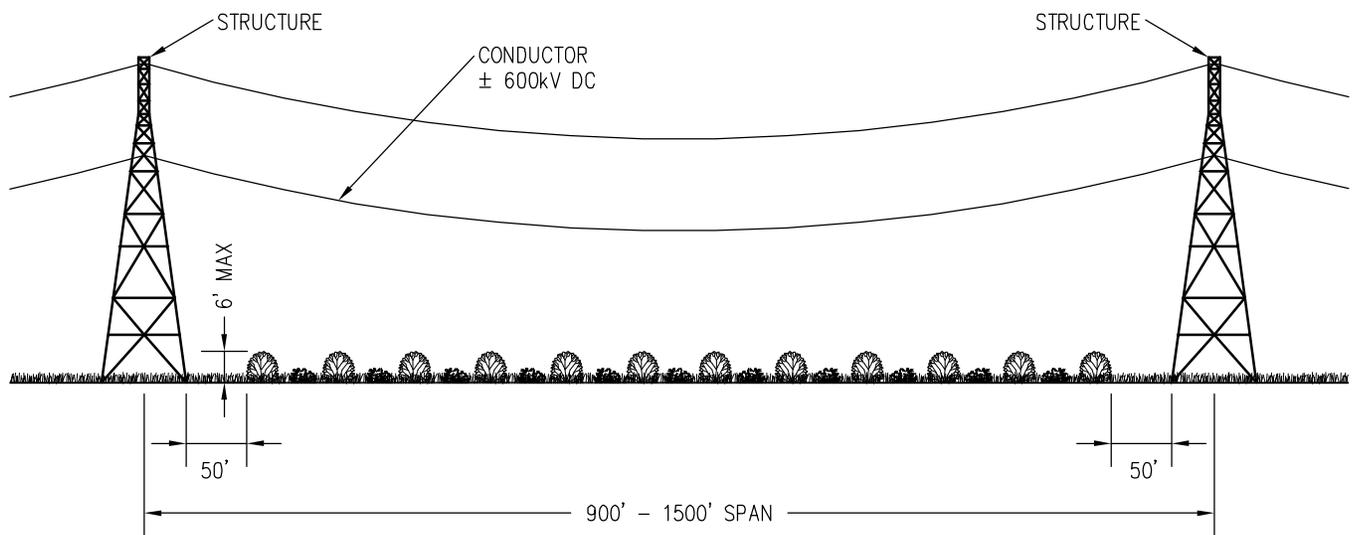
Definition

The standard ROW vegetation management approach (Level 1) would entail initially clearing the ROW of all undesirable vegetation and managing the ROW to maintain the desired condition. The desired condition is characterized by stable, low growth plant communities, free of noxious or invasive plants. These communities would typically be comprised of herbaceous plants and low growing shrubs, ideally native to the local area. Vegetation heights would average three feet in height, and may range up to six feet. Accumulations of vegetation debris from intensive or repetitive vegetation treatments may require removal to reduce risks from wildfire and enhance the fire survivability of the transmission line. The density of remaining vegetation would be a consideration in assessing overall fire risk. Adequate access routes are required and must be maintained to provide for efficient, cost-effective vegetation treatment activities.

Application and Desired Condition

Level 1 is TransWest's desired condition for the majority of the TWE Project ROW. Level 1 represents the most effective way to meet and exceed the NERC standards in a cost-effective manner. Figures R1 and R2, illustrate the Level 1 desired conditions.

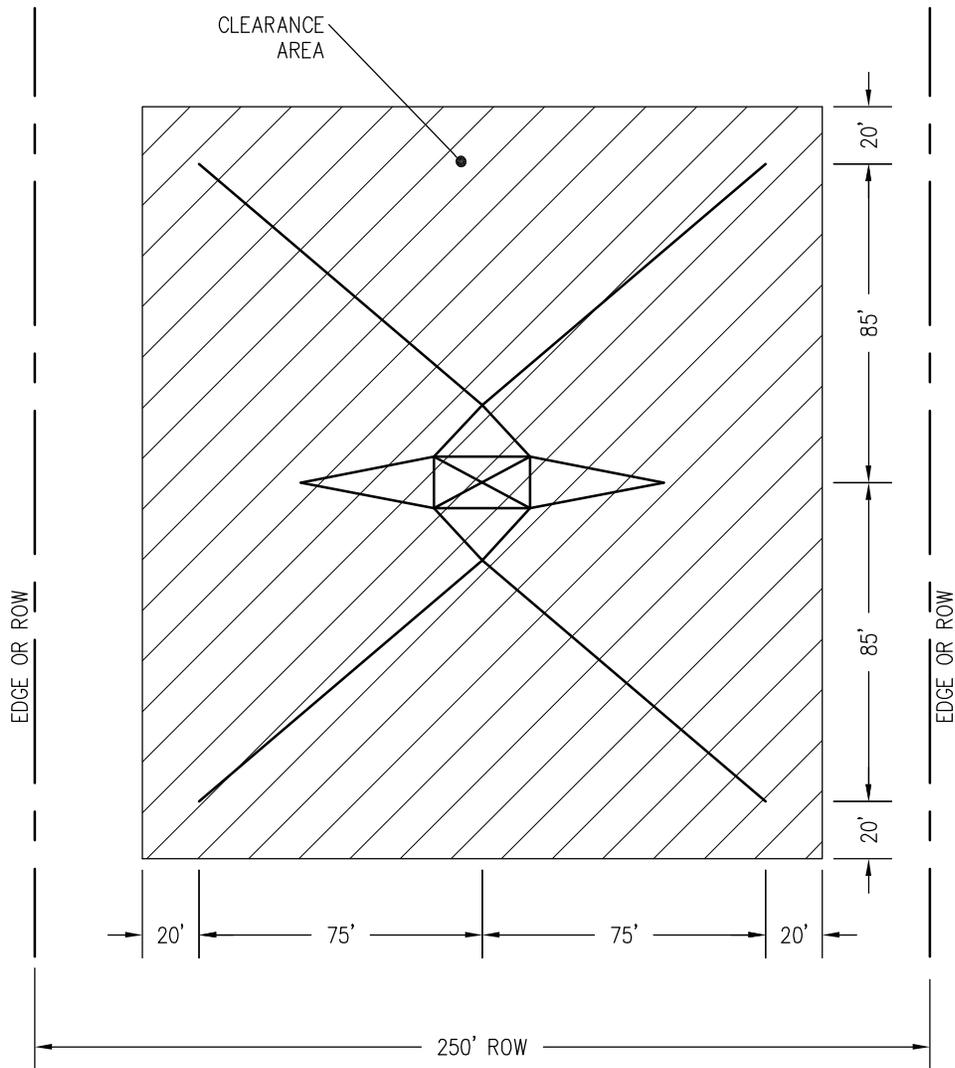




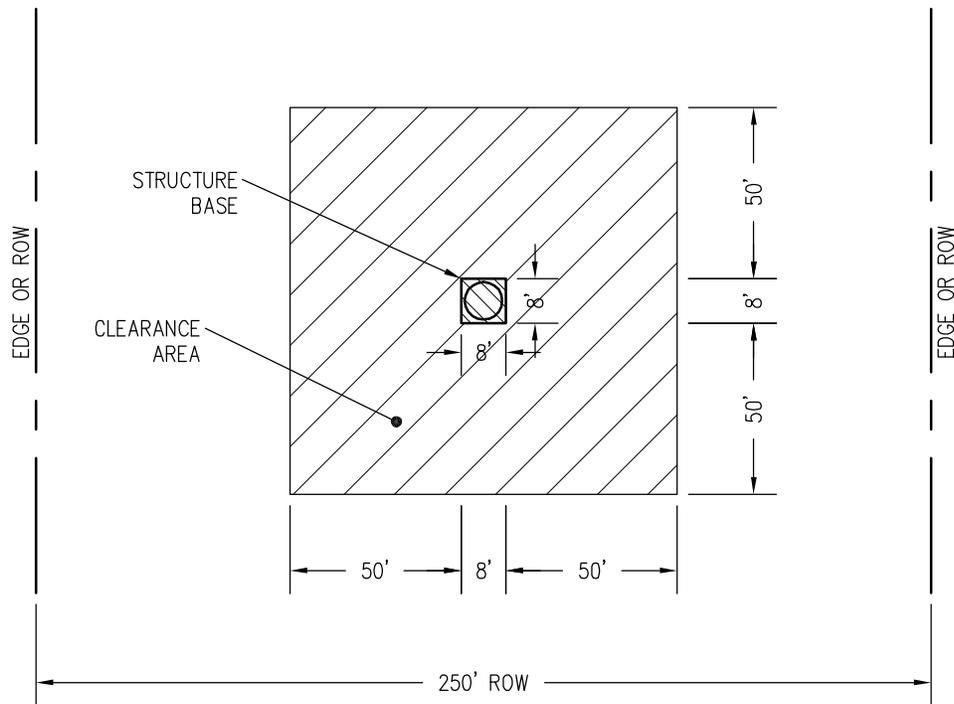
Implementation

As part of construction, the clearing of the ROW and access roads would be accomplished in accordance with this Plan. As part of the ROW clearing, all danger trees would be identified and removed from the ROW. Where necessary, tree removal would be accomplished by cutting as near to the surrounding grade wherever possible, and would not exceed eight inches above grade when measured on the downhill side of the tree, and two inches on the uphill side of the tree (BLM 2008). All stumps would be left in place for erosion control. Low-growing trees, shrubs, and ground vegetation would be left in place to the extent possible. To the extent feasible, the Applicant would maintain adequate downed material for wildlife habitat. At ravine crossings with higher conductor clearances, more woody vegetation would be retained to the extent practical. Vegetation would be cleared at each tower location. Clearance zones would extend out 50 feet around self supporting lattice towers and single shaft tubular steel poles. The clearance zone for the guyed lattice towers would extend out 20 feet from the outline of the guy pattern. Figure R3 shows the extents of vegetation clearing planned for the guyed lattice towers. Figure R4 provides comparable information for the tubular steel pole and self supporting lattice towers. Shrubs and ground cover outside these tower clearance zones would be left in place to the extent possible. Slash would be removed from the Project site or respread according to Section R3.4 Slash and Mulch Management and the Reclamation Plan (Appendix Q).

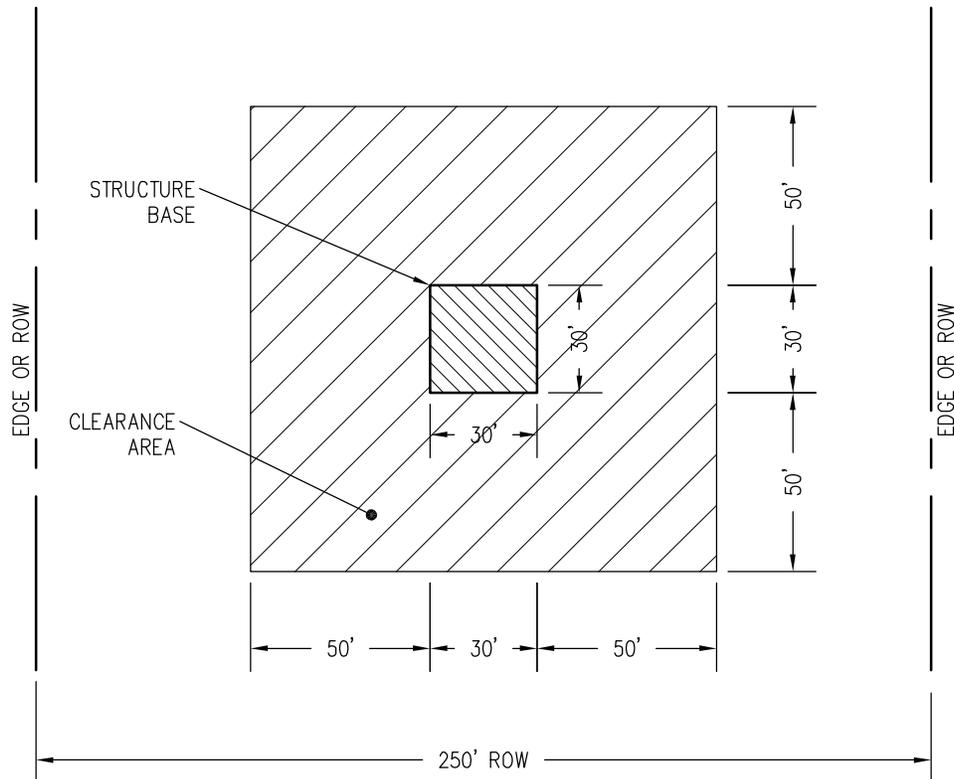
During the life of the TWE Project, the ROW would be managed to retain the Level 1 desired condition in designated areas. During operation, the Applicant would be responsible for routine inspections of vegetation. Annual plans for the inspection and treatment of vegetation would be implemented. Vegetation would be removed using mechanical equipment such as chain saws, weed trimmers, rakes, shovels, mowers, and brush hooks. Clearing efforts in heavy growth areas would use equipment such as a Hydro-Ax or similar. The duration of activities, and the size of crew and equipment required, would depend on the amount and size of the vegetation to be trimmed or removed. In selected areas, herbicides may be used to control noxious weeds, as described in the Noxious Weed Management Plan (Appendix N). All herbicide applications would be performed in accordance with federal, state, and local regulations, and in compliance with appropriate land management agency or private landowner requirements.



CLEARANCE ZONE FOR GUYED LATTICE TOWER
(TYPICAL)



CLEARANCE ZONE FOR TUBULAR STEEL POLE
(TYPICAL)



CLEARANCE ZONE FOR SELF-SUPPORTING LATTICE TOWER
(TYPICAL)

R3.3.2 Level 2 – Selective ROW Wire-Border Zone Vegetation Management

Definition

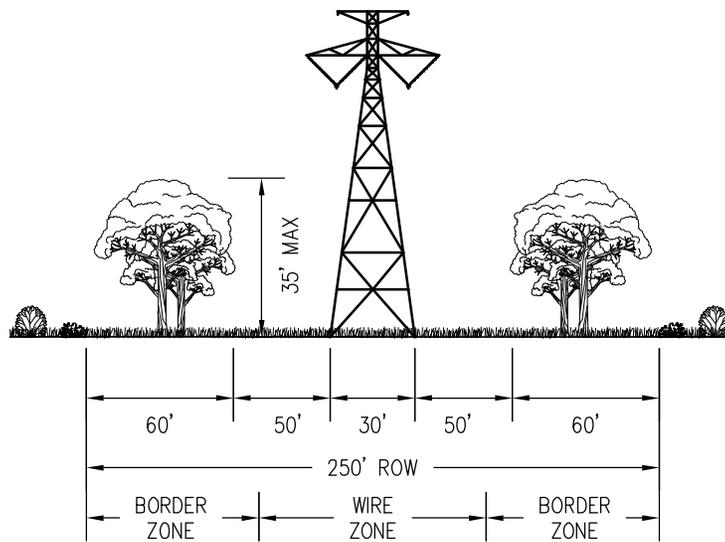
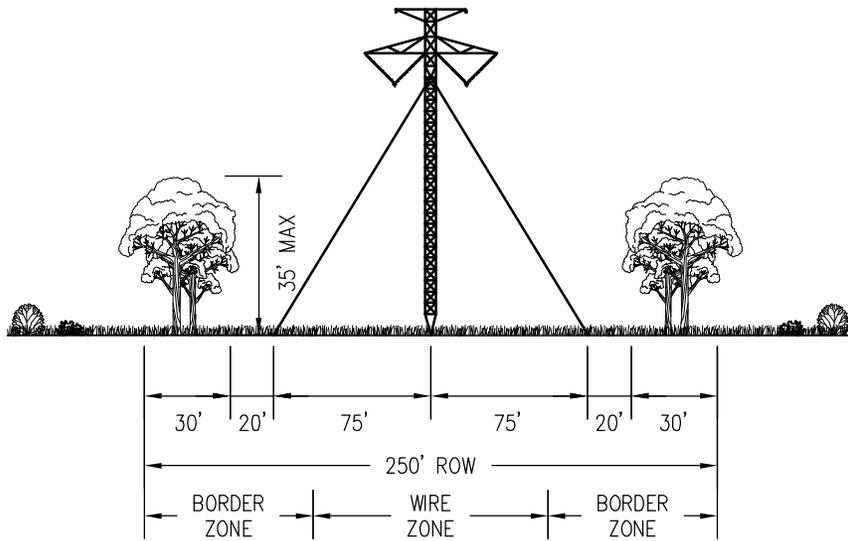
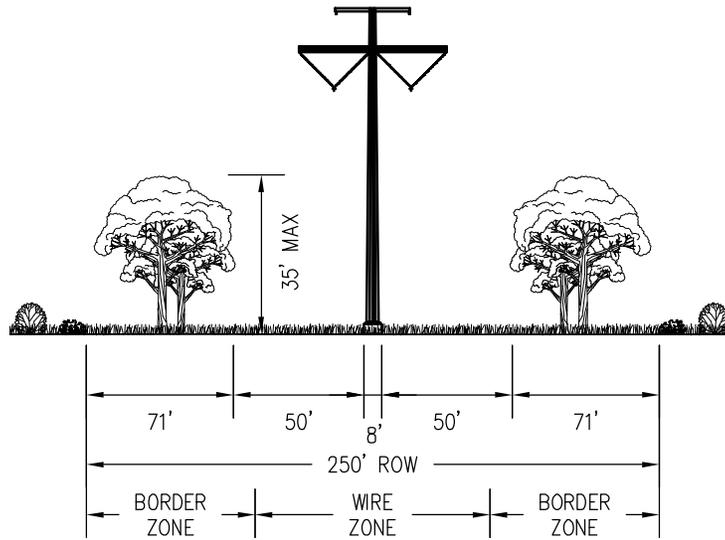
The wire-border zone approach to vegetation management (Level 2) divides the ROW width into three distinct management zones from edge to edge: the border zone, the wire zone, and another border zone. The ROW vegetation is managed differently in these zones to optimize the safe and reliable transmission of electricity while minimizing vegetation clearing in the border zone to balance for other values such as wildlife habitat and visual aesthetics. Herb-grass-forb cover types (low-growing vegetation), which may include short woody shrubs, are promoted in the wire zone, and shrub-short tree cover types (taller woody vegetation) are allowed to grow in the border zones (Ballard et al. 2007). The wire-border zone approach is supported by over 50 years of research to manage vegetation on transmission ROWs and is an industry accepted best practice to help ensure electric system reliability (NERC 2011). The wire-border zone approach is consistent with the NERC FAC-003-2 regulatory requirements to maintain the required Minimum Vegetation Clearance Distance (MVCD). MVCD is the calculated minimum distance (feet) to prevent flash-over between conductors and vegetation, for various altitudes and operating voltages (NERC 2011).

Application and Desired Condition

Level 2 is the desired condition for portions of the ROW where highly sensitive or constrained resource or agency management issues have been identified through the National Environmental Policy Act (NEPA) process and that can be effectively mitigated with Level 2 vegetation treatment. Level 2 vegetation management would meet the NERC standards, but would be more costly in terms of ongoing maintenance. Consequently, Level 2 would be applied selectively to only those portions of the ROW where the implementation of Level 2 would effectively mitigate potential impacts to highly sensitive resources. Examples of areas where Level 2 vegetation management may be appropriate are Visual Resource Management (VRM) Class III landscapes, or sensitive wildlife habitats susceptible to forest fragmentation impacts, where potential impacts can be effectively mitigated with this vegetation measure. Figure R5 shows a typical ROW cross-section for the TWE Project ±600 kilovolt (kV) direct current (DC) transmission line, and wire zone and border zone areas. A detailed definition of each zone and desired conditions are as follows:

Wire Zone

The Wire Zone is defined as the section of the utility ROW that is directly under the wires and extending outward a distance sufficient to accommodate anticipated wire movement. The Wire Zone for this Project is 90 feet in width centered on the transmission centerline. The maximum vegetation height for the desired conditions for Level 2 within the Wire Zone is six feet. The desired condition for the Wire Zone would be the same as Level 1 and characterized by stable, low-growth plant communities, free of noxious or invasive weeds. These communities would typically be comprised of herbaceous plants and low-growing shrubs, ideally native to the local area. Vegetation heights would average three feet in height, and may range up to six feet. Refer to Level 1 for full definitions.



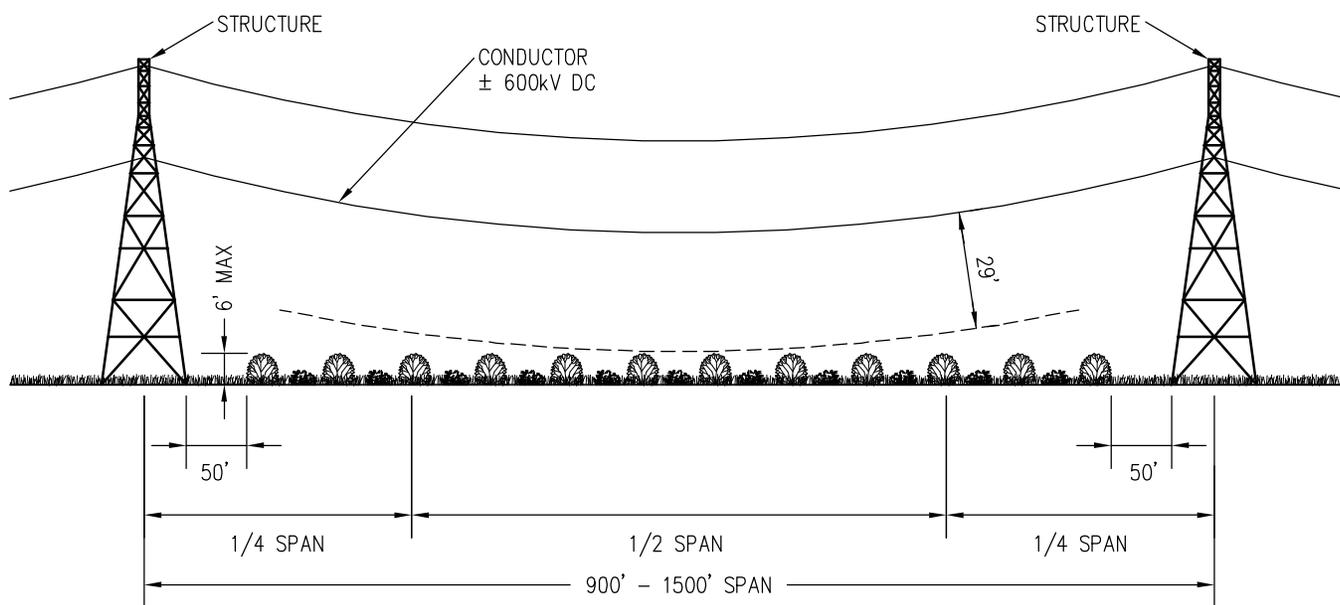
Border Zone

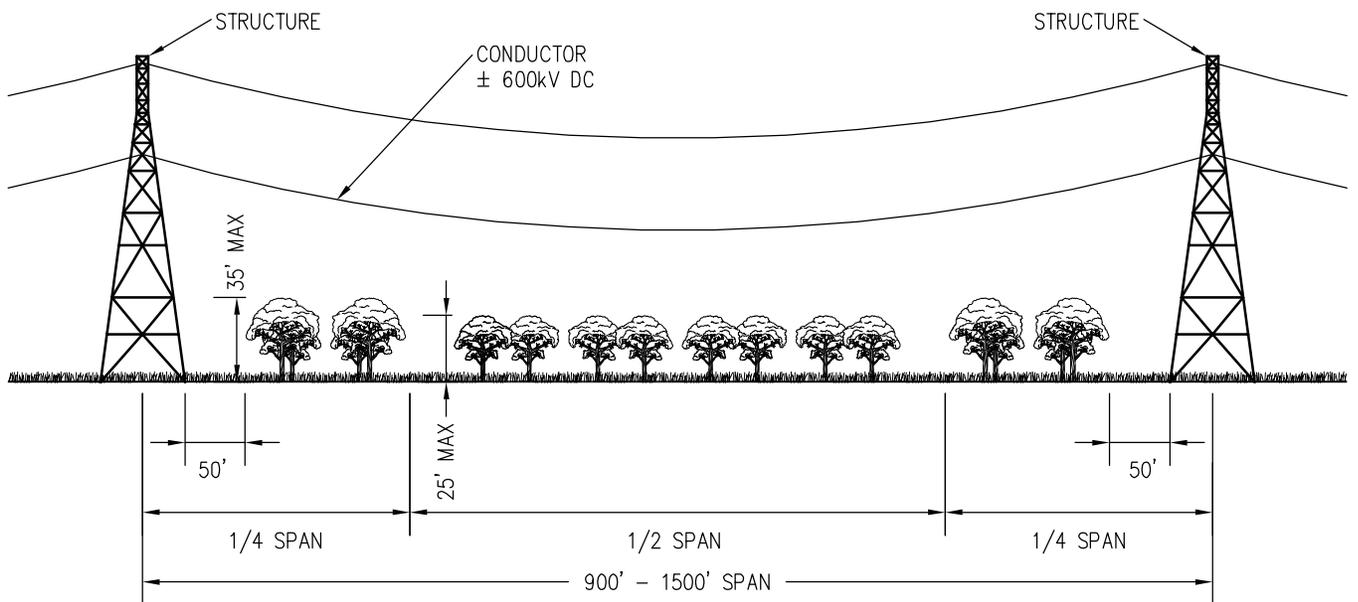
The Border Zone is defined as the section of the utility ROW that extends outward from Wire Zone boundary to the ROW boundary. For the TWE Project, the Border Zone would extend 80 feet on either side of the Wire Zone to the ROW boundary, depending on slope and other topographic conditions. For Level 2, the desired condition within the Border Zone is to manage this section of the ROW for stable low-growth vegetation consisting of small trees and large shrubs, as well as lower growing grasses and herbs. The maximum vegetation height within the Border Zone, within the center half of the span is 25 feet. The maximum vegetation height within the Border Zone, within the quarter spans nearest the structures is 35 feet. Taller vegetation may also be suitable, depending on the growth and density characteristics of specific tree varieties, as well as increased height of the conductors across canyons or low-lying valleys. Figure R5 conceptually illustrates the differences in vegetation height that the Wire-Border Zone management technique would allow for each of the three structure types. Figures R6 and R7 illustrate a typical profile view of Level 2 vegetation heights.

Implementation

As part of construction, implementation standards for the clearing of the ROW and access roads would be the same in the Level 2 Wire Zone as described previously (refer to Level 1 discussion). Level 1 construction standards would also be applied to the Level 2 Border Zone in instances where undesirable vegetation needs to be removed and managed for the life of the Project (e.g., fast-growing or invasive species). Other techniques that may be used in the Level 2 Border Zone during construction are selective mechanical or manual tree removal, side pruning, and selective use of herbicides. During operation, Level 2 vegetation would be managed the same as Level 1 in the Wire Zone. The Applicant would be responsible for routine inspections of vegetation. Annual work plans for the inspection and treatment of vegetation would be implemented. The annual work plans would describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions.

In the Border Zone, long-term operational practices would include additional techniques such as selective mechanical tree removal, selective manual control measures (e.g., use of hand-carried tools), thinning or feathering edges, and side pruning. To the extent feasible, the Applicant would maintain adequate downed material and standing snags for wildlife habitat. Long-term operational management of ROW vegetation under Level 2 would be more costly and labor-intensive over time, to ensure taller trees in the Border Zone do not violate NERC reliability standards for MVCD.





R3.3.3 Level 3 – Selective ROW Clearance-Based Vegetation Management

Definition

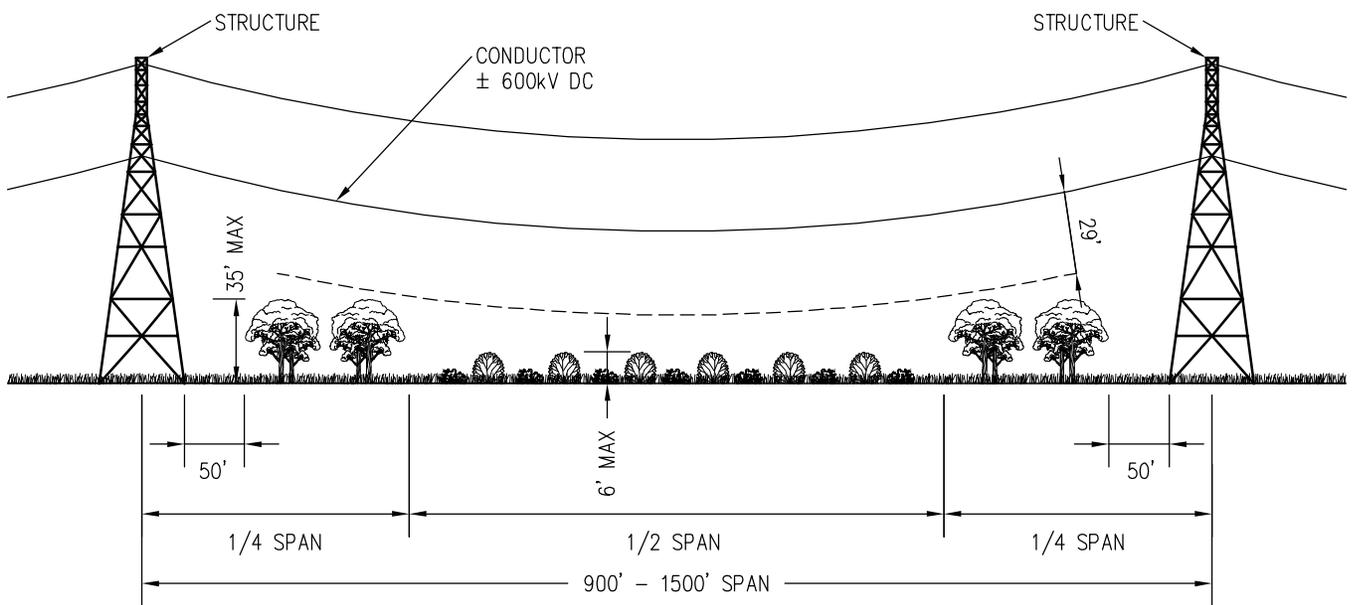
Clearance based vegetation management (Level 3) builds on the wire-border zone approach described above. The desired condition is based on maintaining the Applicant-defined minimum clearance from energized conductors to any type of vegetation. Within the wire zone and border zone, the desired condition would allow for increased vegetation diversity and heights, where such vegetation would not pose potential conflicts with the Applicant-defined minimum clearances to vegetation. The Applicant-defined minimum clearances to vegetation have been established to incorporate NERC reliability standards, construction tolerances (variance in construction materials and workmanship skills), conductor and tree movement due to wind and/or ice loading, increased sag as a result of thermal loading, and allowances for rapid vegetation growth. For the TWE Project, the minimum clearances from an energized conductor to vegetation would be (NERC 2011):

- ±600 kV DC – 29 feet, which exceeds the MVCD of 13.24 feet (at maximum elevation of 10,000 feet)
- 500 kV alternating current (AC) – 23 feet, which exceeds the MVCD of 7.13 feet (at maximum elevation of 10,000 feet)

Increased vegetation heights within the ROW would be suitable where the vegetation does not encroach on the minimum clearance to vegetation established by the Applicant. Level 3 is also expected to be feasible at most ROW crossings of riparian vegetation due to increased structure heights at canyon crossings or low valley crossings. Level 3 may also be achieved in some locations by increasing the height of structures at riparian crossings to allow a greater diversity and height of vegetation to remain.

Application and Desired Condition

Level 3 is the Applicant's desired condition for limited and selective portions of the ROW that have been determined to have critical resource or agency management issues associated with vegetation within the Wire Zone. Level 3 would meet the NERC standards, but would be significantly more costly in terms of ongoing maintenance of the ROW, would require more frequent access to the ROW, and more frequent vegetation treatments. Consequently, Level 3 is proposed by the Applicant only in limited and specific areas of the ROW where practices would effectively mitigate potential impacts to critical resources and related land management issues. Examples of critically sensitive areas where Level 3 may be appropriate are at ROW crossings of riparian vegetation or VRM Class II areas where potential impacts can be effectively mitigated with this vegetation management practice. Figures R7 and R8 provide profiles for both the Wire and Border Zones for Level 3.



Implementation

As part of construction, implementation standards for the clearing of the transmission structure sites and access roads within the ROW would be the same under Level 3 as previously described for Level 1 (refer to Level 1 discussion). In practice, Level 3 selective clearing of the entire ROW would be defined on a span-by-span basis such that any vegetation that does not meet the minimum clearance to vegetation established by the Applicant would be cleared. Level 3 construction standards would be applied in instances where undesirable vegetation needs to be removed from the ROW and managed for the life of the Project (e.g., fast-growing or invasive species). Selective clearing techniques that may be used for Level 3 clearance criteria during construction are selective mechanical tree removal, directional felling, cable yarding, side pruning, selective use of herbicides to control noxious weeds, and thinning or feathering edges. In general, trees and larger shrubs would be retained through selective clearing. To the extent feasible, the Applicant would maintain adequate downed material and standing snags for wildlife habitat.

During operation, Level 3 vegetation would be managed within the ROW to maintain the desired conditions. Long-term operational practices for Level 3 ROW areas would be more labor-intensive and expensive than Level 1 or 2, to ensure that, over time, taller trees and shrubs do not violate the Applicant-defined minimum clearances to vegetation. Level 3 also requires more frequent visitation and access to the ROW for inspections and vegetation treatments. During operation, the Applicant would be responsible for routine inspections of vegetation. Annual plans for the inspection and treatment of vegetation would be implemented. The annual plan would describe the methods to be used in Level 3 areas, as well as techniques applicable to the Level 1 and 2 portions of the ROW.

R3.3.4 Project-Specific Measures Applicable to All Levels

For all levels of ROW clearing, TransWest must meet the NERC requirements. Irrespective of the level of vegetation management applied, site-specific conditions may require a more conservative vegetation management approach such that the Applicant-defined minimum clearance to vegetation criteria, which complies with NERC, is met. Table R2 summarizes how these three levels would apply to each of the vegetation communities.

Clearing of mature vegetation (trees and tall shrubs), under or near the conductors, would be required to provide adequate electrical clearance and to maintain reliability. TransWest would coordinate timing and methods of tree clearing and removal with the appropriate land management agency, which would also approve the ROW boundary for tree removal. Restrictions that would apply to vegetation clearing throughout the TWE Project as required by land ownership are listed below:

- Clearing would be performed so as to minimize marring and scarring the countryside and preserve the natural beauty to the extent feasible.
- Vegetation clearing in the ROW would be minimized in deep valleys with high line clearance.
- Except for “danger trees,” no clearing would be performed outside the limits of the ROW or other predetermined construction areas. “Danger trees” are trees or tree limbs (located off of the transmission line ROW, and thus outside of normal clearing limits), which are of such height; condition (e.g., leaning, rotted); location (e.g., side hill, proximity to transmission lines, soil characteristics); and/or species type that they represent a threat to the integrity of the transmission line conductors, pole structures, or other facilities.

- If any salt cedar (*Tamarix* spp.) stands are felled, the cut stumps would be immediately treated with herbicides, as described in Appendix N – Noxious Weed Management Plan.
- Woody areas such as pinyon-juniper, which are on average taller than the six foot minimum clearance, but with wide spacing between trees allowing vehicle and equipment access to the ROW, would not be cleared during construction activities, as long as conductor clearance requirements and compliance with NERC is maintained (typically following standards described in Levels 2 and 3 below). Where clearing of pinyon-juniper is required, edges of clearing would be feathered. Where feasible, trees would be topped rather than removed if they exceed the allowable height unless otherwise directed by the land management agency or landowner.
- Within Inventories Roadless Areas (IRAs) and Special Designated Areas (SDAs) of high scenic quality, Level 2 or Level 3 management methods would be utilized as needed to reduce impact to wildlife habitat and reduce the level of habitat fragmentation during operations.

TABLE R2 TWE PROJECT DEIS VEGETATION MANAGEMENT GUIDELINES BY VEGETATION LAND COVER TYPE

VEGETATION LAND COVER TYPE/ AND DOMINANT SPECIES*	HEIGHT RANGE	REGENERATION TIME TO FORMER HEIGHT (YEARS)	LEVEL 1 – STANDARD ROW VEGETATION MANAGEMENT	LEVEL 2 – SELECTIVE ROW VEGETATION MANAGEMENT – WIRE-BORDER ZONE	LEVEL 3 – SELECTIVE ROW – CLEARANCE BASED VEGETATION MANAGEMENT
Montane Forest SO28, SO32 - Douglas fir - Subalpine fir - Engelmann spruce - Aspen	60 to 80 feet	50 to 150 years	Construction Phase: Cleared from ROW. Operation Phase: ROW managed for low growing shrubs and herbs.	Construction Phase: <i>ROW Wire Zone</i> – Same as Level 1. Cleared from ROW <i>ROW Border Zone</i> - Selectively cleared based on allowed vegetation types, heights and densities. Operation Phase: <i>ROW Wire Zone</i> - Same as Level 1. Managed for low growing shrubs and herbs. <i>ROW Border Zone</i> – Managed for compatible vegetation types, heights and densities, including trees, shrubs and herbs, based on allowed types, heights and densities.	Construction Phase: <i>ROW Wire Zone</i> - Selectively cleared based on allowed vegetation types, heights and densities. <i>ROW Border Zone</i> - Selectively cleared based on allowed vegetation types, heights and densities. Operation Phase: <i>ROW Wire Zone</i> – Managed for compatible vegetation, including trees, shrubs and herbs, based on allowed types, heights and densities. <i>ROW Border Zone</i> – Managed for compatible vegetation, including trees, shrubs and herbs, based on allowed types, heights and densities.
Aspen SO 23	30 to 70 feet	30 to 60 years	Construction Phase: Cleared from ROW. Operation Phase: ROW managed for low growing shrubs and herbs.	Construction Phase: <i>ROW Wire Zone</i> – Same as Level 1. Cleared from ROW <i>ROW Border Zone</i> – Same as ROW. Operation Phase: <i>ROW Wire Zone</i> - Same as Level 1. Managed for low growing shrubs and herbs. <i>ROW Border Zone</i> – Managed for allowed tree heights and densities.	Construction Phase: <i>ROW Wire Zone</i> - Selectively cleared based on allowed heights and densities. <i>ROW Border Zone</i> - Selectively cleared based on allowed heights and densities. Operation Phase: <i>ROW Wire Zone</i> – Managed for allowed vegetation, including shrub and types, heights and densities. <i>ROW Border Zone</i> – Managed for allowed vegetation, including shrub and tree types, heights and densities.
Ponderosa Pine SO36	40 to 90 feet	30 to 100 years	Construction Phase: Cleared from ROW.	Construction Phase: <i>ROW Wire Zone</i> – Same as	Construction Phase: <i>ROW Wire Zone</i> -

VEGETATION LAND COVER TYPE/ AND DOMINANT SPECIES*	HEIGHT RANGE	REGENERATION TIME TO FORMER HEIGHT (YEARS)	LEVEL 1 – STANDARD ROW VEGETATION MANAGEMENT	LEVEL 2 – SELECTIVE ROW VEGETATION MANAGEMENT – WIRE-BORDER ZONE	LEVEL 3 – SELECTIVE ROW – CLEARANCE BASED VEGETATION MANAGEMENT
Pinyon Juniper SO39, SO40, SO52 - Pinyon pine Utah Juniper	15 to 40 feet	100 to 300 years	<p>Operation Phase: ROW managed for low growing shrubs and herbs.</p>	<p>Level 1. Cleared from ROW <i>ROW Border Zone</i> - Selectively cleared based on allowed vegetation types, heights and densities. Operation Phase: <i>ROW Wire Zone</i> - Same as Level 1. Managed for low growing shrubs and herbs. <i>ROW Border Zone</i> – Managed for allowed tree heights and densities.</p>	<p>Selectively cleared based on allowed heights and densities. <i>ROW Border Zone</i> - Selectively cleared based on allowed heights and densities. Operation Phase: <i>ROW Wire Zone</i> – Managed for allowed vegetation, including shrub and types, heights and densities. <i>ROW Border Zone</i> – Managed for allowed vegetation, including shrub and tree types, heights and densities.</p>
Mountain Shrubland SO46 - Gambel oak - Serviceberry - Mountain-mahogany - Chokecherry	8 to 15 feet	20 to 50 years	<p>Construction Phase: Cleared from ROW. Operation Phase: ROW managed for low growing shrubs and herbs.</p>	<p>Construction Phase: <i>ROW Wire Zone</i> – Same as Level 1. Cleared from ROW <i>ROW Border Zone</i> - Selectively cleared based on allowed heights and densities. Most pinyon juniper would be allowed in the border zone. Operation Phase: <i>ROW Wire Zone</i> - Same as Level 1. Managed for low growing shrubs and herbs. <i>ROW Border Zone</i> – Managed for allowed tree heights and densities.</p>	<p>Construction Phase: <i>ROW Wire Zone</i> - Selectively cleared based on allowed heights and densities. Most pinyon juniper would be allowed in the wire zone. <i>ROW Border Zone</i> - Selectively cleared based on allowed heights and densities. Most pinyon juniper would be allowed in the border zone. Operation Phase: <i>ROW Wire Zone</i> – Managed for allowed vegetation, including shrub and tree types, heights and densities. <i>ROW Border Zone</i> – Managed for allowed vegetation, including shrub and tree types, heights and densities.</p>
			<p>Construction Phase: Cleared from ROW. Operation Phase: ROW managed for low growing shrubs and herbs.</p>	<p>Construction Phase: <i>ROW Wire Zone</i> – Same as Level 1. Cleared from ROW <i>ROW Border Zone</i> - Selectively cleared based on allowed heights and densities. Most shrubs would be allowed in</p>	<p>Construction Phase: <i>ROW Wire Zone</i> - Selectively cleared based on allowed heights and densities. Most shrubs would be allowed in the wire zone, except along access roads and structure clearance sites.</p>

VEGETATION LAND COVER TYPE/ AND DOMINANT SPECIES*	HEIGHT RANGE	REGENERATION TIME TO FORMER HEIGHT (YEARS)	LEVEL 1 – STANDARD ROW VEGETATION MANAGEMENT	LEVEL 2 – SELECTIVE ROW VEGETATION MANAGEMENT – WIRE-BORDER ZONE	LEVEL 3 – SELECTIVE ROW – CLEARANCE BASED VEGETATION MANAGEMENT
				the border zone. Operation Phase: <i>ROW Wire Zone</i> - Same as Level 1. Managed for low growing shrubs and herbs. <i>ROW Border Zone</i> – Managed for allowed shrub heights and densities.	<i>ROW Border Zone</i> - Selectively cleared based on allowed heights and densities. Most shrubs would be allowed in the border zone, except along access roads and structure clearance sites. Operation Phase: <i>ROW Wire Zone</i> – Managed for allowed vegetation, including shrub types, heights and densities. <i>ROW Border Zone</i> – Managed for allowed vegetation, including shrub types, heights and densities.
Sagebrush Shrubland SO54, SO55, SO56 - Big sagebrush - Silver sagebrush - Black sagebrush	2 to 6 feet tall	20 to 50 years	Construction Phase: Retained in ROW and along access roads and construction sites. Operation Phase: ROW managed for low growing shrubs and herbs.	NOT APPLICABLE	NOT APPLICABLE
Desert Shrubland SO45, SO60, SO65, SO69 Cold Desert: - Greasewood - Rabbitbrush - Saltbush species Warm Desert: - Creosote bush - Burro bush - Joshua trees	1 to 6 feet tall Joshua trees – 20 feet; Salt bush – less than 1 foot; Average – 3 feet	Cold desert: 30 to 50 years Warm desert: 50 to 200 years	Construction Phase: Retained in ROW except where fuel load is too great; and along access roads and construction sites. Joshua trees would be retained, except for center span of wire zone. Operation Phase: ROW managed for low growing shrubs and herbs. Joshua trees would be retained, except for center span of wire zone.	NOT APPLICABLE	NOT APPLICABLE
SO96, S118 - Cottonwoods - Wouldows	Trees – 30 to 60 feet (if	Trees – 50 to 80 years Shrubs – 5 to 20 years	NOT APPLICABLE	NOT APPLICABLE	Retained in ROW except where fuel load is too great; or where conductor clearances cannot be maintained.

VEGETATION LAND COVER TYPE/ AND DOMINANT SPECIES*	HEIGHT RANGE	REGENERATION TIME TO FORMER HEIGHT (YEARS)	LEVEL 1 – STANDARD ROW VEGETATION MANAGEMENT	LEVEL 2 – SELECTIVE ROW VEGETATION MANAGEMENT – WIRE-BORDER ZONE	LEVEL 3 – SELECTIVE ROW – CLEARANCE BASED VEGETATION MANAGEMENT
- River birch - Boxelder - Wouldow	present) Shrubs – 5 to 15 feet				Riparian areas would be avoided by access roads and construction sites to the extent feasible. Trees would be retained, except for center span of wire zone. <i>ROW Wire Zone and Border Zone</i> - Selectively cleared based on allowed vegetation types, heights and densities. Operation Phase: <i>ROW Wire Zone and Border Zone</i> - Managed for compatible vegetation, including trees, shrubs and herbs, based on allowed types, heights and densities.
Wetland SO96 - Greasewood - Saltbush - Inland salt grass - Alkali sacaton	2 to 5 feet	20 to 40 years	NOT APPLICABLE	NOT APPLICABLE	Construction Phase: Retained in ROW except where impacts are unavoidable (e.g., limited access roads). Operation Phase: Managed for retention of compatible vegetation.
Grassland/Steppe SO71, SO79, SO90 - Herbs and Shrubs	Herbs – 1 to 2 feet Shrubs – 1 to 5 feet	5 to 20 years	Construction Phase: Retained in ROW. Operation Phase: ROW managed for low growing shrubs and herbs.	NOT APPLICABLE	NOT APPLICABLE
Grassland – Invasive D08 - Cheatgrass - Red brome	Herbs – 1 to 2 feet	1 to 2 years	Construction Phase: Retained in ROW. Operation Phase: ROW managed for low growing shrubs and herbs if possible.	NOT APPLICABLE	NOT APPLICABLE
Riparian – Invasive D04 - Tamarisk	5 to 20 feet	5 to 20 years	Construction Phase: Cleared from ROW. Operation Phase:	NOT APPLICABLE	NOT APPLICABLE

VEGETATION LAND COVER TYPE/ AND DOMINANT SPECIES*	HEIGHT RANGE	REGENERATION TIME TO FORMER HEIGHT (YEARS)	LEVEL 1 – STANDARD ROW VEGETATION MANAGEMENT	LEVEL 2 – SELECTIVE ROW VEGETATION MANAGEMENT – WIRE-BORDER ZONE	LEVEL 3 – SELECTIVE ROW – CLEARANCE BASED VEGETATION MANAGEMENT
			ROW managed for noninvasive low growing shrub species.		

* Land cover types and dominant species listing is based on AECOM's Memorandum: Characteristics of Land Cover Crossed by TransWest Express Transmission Project Alternative Corridors, Draft, February 22, 2011.

R3.4 Slash and Mulch Management

Slash and mulch would be managed to reduce fire hazard, improve restoration effectiveness, reduce soil erosion, and improve aesthetic appeal. Cut trees would be whole tree yarded, decked, and removed or left on site as approved by the appropriate land management agency. Due to inaccessibility and safety concerns, it may not be possible to reach desired fuel levels on every piece of ground within the ROW, and trees may be left on site if they cannot be safely removed, as approved by the appropriate land management agency. Excessive pine needles left by tree clearing would be removed from the ROW and disposed of to prevent harm from grazing animals. All other slash and biodegradable debris would be left in place or disposed of in accordance with agency requirements. Depending on agency requirements, access, existing fuel loads, and fire safety, one or more of the slash disposal methods described below would be used to manage activity fuels.

R3.4.1 Lopping and Scattering

Vegetation may be lopped and scattered, but may not exceed a depth of 18 inches. Slash may not be left in streambeds, natural drainages, roadside ditches, or collection basins at the entrance of culverts. Slash may not be scattered so that concentrations lie around the base of any live trees. To the extent practicable, total residual debris (slash and natural debris) greater than three inches in diameter would not exceed 10 tons per acre, and total residual debris three inches or less in diameter would not exceed five tons per acre. This may require dispersing slash over a large area.

R3.4.2 Chipping

Foliage and limbs less than six inches in diameter may be chipped and spread on the ground within the ROW or removed from the ROW. If chipping and spreading woody material in the ROW, wood chips would not exceed three inches in depth and would be spread discontinuously so there is not a continuous chip mat (e.g., <40% of surface covered by three inches of chips). Chipping should be conducted in the fall to allow the chips to dry over the winter and before the spring bark beetle flight, as per the BLM Integrated Vegetation Management Handbook (BLM 2008).

R3.4.3 Windrow Vertical Mulch

Windrow vertical mulch is defined as materials including cut trees and shrubs, dead plants, cut plants and rocks that are temporarily set aside during ROW preparation so that they may be shredded or directly placed on the soil surface (post-construction) to increase fertility, provide microclimates for seed to germinate and stabilize soil. This would include any succulents that did not meet salvage requirements referred to in Section R3.2 Plant Salvage discussed further in Reclamation Plan (Appendix Q). To the extent feasible, windrow vertical mulch retained and/or replaced in the ROW would be spread discontinuously and not exceed 10 tons per acre of material over three inches in diameter and five tons per acre for material three inches or less in diameter. Windrow vertical mulch would not come entirely in contact with the soil surface, rather, parts of the mulch rise above the surface. Large rocks and boulders would be removed to the side. Rocks over six inches can be removed and stockpiled outside the disturbance areas (within the ROW), and used as needed for off-highway vehicle (OHV) deterrents. In some vegetation communities where mulch density would be very high, removal of excess mulch off site would be arranged after replacement quantities have been determined. Vertical mulch temporary storage areas would be located within the ROW.

R3.4.4 Decking

In areas that are accessible by existing roads or that allow for overland travel, cut trees may be whole tree yarded, skidded, and decked at designated decking yards or laydown areas for processing and loading onto trucks for transportation off site. During helicopter clearing, whole trees may be yarded

from the ROW to the decking yards or laydown areas where they would be limbed and processed. Commercial timber generated from the ROW clearing would be purchased from the appropriate land management agency or private landowner prior to ROW clearing and according to fair market value. Slash resulting from tree processing at decking areas may be chipped and removed as mutually agreed. All trees that may be safely removed from the ROW to a decking area shall be removed before April 1 of the following year. Trees would be whole-tree removed as much as possible (i.e., the removal of the entire tree, except for the branches that break-off during the cutting and removal operation). Logs or trees removed from the ROW would be transported to the decking areas by ground based equipment or helicopter. Updated versions of this Plan would identify staging areas and construction yards/decking areas.

R3.5 Reclamation

In areas disturbed during ROW clearing, surface preparation and reclamation activities would be implemented, as described in the Reclamation Plan (Appendix Q). Erosion and sediment control measures are specified in the Stormwater Pollution Prevention Plan (Appendix T).

R4.0 ANNUAL WORK PLANS

TransWest would complete 100% of its annual vegetation work plan for the transmission line to ensure no encroachments occur within the MVCD. Modifications to the work plan in response to changing conditions or to findings from vegetation inspections may be made (provided they do not allow encroachment of vegetation into the MVCD) and would be documented. For each annual work plan, TransWest would calculate the percent completed, which is based on the number of units actually completed, divided by the number of units in the final amended work plan (measured in units of choice - circuit, pole line, line miles or kilometers, etc.). Examples of reasons for modification to an annual plan may include:

- Change in expected growth rate/environmental factors
- Circumstances that are beyond the control of a Transmission Owner
- Rescheduling work between growing seasons
- Crew or contractor availability/Mutual assistance agreements
- Identified unanticipated high priority work
- Weather conditions/Accessibility
- Permitting delays
- Land ownership changes/Change in land use by the landowner
- Emerging technologies

R5.0 VEGETATION INSPECTIONS

NERC requires that inspections of vegetation clearance be conducted at least once per year at intervals no greater than 18 months, on 100% of applicable lines. It is not anticipated that more frequent vegetation inspections would be needed, because of the generally low rainfall amounts and

growth rates of local vegetation where the TWE Project is located (NERC 2011). However, more frequent visits may be required in forested areas where selective vegetation clearing measures would be implemented (Levels 2 and 3). Vegetation inspections require the systematic examination of the ROW to document those vegetation conditions under TransWest's control that are likely to pose a hazard to the line, and may be combined with a general line inspection. The inspection includes the identification of any vegetation that may pose a threat to reliability prior to the next planned maintenance or inspection work, considering the current location of the conductor and other possible locations of the conductor due to sag and sway for rated conditions. The information from the vegetation inspections would be used to determine risk, determine future work, and evaluate recently complete work.

TransWest would maintain records to demonstrate vegetation is being managed to prevent encroachment into the MVCD and that vegetation inspections are annually implemented following the annual work plan (NERC 2011). These records would include a copy of the completed annual work plan (including modifications if any), completed and dated work orders, dated invoices, dated inspection records, dated attestations, confirmation of no real-time observations of any MVCD encroachments, and/or dated reports containing no vegetation-related Sustained Outages associated with any of the following encroachment types:

- An encroachment due to a fall-in from inside the ROW;
- An encroachment due to blowing together of applicable lines and vegetation located inside the ROW; or
- An encroachment due to vegetation growth into the MVCD.

If TransWest is constrained from performing vegetation work (e.g., by land owners or land management agencies), which may lead to a vegetation encroachment into the MVCD prior to the implementation of the next annual vegetation inspection, then TransWest would take corrective action to ensure continued vegetation management to prevent encroachments. TransWest would maintain records of the corrective action taken for each constraint where the transmission line was put at potential risk. Examples of acceptable forms of evidence may include initially-planned work orders, documentation of constraints from landowners, court orders, inspection records of increased monitoring, documentation of the de-rating of lines, revised work orders, invoices, or evidence that a line was de-energized (NERC 2011).

If there are vegetation conditions that could cause a fault at any moment, TransWest would immediately notify the appropriate control center holding switching authority for the transmission line. In this scenario, TransWest would maintain records that it notified the control center holding switching authority without any intentional time delay. Examples of evidence may include control center logs, voice recordings, switching orders, clearance orders and subsequent work orders. All potential grow-in or fall-in vegetation-related conditions would not necessarily cause a fault at any moment. For example, danger trees would not require notification to the control center unless they pose an immediate fall-in threat (NERC 2011).

R6.0 REPORTING

TransWest would document annual inspections and vegetation management activities in compliance with NERC requirements. Additional documentation regarding the preservation of existing vegetation if feasible, salvaging live plants, and salvaging dead or cut plants for mulching would be included as part of restoration monitoring for implementation of the Reclamation Plan (Appendix Q).

R7.0 REFERENCES

- AECOM. 2010. Memorandum: TransWest Express Project Review of Applicant-Supplied Project Description Information and Draft Project Description Data Request. December 2010.
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- National Park Service (NPS). 2003. *Damage Assessment and Restoration Handbook: Guidance for Damage Assessment and Restoration Activities in the National Park Service*. Environmental Quality Division, Environmental Response, Damage Assessment, and Restoration Branch, Washington, D.C.
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